

Bucknell
UNIVERSITY

2016-17 CATALOG

Lewisburg, PA 17837
bucknell.edu



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ABOUT BUCKNELL

Bucknell was established in 1846 as the University at Lewisburg, the nation's 100th college or university in order of founding. It was renamed in 1886 in honor of William Bucknell, a major benefactor. It has enrolled women since 1883 and, although founded by Pennsylvania Baptists especially to train teachers and missionaries, it always has been open to students and faculty of all religious faiths and it is nondenominational today.

Over the years, the University has steadily evolved from a local, denominational institution to a highly visible national institution. The 3,600 undergraduates and 60 graduate students are drawn from most states and 51 countries, including 17 percent who are students of color and 6 percent from abroad. Prospective undergraduate interest is such that only one-fourth of the applicants can be admitted, and more than 65 percent of those who enroll and provide a class rank are from the top one-tenth of their secondary school classes.

Among the institutions sharing the interests of Bucknell's applicants each year are most of the Ivy League universities, other prominent doctoral institutions such as Duke and Carnegie Mellon, and many of the finest liberal arts colleges, underscoring Bucknell's considerable stature in its 170th year.

The range of institutions with which observers align Bucknell bespeaks the University's distinctive institutional type. This type is decidedly undergraduate and collegiate, providing for personalized, liberal learning, yet it incorporates the curricular complexity and scope of significantly larger institutions.

Professional and preprofessional programs in the College of Engineering, music, education, and the School of Management do more than coexist with the liberal arts and sciences. All of these programs operate with obvious excellence, and they often function synergistically to enhance the intellectual transformation of students that is Bucknell's *raison d'être*.

The Bucknell model for higher education dates to the late 19th century and the earliest years of the 20th century, when the University's fourth president, John Howard Harris, oversaw the institution of the engineering programs, the expansion of the education program, and the introduction of prelaw and premed programs.

Bucknell University awards Bachelor of Arts and Bachelor of Science degrees in more than 50 fields, including nine interdisciplinary programs – Animal Behavior, Cell Biology/Biochemistry, Comparative Humanities, Economics/Mathematics, Environmental Studies, International Relations, Latin American Studies, Neuroscience, and Women's and Gender Studies. Approximately 80 percent of the students are enrolled in the College of Arts and Sciences and 20 percent in the College of Engineering. A small number of master's degrees are awarded in selected fields.

The undergraduate curriculum capitalizes on the strengths of Bucknell's entering students – the drive to succeed, a curiosity to understand, a desire to find meaning in daily life – while providing the foundation for a lifetime of learning. Requirements are structured to develop context – historical, cultural, and geographic – for the study of nature and societies; the analytical tools and ability to reason; initiative and motivation to learn; and basic writing, quantification, and problem-solving skills.

Because students will be living and working in a world where intercultural competence and technology will demand broad perspective and transferable habits of thought, Bucknell includes both independent and collaborative learning, as well as focused study in international and modern culture and issues, as cornerstones of the undergraduate experience. More than 45 percent of each graduating class has studied abroad in approved programs in Europe, the Middle East, Africa, Asia, South and Central America, Australia, New Zealand, and Canada.

Great Teaching and Other Assets

Notwithstanding the variety of intellectual commitments and practices represented at Bucknell, the faculty aspire to be great teachers universally and single-mindedly. They practice a most direct, energetic and committed form of pedagogy, one result of which is a rich variety of close intellectual encounters between faculty and their students. Undergraduate research is emphasized in all areas of the curriculum, and it is made possible by the high level of the faculty's research and scholarship. Bucknell's faculty consists of about 375 full-time members, 96 percent with the Ph.D. or another terminal degree.

The faculty's strong relations with students have much to do with Bucknell's extraordinary graduation rates – 89 percent within six years – which annually rank among the highest few in the nation. Employment and graduate school placement figures are also very high.

Bucknell's additional assets include a \$789 million endowment, an operating budget of \$275 million, and a network of more than 50,000 alumni throughout the nation and the world. The 450-acre campus is among the most attractive in the country; most of its more than 100 facilities are described later in the catalog. Of particular note are the highly regarded Ellen Clarke Bertrand Library (1951), the handsome Weis Center for the Performing Arts (1988), the capacious Rooke Science Center (1991), the Weis Music Building (2000), the state-of-the-art Breakiron Engineering Building (2004), and the LEED Silver-certified Academic West (2013).

The University provides comprehensive residential and student activities programs to support the educational mission and to promote personal growth and responsibility. Eighty-six percent of Bucknell students live on campus, enjoying options that include seven residential colleges. More than 150 student organizations create a wide range of cocurricular and extracurricular opportunity in the arts, media, community service, religion, and other areas. An active Greek system involves about half of the eligible (non-first-year) students.

Bucknell's athletics program is particularly rich and distinctive. Approximately one-fifth of all students participate in 27 varsity sports at the Division I level. Bucknell is a member of the Patriot League, whose member institutions share a commitment to the primacy of the academic experience. Bucknell has captured the Patriot League's all-sports championship in 18 of the 25 years contested, but is equally proud that its graduation rate for athletes – 92 percent in the latest four-year average – is annually among the highest in the nation. Bucknell ranked #1 in the nation in the 2013 NCAA student-athlete graduation rate report and #2 in the 2014 and 2015 reports.

The campus is bordered by the Susquehanna River and Lewisburg, a historic small town in scenic central Pennsylvania. Most of the mid-Atlantic region's major cities are within three- or four-hour drives, including New York, Philadelphia, Baltimore, Pittsburgh, and Washington, D.C., and the University uses their resources on a regular basis. Still, the day-to-day life of faculty and students is clearly nonurban and nonsuburban, and the walk from downtown to the University among stately 19th-century homes, in the light of the borough's signature street lamps, evokes the sense of an earlier, calmer America. Lewisburg also is ranked among the nation's "most livable" small towns, on the basis of key resources such as health care, safety, and the economic base.

Mission Statement

Bucknell is a unique national university where liberal arts and professional programs complement each other. Bucknell educates students for a lifetime of critical thinking and strong leadership characterized by continued intellectual exploration, creativity, and imagination. A Bucknell education enables students to interact daily with faculty who exemplify a passion for learning and a dedication to teaching and scholarship. Bucknell fosters a residential, co-curricular environment in which students develop intellectual maturity, personal conviction and strength of character, informed by a deep understanding of different cultures and diverse perspectives. Bucknell seeks to educate our students to serve the common good and to promote justice in ways sensitive to the moral and ethical dimensions of life.

Bucknell's rich history and heritage will influence its planning for the future. Bucknell's potential as an institution of higher learning extends beyond that of a traditional liberal arts college by virtue of its larger size and expansive programs. The University's broader spectrum of disciplines and courses of study within a diverse and active residential campus community enhance the quality of all aspects of the undergraduate experience, both in and out of the classroom.

Academic Calendar

Bucknell's Academic Planning Calendar

The University calendar covers four years to help faculty, staff, students and their parents plan for the beginning and ending semester dates, and significant academic dates along with fall, winter and spring breaks. This calendar also includes the dates for Homecoming, Reunion, Family Weekend, other special events and religious holidays.

Policy Statements

Bucknell University does not discriminate on the basis of race, color, national origin, sex, disability, religion, age, veteran status, gender identity, marital status, sexual orientation, gender expression, or any characteristic protected by law, in its educational programs and activities, admissions, or employment, as required by Title IX of the Educational Amendments of 1972, the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964, and other applicable laws and University policies.

It complies fully with the prohibitions against discrimination on the basis of race and sex contained in Title VI of the Civil Rights Act of 1964 and Title IX of the Educational Amendments of 1972. In employment of both students and staff, Bucknell is an Affirmative Action and Equal Opportunity Employer. The Affirmative Action Officer, 14 Cooley Hall (570-577-1632) is the designated coordinator for compliance with Commonwealth and federal regulations and requirements. Bucknell has designated a Title IX coordinator, adopted and disseminated a nondiscrimination policy, and has put grievance procedures in place to address complaints of discrimination on the basis of sex in education programs and activities. The Title IX coordinator is Kathleen Grimes, Compliance Officer, Dean of Students Office, kag039@bucknell.edu, 570-577-1554.

Because enrollment limitations may require the exclusion of some qualified students from certain academic programs, the following policy has been adopted: Admission to the University, to a college, to a degree program, or to a major does not guarantee enrollment to any individual course, transfer from one college to another, or registration in any particular degree program or declaration of a particular major. Registration in or transfer from one degree program to another, or declaration of a major, is authorized only with the approval of the University through the academic deans. The University reserves the right to cancel or limit enrollment in any individual course.

Nothing in this *Catalog* may be considered as setting forth the terms of a contract between a student or prospective student and Bucknell University. The University reserves the right to modify the requirements for admission and graduation and the contents of this catalog at any time; to amend any regulation or policy affecting the student body; and to dismiss from the University any student if it is deemed by the University to be in its best interest or in the best interest of the student to do so.

Accreditations

Bucknell University is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools, 3624 Market St., Philadelphia, PA 19104, 215-662-5606. The Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Commission on Recognition of Postsecondary Accreditation.

In addition, Bucknell's Bachelor of Science curricula in biomedical, chemical, civil, electrical, and mechanical engineering and in computer science and engineering are accredited by Engineering Accreditation Commission (EAC) of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202, 410-347-7700. ABET is a specialized accrediting agency recognized by the U.S. Department of Education and the Council for Higher Education Accreditation.

The Bachelor of Science in computer science within the College of Arts and Sciences and the Bachelor of Science in computer science and engineering in the College of Engineering are accredited by the Computing Accreditation Commission (CAC) of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202, 410-347-7700. ABET is a specialized accrediting agency recognized by the U.S. Department of Education and the Council for Higher Education Accreditation.

The music curricula are accredited by the National Association of Schools of Music Commission on Accreditation, 11250 Roger Bacon Drive, Suite 21, Reston, VA 20190, 703-437-0700. The National Association of Schools of Music is a specialized accrediting agency recognized by the U.S. Department of Education and the Council on Higher Education Accreditation.

The Bachelor of Science curriculum in chemistry is approved by the American Chemical Society, 1155 16th St., N.W., Washington, DC 20036, 800-227-5558.

The Department of Education certification programs are approved by the Pennsylvania Department of Education, 333 Market St., Harrisburg, PA 17126, 717-787-2644.

The School of Management is accredited by the Association to Advance Collegiate Schools of Business, 777 S. Harbour Island Blvd., Suite 750, Tampa, FL 33602, 813-769-6500.

*Information in the Catalog was accurate as of printing date
– March 2016*

Contacts

For more information on particular aspects of Bucknell University, contact the people listed below at the phone number shown. To reach departments not included on the list, call the main University number, 570-577-2000. All mail to Bucknell faculty and administrators may be addressed to:

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Lewisburg, PA 17837

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Robert G. Springall, Dean of Admissions, 570-577-3000

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John P. Hardt, Director of Athletics and Recreation, 570-577-3067

Dean of Students

Amy A. Badal, Dean of Students, 570-577-1601

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Financial Services, 570-577-1138
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Andrea C.A. Leithner Stauffer, Director of Financial Aid, 570-577-1331

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Robert M. Midkiff Jr., Dean of Graduate Studies, 570-577-3655

Registrar's Office

Robert M. Midkiff Jr., Registrar, 570-577-1201

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Robert M. Midkiff Jr., Dean of Summer Session, 570-577-3655

UNIVERSITY EDUCATIONAL GOALS

The goal of a Bucknell education is to transform students through rigorous and sustained academic study supported and enriched by co-curricular and residential experiences.

To that end, Bucknell University's students will:

1. Learn, integrate, and apply knowledge and methodological approaches through in-depth study of an academic discipline.
2. Integrate and synthesize a range of knowledge, perspectives, and creative methods acquired through study and practice across multiple academic disciplines and diverse educational experiences.
3. Develop knowledge and skills for interpreting the commonalities and differences among human societies, including diverse cultural perspectives and traditions within the United States and internationally to enable living and working effectively in a global context.
4. Develop knowledge and skills to identify and respond creatively and effectively to local and global challenges to humans and the natural world.
5. Understand the importance of and develop the capacities for self-assessment, ethical reasoning, and effective interaction with others so as to act responsibly and to promote justice in professional and communal life.
6. Develop critical thinking skills to evaluate arguments and address complex issues using techniques including quantitative and qualitative analysis and scientific reasoning.
7. Develop skills in oral and written communication to articulate ideas and arguments clearly and effectively.
8. Develop information literacy and technological competency across disciplines.
9. Develop the desire and intellectual skills for lifelong learning.

COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences offers programs of study leading to five degrees: the Bachelor of Arts, the Bachelor of Science, the Bachelor of Science in Business Administration, the Bachelor of Science in Education, and the Bachelor of Music. The programs are designed to carry out the educational objectives of the University through courses in the arts and humanities, the social sciences, the natural sciences and mathematics.

Curricula Overview (AS)

The curricula of the College are primarily organized around the major disciplinary fields of inquiry traditionally recognized in the wider world of higher education, both in the United States and abroad. In each of its varied and diverse parts, the College offers challenging opportunities for general education and for intensive academic exploration, for breadth and for depth. Consequently, candidates for degrees in arts and sciences, regardless of the specific degree or major, are required to demonstrate high capability in general as well as in specialized study.

College Core Curriculum

This curriculum is based on an interrelated set of principles that emphasize intellectual and practical skills, transferable tools for integrative learning, and disciplinary perspectives. It recognizes writing, oral communication, and information literacy as central tools for learning and disseminating new knowledge that permeate the entirety of the learning experience. The curriculum is intended to help students understand the synergistic and complementary relationships among academic disciplines and their varied approaches to describing, analyzing, comprehending, interpreting, and critiquing a range of phenomena in both human cultures and the physical and natural world. In doing so, it will prepare students to apply the skills, knowledge, and sense of responsibility they have gained to new settings and complex problems as engaged citizens in an interconnected world.

Although students will satisfy the requirements in different ways, each student must devise a program in accordance with the College Core Curriculum and the University Writing Requirement.

Components of the College Core Curriculum

Intellectual Skills

- Foundation Seminar
- Lab Science
- Foreign Language
- Integrated Perspectives

Tools for Critical Engagement

- Diversity in the U.S.
- Environmental Connections
- Global Connections
- Quantitative Reasoning

Disciplinary Perspectives

(two from each division; one course must meet the divisional learning goals)

- Arts and Humanities
- Natural Sciences and Mathematics
- Social Sciences

Disciplinary Depth

- The Major(s)
- Academic Conventions of Writing, Speaking, and Information Literacy
- Culminating Experience

One course from each of the Tools for Critical Engagement categories may also count as a course within the Disciplinary Perspectives categories, but not the Disciplinary Perspectives course(s) used to meet the CCC learning goals. Advanced Placement (AP) courses, International Baccalaureate (IB) courses, and courses taken elsewhere for Bucknell credit may be used to fulfill CCC requirements only when approved by the appropriate department chair and the coordinator of the CCC. Any course that fulfills a College Core Curriculum requirement may count toward a major or minor, or to fulfill the Writing Requirement.

The following descriptions articulate the learning outcomes for each of the types of courses within the components of the curriculum.

Intellectual Skills

Transferable knowledge and a range of intellectual abilities drawn from different modes of inquiry across disciplines are essential components of any liberal education. These courses help students develop important academic capacities for use during their undergraduate career and in the rapidly changing world they will enter after college.

Foundation Seminar

(one writing-intensive W1 course in the fall of the first year)

Students will develop writing, reading, speaking, listening, and information literacy skills necessary for collegiate-level academic work.

Students will develop capacities for independent academic work and become more accountable for their own learning.

Lab Science

(one course from the list of designated courses)

Students will develop a unified understanding of scientific theory and practice in modern natural science.

Students will demonstrate an understanding of the development of science as an intellectual pursuit and of the ways in which scientific ideas are formulated, modified, and come to be accepted.

Students will demonstrate skill in the application of scientific techniques and methods, including the collection, analysis, and interpretation of data, and communication of results.

Foreign Language

(one course from the list of designated courses)

Students will study language as a complex multifunctional phenomenon – as a system for communicating thought and information and as an essential element of human thought processes, perceptions, and self-expression – that allows students to understand different peoples and their communities.

Students will examine the world, their own culture, and their own language through the lens of a foreign language and culture.

Integrated Perspectives Course

(one team-taught interdisciplinary course taken during the sophomore or junior year from the list of designated courses)

Students will recognize, construct, and evaluate connections among different intellectual methods, ways of learning, and bodies of knowledge.

Tools for Critical Engagement

Courses in this category provide students with an opportunity to apply their skills and knowledge to problems and issues that challenge us today or have done so throughout history.

Diversity in the United States

(one course from the designated list of courses)

Students will acquire contextualized knowledge about some aspect of complex group interactions in the United States.

Students will use concepts and tools of inquiry from at least one discipline to analyze issues related to the diversity of cultural experiences in the United States.

Students will reflect critically on the ways in which diversity (broadly understood) within the United States shapes the experience of citizens and persons residing in the United States.

Environmental Connections

(one course from the designated list of courses)

Students will analyze, evaluate, and synthesize complex interrelationships between humans and the natural world.

Students will evaluate critically their personal connections to the natural world in one of the following ways: reasoning about ethical issues, directly experiencing the natural world, connecting to their community, or relating individual choices to larger societal goals.

Students will apply knowledge of the physical, cultural, or social connections between humans and the natural world, according to their interests and disciplinary preferences, in at least one of the following ways:

- Tracing the fundamental physical interconnections between humans, other species and the environment

- Explaining how natural systems function and how human actions affect them
- Distinguishing between human impacts and natural changes
- Elucidating the concept of sustainability
- Analyzing past cultural constructions of the environment
- Analyzing current cultural narratives that shape our relationship to the environment
- Analyzing societal mechanisms that influence our relationship to the environment
- Assessing governance and political conflicts regarding human-environment relationships
- Understanding the role of technological, economic, and scientific knowledge in environmental decision-making and power relations between social actors.

Global Connections

(one course from the designated list of courses)

Students will use concepts and tools of inquiry to examine the beliefs, history, social experiences, social structures, artistic or literary expressions, and/or traditions of one or more cultures or societies located outside the United States.

OR

Students will use appropriate tools of inquiry to understand the interdependent nature of the global system and the consequences this interdependence has for political, economic, and social problems.

Quantitative Reasoning

(one course from the designated list of courses)

Students will demonstrate college-level knowledge of a body of mathematical and/or statistical techniques suitable for modeling and analyzing real world questions/situations, and will gain some experience in such modeling, including experience in building, describing, testing, analyzing, and making predictions from such models.

OR

Based on a focused course experience, students will apply basic mathematical and/or statistical techniques at a college level of sophistication in the analysis and modeling of real-world questions or problems, including experience in building, describing, testing, analyzing, and making predictions from such models.

AND

Students will formulate questions and propositions for quantitative analysis, translate the question into a form appropriate for the chosen quantitative model, and interpret and evaluate the results of the model in ways meaningful to the problem at hand. Students will demonstrate the ability to assess the validity and limitations of quantitative models and an understanding of the role of the assumptions made in the construction of these models.

Disciplinary Perspectives

Courses in this category expose students to a wide range of modes of intellectual inquiry. To ensure that students sample broadly from the curricular offerings of the College of Arts and Sciences, they are required to take two courses from each of the College's divisions – the Division of Arts and Humanities, the Division of Natural Sciences and Mathematics, and the Division of Social Sciences. One course in each division must meet the learning goals stated below.

Arts and Humanities

(two courses; one must be from the designated list of courses)

Textual Analysis and Interpretation

Students will interpret texts with awareness of the texts' basic orientation in the world (historical, philosophical, religious, linguistic, etc.).

Students will construct arguments and evaluate canons using the evidence and tools of critical analysis appropriate to the object of inquiry.

Students will develop an appreciation of the fundamental ambiguities and complexities involved in all human attempts to answer questions about knowledge, values, and life.

OR

Arts Literacy and Practice

Students will appreciate, evaluate, and articulate the aesthetic and formal elements of a work of art.

OR

Students will comprehend and interpret works of art within historical and cultural contexts.

OR

Students will synthesize conceptual, formal, aesthetic, and technical elements resulting in the performance or creation of works of art.

Natural Sciences and Mathematics

(two courses; one must be from the designated list of courses)

Students will demonstrate knowledge of scientific and/or mathematical content and principles in a disciplinary field.

Students will develop skills that enhance their ability to think critically about scientific, technological, and/or mathematical issues.

Social Sciences

(two courses; one must be from the designated list of courses)

Students will understand and examine the ways in which individuals interact with, and are shaped by, social groups, institutions, and social structures and how these social constructions shape history, space, values, culture, and behavior.

OR

Students will understand how behavior is shaped by biological and environmental history and the choices made throughout life.

AND

Students will apply principles of social and/or behavioral analysis drawn from various theoretical frameworks to critically interpret behavior and/or social issues.

Disciplinary Depth

The Major(s)

The disciplinary depth component of the curriculum provides students with the opportunity for sustained study in an academic discipline. Students learn to think deeply about a set of linked topics and the methodology of academic investigation in a specific field or a set of subfields, and within these categories they extend and develop their own ideas with more sophisticated and informed analysis. They acquire the intellectual confidence that comes from mastery of a body of knowledge and develop the skills to apply their learning beyond their coursework.

The academic major provides students with a framework for focused disciplinary study. Through a set of linked courses defined by faculty in departments and programs, students develop expertise in their discipline. Students in major courses have common academic backgrounds, and therefore upper-level major courses can address academic material at a sophisticated level.

Academic Conventions of Writing, Speaking, and Information Literacy

The College faculty has identified writing, speaking, and information literacy as essential intellectual competencies that need to be mastered by competent graduates. In-depth and discipline-specific study affords students an opportunity to practice these activities at a high level; therefore the curriculum of each major helps students meet the learning goals of speaking, information literacy, and writing through a variety of means.

Writing: Students will develop their writing abilities through coursework in the University Writing Program. Courses in the major will allow students to apply their writing ability to address and investigate issues at a more sophisticated level due to their mastery of the subject matter. These courses will allow students to write about topics they know best.

Speaking: Students will develop skills in formal presentation at a level reasonable for a college graduate in the particular major. Ways in which this skill can be obtained and practiced include but are not restricted to a course with student presentations, honors thesis defense, talk in a student colloquium series, presentation at a conference, or presentation of significant course projects.

Information Literacy: In the Foundation Seminar and in many other courses, students have achieved basic competency in finding, analyzing, evaluating, and effectively using various sources of information. Courses in the major will build on these skills and introduce students to field-specific information retrieval techniques and to critical evaluation of content as customary in the field.

Culminating Experience

In addition to completing a body of specialized coursework, students in each major will complete an approved Culminating Experience usually in their senior year. Second-semester juniors may complete a Culminating Experience in a major with permission of the adviser and the department chair or program coordinator. The successful Culminating Experience will draw together a student's disciplinary experiences and provide a more coherent appreciation of the major's academic discipline. The structure of the Culminating Experience is left to the discretion of the faculty in the department

or program offering the major (subject to the review of the Arts and Sciences Curriculum Committee). Types of Culminating Experiences will vary by major, but they may include a senior seminar, interdisciplinary course, independent study project, service learning, or an honors thesis.

Majors may be pursued in either the Bachelor of Arts degree program or from among the several Bachelor of Science and professional degree programs offered by the College of Arts and Sciences. When a major is available in more than one degree program, the choice of degree will likely depend upon the student's overall educational objectives: those seeking to emphasize a broader grounding in the liberal arts may choose the Bachelor of Arts degree program; those seeking to emphasize more sustained study in the major field may choose one of the Bachelor of Science or professional degree programs. Regardless of the choice of degree program, students will have the opportunity to fulfill all of the objectives of a liberal education, of specialization, and to prepare for future endeavors, including advanced study.

Bachelor of Arts Majors

The Bachelor of Arts degree program provides both a minimal and a maximum number of courses to be studied in the major. Accordingly, in addition to meeting the College Core Curriculum requirements and objectives, the student is encouraged, and has ample opportunity, to pursue electives that will supplement and further broaden the educational experience.

The end and aim of such an extended and extensive liberal studies education is the development and orientation of an intelligent and responsible individual. The liberal studies are the starting point and constant preoccupation of students who are committed to the belief that knowledge is important for its own sake and that the pursuit of perfection is worth all the work that it requires. After college, students who have elected liberal studies may discover great practical advantage, for they have laid the foundations for an understanding of their cultural heritage, of the contemporary world, of the hierarchy of values, and of themselves. They also have learned much about their own abilities, their strengths, and their limitations.

For the student who has professional ambitions, and who therefore faces the prospect of spending from three to six years in specialized graduate study, the curriculum of liberal studies is invaluable. Graduate schools as well as training programs in industry are coming to expect a liberal education as a qualification for admission.

Liberal education is not incompatible with specialization. It is liberal education that gives a broader usefulness to specialization. Graduate and professional schools and employment training programs expect that specialized instruction be based on a liberal foundation. Because it establishes the conditions for development of an individual's potential, such a foundation becomes a means of achieving a higher degree of professional and technical competency. It stabilizes the balance of judgment and supports the resourcefulness and the creativity of the specialist.

The process of attaining the Bachelor of Arts degree serves in achieving the goals of a liberal education. Each student who is a candidate for this degree, with the assistance of a faculty adviser, is required to plan a personal program of study. It is obvious that the planning of such a program is itself a task of considerable difficulty and that it may well be the most demanding responsibility a student must face. When it is wisely carried out, it will represent a major achievement of the undergraduate years.

The major will be declared during the second semester of the sophomore year. (Occasionally, a student will undertake a double major, which entails meeting all obligations of each of the two fields selected.)

The Established Departmental and Interdepartmental Majors

Students who wish to pursue a major in a discipline may do so by selecting from among many established programs: animal behavior, anthropology, studio art, art history, biology, chemistry, classics, comparative humanities, computer science, East Asian studies, economics, education, English, environmental geology, environmental science, environmental studies, French, geography, geology, German, history, international relations, Italian studies, Latin American studies, linguistics, mathematics, music, philosophy, physics, political science, psychology, religion, Russian, sociology, Spanish, theatre, and women's and gender studies. Students select a major during the fourth semester of study, at which time the program of studies is established in consultation with an academic adviser and approved by the department or interdepartmental program chair concerned. A major normally requires a minimum of eight courses.

Maximum Concentration

Within the 32 courses required for the Bachelor of Arts degree, a maximum of 12 courses may be taken in a single department. However, this 12-course limitation does not apply per se to the following departments: art and art history; classics and ancient Mediterranean studies; languages, cultures, and linguistics; sociology and anthropology; or theatre and dance. In these departments, the limitation applies to each of the programs in which a major is offered.

In those rare instances in which serious deficiency in a student's major program occurs, the student affected may submit a petition through the faculty adviser and department chair to the associate dean of the College of Arts and Sciences requesting that an exception be made to the 12-course limit. This right of petition is to be exercised only when a serious deficiency develops in a student's chosen major and after the seriousness of the deficiency has been assessed in the light of the student's demonstrated pursuit of a broad, liberal education. Evidence of such pursuit should include the use of elective courses, which go beyond the minimal requirements, to more fully realize the disciplinary breadth and the broadened perspective objectives (as noted in the discussion of those requirements). The petition must be recommended by a faculty adviser and endorsed by the student's department chair.

Bachelor of Science and the Professional Degree Majors

The Bachelor of Science and the professional degree programs require and permit greater specialization. Each of these programs has more extensive major and major-related requirements than do comparable majors in the Bachelor of Arts degree program. Unlike the Bachelor of Arts degree, each of these degree programs does not limit the number of electives that may be taken in the major beyond the minimal requirements.

Natural Sciences and Mathematics

The Bachelor of Science curricula are offered for those who seek an education founded upon the sciences but including instruction in the humanities and social sciences. These curricula, based on the requisites of scientific knowledge, provide a thorough preparation in the field of the student's major interest without neglecting complementary study in other areas. After completing one of these curricula, the student is qualified to pursue graduate or professional studies, or to enter research positions in industry. Bachelor of Science students generally enter Bucknell having already selected a major.

The College of Arts and Sciences offers Bachelor of Science majors in animal behavior, applied mathematical sciences, biology, cell biology/biochemistry, chemistry, computer science, environmental geology, geology, interdisciplinary studies in economics and mathematics, mathematics, neuroscience, and physics.

Professional Degree Programs

The Bachelor of Science in Business Administration (B.S. B.A.), Bachelor of Science in Education (B.S. Ed.), and Bachelor of Music (B. Mus.) programs provide professional development that is strongly grounded in the larger context of a liberal education. Students in these programs, like those in other Bachelor of Science programs described above, devote a larger proportion of their studies to the major than candidates for the Bachelor of Arts degree.

The programs leading to the degree of Bachelor of Science in Business Administration are accredited by the Association to Advance Collegiate Schools of Business (AACSB). Due to enrollment limitations first year students in the College of Arts and Sciences who apply to transfer to the B.S. B.A. degree will be subject to a review of their academic performance at Bucknell for entrance into the School of Management. See School of Management (p. 166) for more information on the application process. Students pursuing the B.S. B.A. degree may major in Accounting and Financial Management; Global Management; Managing for Sustainability; or Markets, Innovation and Design. The B.S. Ed. degree leads to certification in Early Childhood Education (Pre-K-4). The B. Mus. program offers majors in vocal performance or music education.

Pre-Health Professions Preparation

The coursework for admission into the various graduate programs in the health sciences may be completed through work toward either a Bachelor of Arts or a Bachelor of Science degree with a major in practically any department. Most graduate programs require a minimum of undergraduate work equivalent to one year each in biology, inorganic chemistry, organic chemistry, physics, and mathematics; however, requirements vary both by discipline and by program within a discipline. Students planning for such careers should consult the catalogs of the schools of their choice for specific requirements and suggested courses, and register with the Pre-Health Professions Adviser as soon as possible after enrollment in Bucknell.

Integrated B.S./M.S. Degrees

Undergraduate students who have completed three years at Bucknell with a cumulative grade point average of at least 2.80, and who show aptitude for graduate study, may apply for admission to the integrated Bachelor of Science/Master of Science degree program available in the departments of chemistry or mathematics. This program permits selected students to complete all requirements for both degrees in five years.

Writing Competency

To satisfy the University writing requirement, a student must successfully complete three writing courses: one course designated W1 (which must be taken during the first year and must be taken before the W2 courses) and two W2 courses (usually taken after the first year, but, in any case, at least one of which must be taken after the first year). Lists of W1 and W2 courses are available from the Registrar's office webpage (www.bucknell.edu/registrar) under Course Information.

Writing courses are designed to enhance the student's understanding of the writing process and to emphasize that writing is a way of learning as well as a communication skill. They may be taken in any department, including the student's major.

Optional Minors

Minors are optional on both the part of faculty and students; no department or group of faculty members is required to offer a minor and no student can be required to elect a minor.

Pursuit of a minor, whether departmental or interdisciplinary, may provide a student with more coherence and focus in choosing electives. This may well enhance the educational experience, particularly when the minor is chosen from a division other than that of the major or when the minor is interdisciplinary.

Optional minors are available to regular undergraduate students in each of the areas listed below. Details of the requirements for each minor are listed on the indicated pages.

- African-American Studies (p. 22)
- African Studies (p. 22)
- American Studies (p. 24)
- Anthropology (p. 30)
- Arabic Studies (p. 105)
- Art (Studio Art) (p. 33)
- Art (Art History) (p. 32)
- Arts Entrepreneurship (p. 34)
- Biology (p. 40)
- Biomedical Engineering (p. 198)
- Caribbean Studies (p. 22)
- Chemical and Biological Studies (p. 194)
- Chemistry (p. 46)
- Chemistry (Biochemistry) (p. 46)
- Children's Studies (p. 47)
- Chinese (p. 59)
- Classics and Ancient Mediterranean Studies (p. 50)
- Comparative Humanities (p. 52)
- Computer Science (Arts and Sciences) (p. 56)
- Computer Science (Engineering) (p. 56)
- Dance (p. 185)
- Digital Humanities (p. 57)
- East Asian Studies (p. 59)
- Economics (p. 61)
- Education (p. 66)
- English (Literary Studies) (p. 70)
- English (Creative Writing) (p. 68)
- Environmental Studies (p. 75)
- Film and Media Studies (p. 69)
- Food Systems (p. 76)
- French (p. 107)
- Geography (p. 78)
- Geology (p. 84)
- Geology (Engineering Geology) (p. 84)
- Geology (Environmental Geology) (p. 84)
- German Studies (p. 109)
- Greek (p. 50)
- History (p. 93)
- International Relations (p. 101)
- Italian Studies (p. 112)
- Japanese (p. 59)
- Jewish Studies (p. 102)
- Latin (p. 50)
- Latin American Studies (p. 119)
- Legal Studies (p. 123)
- Linguistics (p. 113)
- Mathematics (p. 129)
- Mathematics (Applied/Modeling) (p. 129)
- Mathematics (Statistics) (p. 129)
- Music (p. 137)

- Peace Studies (p. 141)
- Philosophy (p. 147)
- Physics (p. 150)
- Political Science (p. 154)
- Political Science (American Politics) (p. 154)
- Political Science (Comparative Politics) (p. 154)
- Political Science (International Politics) (p. 154)
- Political Science (Political Theory) (p. 154)
- Psychology (Cognitive and Perceptual Sciences) (p. 159)
- Psychology (Neuropsychology) (p. 159)
- Public Policy (p. 160)
- Race and Ethnicity Studies (p. 162)
- Religious Studies (p. 165)
- Russian (p. 114)
- Russian (Area Studies) (p. 114)
- Social Justice (p. 175)
- Sociology (p. 179)
- Spanish (p. 183)
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- Theatre (Acting and Directing) (p. 185)
- Theatre (Design and Technology) (p. 185)
- Translation Studies (p. 187)
- Women's and Gender Studies (p. 190)

Regulations for Minors

A departmental minor consists of four, five, or six courses in a department. An interdepartmental minor consists of five courses, with none of the five being in the student's major department and no more than three of the five being in a single department. By faculty action, all minors are available to all students in the University, with the following exceptions: chemical engineering majors are not eligible for the chemical and biological studies minor or the chemistry minor, and the biomedical engineering minor is open only to students in the College of Engineering.

The following Stipulations Pertain to a Minor:

- Courses may not be double-counted in majors and minors; however, corequisite or major-related courses outside the student's major department may be counted toward a minor.
- Courses that count toward a minor also may satisfy College Core Curriculum requirements, except for the major.
- Students in one degree program (e.g., Bachelor of Arts) may complete a minor in a department offering a different degree (e.g., Bachelor of Science).
- The minors in chemical and biological studies and biomedical engineering are administered by the dean's office of the College of Engineering. Questions regarding these minors should be addressed to that office.

Declaring a Minor

It is the student's responsibility to know and monitor the minor requirements. To declare a minor, a student should complete the form and have it signed by the chair of the department offering the minor or by the coordinator of the particular interdepartmental minor. The completed and signed form should be returned to the Registrar's Office only after the minor is completed, except that seniors must submit the form by the published deadline. Students planning on a summer graduation must also have the form filed by the deadline published for spring graduation.

It should be noted that it is not possible to substitute courses for those on the approved lists of requirements. Students who have not elected the specific minor requirements may not propose waivers or modifications unless approved by the department chair and the dean.

Areas of Study

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Africana Studies (AFST)

Faculty

Director: Carmen Gillespie

Affiliated Faculty: Marcellus Andrews (Economics), Nina E. Banks (Economics), Raphael Dalleo (English), Michael Drexler (English), Katherine M. Faul (Languages, Cultures & Linguistics-German, Comparative Humanities), Cymone Fourshey (History, International Relations), Renée K. Gosson (Languages, Cultures & Linguistics-French), Winston H. Griffith (Economics), Mai-Linh Hong (English), Michael R. James (Political Science), Michelle C. Johnson (Anthropology), Nicholas Jones (Spanish), Angèle M. Kingué (Languages, Cultures & Linguistics-French), Barry Long (Music), Elena Machado Sáez (English), Dustyn Martincich (Theatre & Dance), Shara McCallum (English), David Mitchell (Political Science, International Relations), Berhanu Nega (Economics), Leslie C. Patrick (History), Harriet R. Pollack (English), Meenakshi Ponnuswami (English), Geoffrey E. Schneider (Economics), Anthony F. Stewart (English), Atiya Stokes-Brown (Political Science), T. Joel Wade (Psychology), Carol Wayne White (Religious Studies), Thelathia Nikotris Young (Women's and Gender Studies)

Africana Studies is the study of the interrelated histories, politics, and cultural products of Africa and the African Diaspora in the United States, Latin America and the Caribbean, Europe, and elsewhere. As a field of inquiry, Africana Studies critically examines the intellectual traditions and experiences of Africans and diasporic communities from intra- and interdisciplinary perspectives. As such, Africana Studies includes African American, Caribbean, and African Studies.

Africana Studies offers majors a multidisciplinary curriculum that examines the histories, narratives, intellectual traditions, music, art, politics, cultures, literatures, economies, social institutions, and identities of Africans and their descendants from the liberal arts perspective. It provides students with critical engagement with contemporary and historical concerns and self-expressions of African and African descended people. It also examines these experiences within the context of social relations with European, Euro-American, and other non-African communities. Africana Studies is a rich inter- and intradisciplinary major.

Africana Studies majors will become competent writers through their engagement with the wide array of writing tasks required in our courses. Public speaking instruction will occur as a facet of the oral presentation assignments in many of our courses, but specifically required in our two core classes. Through the research skills acquired through our foundational classes, the classes that constitute the major, students will gain information literacy and will be required to demonstrate that literacy through completion of a thesis in their senior year.

Resources

The Africana Studies major enjoys a co-curricular and curricular relationship with Bucknell's Griot Institute for Africana Studies. The activities, programs, and projects of the Institute coalesce and interface with the objectives and goals of the major. Africana Studies majors and minors are encouraged to engage with the opportunities presented by the Institute's programming.

Africana Studies **majors** must complete nine courses from the following categories, including an independent study, the object of which is to complete a thesis, which will fulfill the Culminating Experience. Courses must be selected in consultation with a departmental adviser.

Africana Studies Major Requirements (9 courses)

AFST 199	Introduction to Africana Studies	1
AFST 250	Approaches to Africana Studies	1
One course in History (Africa, African American, or Caribbean)		1
Five courses in area specialties: Social Sciences, Humanities, and Arts; of these courses, two must be at the 200-level, and at least one course must be at the 300-level.		5
AFST 399	Independent Study	1

Courses in area specialties are distributed both divisionally and geographically. Students must take the following number of courses out of the approved list of Africana divisional courses: two in social sciences, two in humanities, and one in the arts. These courses must include the following geographic groupings: one course on Africa, one course on African America, and one course on either the Caribbean or Afro-Latin communities. Courses may count simultaneously for the division and region/spatial community requirements. (As such, a single course may fulfill both a humanities and an Africa requirement.)

Students will fulfill the Culminating Experience by completion of a thesis in an area of Africana Studies. Students will register for an independent study in the fall of their senior year with their faculty adviser. The thesis topic must be confirmed in writing in consultation with the faculty adviser by the end of each student's junior year. [See Honors Council website for consideration as an honors thesis; however, theses do not have to be submitted to the Honors Council to count as the Culminating Experience major requirement for Africana Studies.] For particular information about the process

for pursuing an honors thesis, please see <https://my.bucknell.edu/x56270.html>. Faculty advisers will determine successful completion of the thesis/Culminating Experience requirement by submission of the grade for the independent study.

Africana Studies majors will become competent writers through their engagement with the wide array of writing tasks required in our courses. Public speaking instruction will occur as a facet of the oral presentation assignments in many of our courses, but specifically required in our two core classes. Through the research skills acquired through our foundational classes (the classes that constitute the major), students will gain information literacy and will be required to demonstrate that literacy through completion of a thesis in their senior year.

****For a current list of courses that contribute to the Africana Studies Program, please visit the Africana Studies webpage at www.bucknell.edu/arts-and-sciences-college-of/academic-departments-and-programs/africana-studies/course-descriptions.html**

Students majoring in Africana Studies are strongly encouraged to spend a semester or a summer abroad, preferably in Africa or the Caribbean. Bucknell *en France* (when appropriate), Bucknell in Barbados, Bucknell in Ghana, Bucknell in the Caribbean, and Bucknell in South Africa programs are particularly encouraged. In addition, the department strongly recommends that students take four semesters of a language spoken in the African Diaspora, e.g. Arabic, French, Spanish, or an African language.

African-American Studies Minor

The African-American experience is directly and inextricably embedded in the history and culture of the United States. As an interdisciplinary field, African-American Studies is concerned with the systematic investigation of the history, culture, political economy, literature, art, and languages of people of African descent in the United States and their contributions to the United States and to the world. The African-American Studies minor is a way of educating all students about black experiences and developing in them an understanding and appreciation of the life and history of peoples of African ancestry in the United States, and thus move toward a more comprehensive view of life and history in the United States generally.

By offering students opportunities to gain knowledge of this history and experience, an African-American Studies minor affirms black identity and heritage, fosters understanding, respect, and appreciation of diversity, and better prepares students for life in a multicultural society.

The interdisciplinary structure of the African-American Studies minor offers students directed toward the professions and graduate schools an opportunity to satisfy the increasingly rigorous expectations of admissions committees and prospective employers for a broad liberal arts perspective that complements specialized knowledge. African-American Studies provide a background for those considering careers in education, journalism, law, business management, public service, psychology, social work, and literature.

The interdepartmental minor in African-American Studies consists of five courses that must be taken in three different disciplines. A minimum of four courses must be selected from the following list. In consultation with the coordinators of the minor, students may count one course from either the African Studies or Caribbean Studies list.

ENCW 210	Special Topic in Creative Writing	1
ENLS 206	Early American National Literature	1
ENLS 209	Modern American Literature 1900-1950	1
ENLS 211	Southern Exposure	1
ENLS 213	Special Topics in American Literature	1
ENLS 217	Studies in Dramatic Literature	1
ENLS 219	Studies-Selected American Authors	1
ENLS 221	Introduction to African American Literature	1
ENLS 286	The Modern Novel	1
ENLS 306	US: Fever/Fantasy/Desire	1
ENLS 321	Seminar in African-American Literature	1
HIST 121	Introduction to African-American History I	1
HIST 122	Introduction to African-American History II	1
HIST 218	African-Americans and the American Revolution	1
HIST 219	Antebellum America	1
HIST 223	Twentieth-century African-American History: Eyes on the Prize	1
HIST 319	African-American History	1
LING 210	Language and Race	1
RELI 219	Contemporary Religion: Race, Gender, and Sexuality	1
SOCI 213	Race in Historical and Comparative Perspectives	1
SOCI 280	Twentieth-century Afro-Caribbean and African-American Thought	1

African Studies Minor

The interdepartmental African Studies minor gives an understanding of Africa's rich heritage, diversity and role in the world today, and contributes an international focus to a liberal arts education. It consists of five courses chosen from the list below. Students must take at least three core courses, and they may choose any two other courses from the list below. If possible, at least one course should be related to the student's major. In consultation with the coordinators of the minor, students may include an Africa-related course from the African-American or Caribbean Studies list. In general, there are no prerequisites for the courses on the African Studies minor list.

Core Courses:

ANTH/IREL 235/UNIV 200	Modern Africa	1
ANTH 329	Religions in Africa: Spirits, Saints, and Sufis	1
ECON 224	African Political Economy	1
ECON 235	African Economic Development	1
ECON/MGMT/PSYC 270	South Africa: Social Entrepreneurship	1
FOUN 098	Foundation Seminar (South Africa)	1
FREN 336	Francophone Africa	1
HIST 291	African History I	1
HIST 292	African History II	1

Other African Studies Courses:

ANTH 305	Womb to Tomb: Culture and the Life Course	1
GEOG 236	Third World Development	1
HIST 290	Europe Imperialism and Colonialism	1
SOCI 213	Race in Historical and Comparative Perspectives	1
SOCI 310	The Sociology of Developing Societies	1

Courses taken in summer or in semester-long or year-long programs in Africa may count toward the minor.

Caribbean Studies Minor

The Caribbean Studies minor is designed to provide students with a comprehensive understanding of the Caribbean region that moves beyond stereotypes and exoticism. In the various courses offered, students are able to explore the complexities of the region's economy and various economic organizations, its cultures, societies, histories, geo-political significance, and literatures.

The minor serves as an important supplement for those students who are studying international relations, sociology, anthropology, economics, literature, and politics, among other disciplines. Combining Caribbean Studies with a major in one of the aforementioned areas contributes not only to the broadening of the horizon of the student but provides a strong basis for pursuing graduate opportunities in such areas as development planning, development economics, international relations, sociology, anthropology, postcolonial literature, cultural studies, gender studies, and area studies. Other students may find that a background in Caribbean Studies is useful in seeking employment in the foreign service, AID agencies, in many international organizations, and in non-governmental organizations.

The interdepartmental minor in Caribbean Studies consists of five courses selected from the following list. No more than two courses may be taken in any one department.

ECON 266	Political Economy of Caribbean	1
ECON 301	Independent Study (Barbados Summer Program)	1
ENLS 227	Caribbean Literature	1
FREN 236	Topics in Francophone Literature and Culture (when relevant)	1
FREN 395	Seminar in French Studies	1
SOCI 213	Race in Historical and Comparative Perspectives	1
SOCI 290	Caribbean Society Music and Ritual	1
SOCI 310	The Sociology of Developing Societies	1

1. To encourage students to explore and cross-pollinate the undeveloped and unimagined intersections between Africana Studies and the arts, humanities, social sciences, and other disciplines;
2. To provide innovative and unique opportunities for Bucknell's students to engage with and to experience the intellectual and artistic endeavors and cultural products of the Africana world.

American Studies Minor

Faculty

Coordinator: John P. Enyeart

American Studies focuses on the power and the mythology connected with the symbol of “America.” When people use the term “America” or “American,” they are often talking about something much more than the people, institutions, geography, culture, or history of the United States. They are talking (positively or negatively) about a symbol that may represent divine intervention in human affairs, or colonialist, imperialist, commercial oppression of others.

American Studies is an examination of the construction of what citizens of the United States and of the world think or mean when they speak of “America” or “American.” It takes as its focus an investigation of the meaning of “America” from the perspective of the peoples who consider themselves (or are considered by others to be) central, peripheral, or excluded by that term. Inclusive of but more than an area study, American Studies is by definition inter- and cross-disciplinary, and minors are required to take courses offered by a variety of departments.

The American Studies minor consists of five courses:

UNIV 229	Introduction to American Studies (or approved replacement)	1
Select four of the following: ¹		4
ANTH 256	Anthropology of Native North America	
ECON 319	Economic History of Women in the United States	
EDUC 350	Higher Education in the United States	
ENLS 205	Early American Colonial Literature	
ENLS 206	Early American National Literature	
ENLS 207	American Romanticism 1800-1865	
ENLS 208	American Realism and Naturalism	
ENLS 209	Modern American Literature 1900-1950	
ENLS 212	Contemporary American Literature	
ENLS 213	Special Topics in American Literature	
ENLS 216	Studies in American Literary Genres	
ENLS 219	Studies-Selected American Authors	
ENLS 221	Introduction to African American Literature	
ENLS 301	Seminar in American Literature Topics	
ENLS 302	Seminar in Selected American Writers	
ENLS 305	Seminar in Early American Literature	
ENLS 307	Seminar in 19th-century American Literature	
ENLS 310	Seminar in Modern American Literature	
ENLS 311	Seminar in Contemporary American Literature	
ENLS 321	Seminar in African-American Literature	
ENST 207	American Environmental History	
HIST 111	Introduction to U.S. History I	
HIST 112	Introduction to U.S. History II	
HIST 113	Introduction to U.S. History III	
HIST 121	Introduction to African-American History I	
HIST 122	Introduction to African-American History II	
HIST 211	Frontiers and Borderlands	
HIST 214	Topics in American History	
HIST 217	American Colonial History	
HIST 218	African-Americans and the American Revolution	
HIST 219	Antebellum America	
HIST 220	American Civil War and Reconstruction	
HIST 221	U.S. History: 1880s to 1930s	
HIST 222	U.S. History from the 1940s to the Present	
HIST 223	Twentieth-century African-American History: Eyes on the Prize	
HIST 225	Topics in American Political and Economic History	

HIST 227	American Intellectual History I
HIST 228	American Intellectual History II
HIST 229	Topics in American Intellectual History
HIST 261	Twentieth-century Afro-Caribbean and African-American Thought
HIST 270	Science and Technology in US
HIST 271	Medicine in the US
HIST 310	U.S. History to 1865
HIST 311	U.S. History since 1865
HIST 312	American Social History
HIST 313	The American West
HIST 319	African-American History
HIST 320	American Labor History
HIST 321	American Immigrants
HIST 322	American Industrialization and Political Development
POLS 140	American Politics
POLS 240	The American Congress
POLS 243	The American Presidency
POLS 244	American Judicial Politics
POLS 246	Race Ethnicity and American Politics
POLS 261	Twentieth-century American Legal Thought
POLS 263	Race and Ethnicity in American Legal Thought
POLS 271	American Foreign Policy
POLS 272	U.S. National Security Policy
POLS 287	U.S. Foreign Policy and the Middle East
POLS 370	Seminar in American Politics
RELI 280	Religion and Constitutional Law
RELI 281	Religion and American Politics
RELI 315	Topics in American Religion
SOCI 140	American Culture and Society
SOCI 241	Marriages and Families in the 21st Century
SOCI 245	Remaking America: Latin American Immigration
SOCI 280	Twentieth-century Afro-Caribbean and African-American Thought
SOCI/WMST 328	Mating and Marrying in America
THEA 261	Inner Journey: Sam Shepard and American Theatre

Total Credits

5

¹ Or appropriate substitution approved by the program co-coordinator.

Minors may not take more than two courses in any one department, and may take no more than two at the 100-level.

Any changes or substitutions must be approved by one of the program's coordinators.

Animal Behavior (ANBE)

Faculty

Director: Peter G. Judge

Coordinating Committee: Z Morgan Benowitz-Fredericks, Elizabeth A. Capaldi, Regina Gazes, Peter G. Judge, Kevin P. Myers, DeeAnn M. Reeder, Jennifer Rice Stevenson, Mizuki Takahashi

The program in animal behavior offers an interdisciplinary major that includes subject matter in biology, chemistry, mathematics, physics, and psychology. The focus is directed toward understanding behavior and providing the student with a background uniting ecological, ethological, environmental, evolutionary, experimental, and physiological approaches to the study of animal life.

During the more than 40 years that Bucknell University has offered this major, animal behavior has been chosen by students seeking a broad background in the natural and social sciences, by those who become researchers, as a background for medical or veterinary science and, because of the breadth of requirements, by persons filling a variety of positions in commerce, law, and public service.

The major may be pursued under either the Bachelor of Arts or the Bachelor of Science programs. The programs differ chiefly in the number of advanced science courses and laboratories. All students are encouraged to seek laboratory and field experiences in addition to required course work. The Bucknell laboratories, as well as opportunities abroad, are well suited to complement the student's education. Research culminating in an honors thesis is especially recommended.

Animal behavior majors will fulfill the Culminating Experience requirement by taking ANBE 320 Advanced Topics in Animal Behavior in their senior year. The course is open only to senior animal behavior majors and is designed to explore diverse areas and concepts in animal behavior particularly relevant to a student graduating with a degree in animal behavior. The course encourages majors to reflect on what they have learned over the years and to look to the future for emerging ideas within the field.

Information literacy, formal presentation, and writing goals within the major will be fulfilled when students take ANBE 296 Research Methods in Animal Behavior/PSYC 296 Research Methods in Animal Behavior and ANBE 320 Advanced Topics in Animal Behavior. In ANBE 296 Research Methods in Animal Behavior/PSYC 296 Research Methods in Animal Behavior, students conduct experimental research, present their work to the class in a conference-style session and write their research as a journal-style publication. In so doing, they search the literature to find sources that provide a theoretical basis for their study, develop the hypotheses tested, and instruct the design of their study. In ANBE 320 Advanced Topics in Animal Behavior, students will develop more theoretical and conceptual writing skills by conducting literature searches on topics in animal behavior and synthesizing the material into a review-style paper. Students will present the results of their literature reviews to class and lead class discussions on selected topics, also enhancing their presentation skills. Although information literacy, formal presentation, and writing goals within the major will be specifically addressed in ANBE 296 Research Methods in Animal Behavior/PSYC 296 Research Methods in Animal Behavior and ANBE 320 Advanced Topics in Animal Behavior, majors will receive similar training in these skills in many other courses that they take as electives and requirements within the major.

Bachelor of Arts

The **Bachelor of Arts major** consists of the following 13 required courses.

Animal Behavior core course

ANBE/BIOL/PSYC 266	Animal Behavior	1
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Applied Research Methods in Animal Behavior

ANBE/PSYC 296	Research Methods in Animal Behavior	1
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Biology core courses¹

Select three of the following: 3

BIOL 205	Introduction to Molecules and Cells (strongly recommended)	
BIOL 206	Organismal Biology	
BIOL 207	Genetics	
BIOL 208	Principles of Ecology and Evolution (strongly recommended)	

Psychology core requirements

PSYC 203	Learning	1
PSYC 250	Biopsychology	1

Statistics requirement

PSYC 215	Psychological Statistics	1
or MATH 216	Statistics I	

Chemistry requirement

Select one of the following pairs: 2

CHEM 211 & CHEM 212	Organic Chemistry I and Organic Chemistry II	
CHEM 201 & CHEM 202	General Chemistry I and General Chemistry II	

Upper-level animal behavior electives²

Select two of the following: 2

ANBE/BIOL 314	Amphibian Biology and Conservation	
ANBE 319	Topics in Animal Behavior	
ANBE/BIOL 321	Behavioral Ecology	
ANBE/BIOL 341	Evolution	

ANBE/BIOL 342	Neuroethology	
ANBE/BIOL 354	Tropical Ecology	
ANBE/BIOL 355	Social Insects	
ANBE/BIOL 357	Ornithology	
ANBE/BIOL/PSYC 370	Primate Behavior and Ecology	
ANBE/PSYC 371	Primate Cognition	
ANBE 372	Evolution of Acquired Behavior	1
BIOL 309	Wildlife and Emerging Diseases	1
BIOL 312	Comparative Vertebrate Anatomy	
BIOL 313	Mammalogy	
BIOL 318	Principles of Physiology	
BIOL 324	Neurophysiology	
BIOL 328	Endocrinology	
BIOL 353	Ecosystem Ecology	
BIOL 358	Invertebrate Zoology	
BIOL 359	General Entomology	
BIOL 361	Systematic Biology	
PSYC 324	Advanced Psychological Statistics	
Culminating Experience requirement		
ANBE 320	Advanced Topics in Animal Behavior	1

¹ Students should consult with an academic adviser in animal behavior to determine the most appropriate biology course selections given their academic goals.

² Cross-listed courses are indicated. With special permission, other upper-level PSYC/BIOL courses can be considered as electives.

Bachelor of Science

The **Bachelor of Science major** consists of the following 19 required courses:

Animal Behavior core course

ANBE/BIOL/PSYC 266	Animal Behavior	1
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Applied Research Methods in Animal Behavior

ANBE/PSYC 296	Research Methods in Animal Behavior	1
PSYC 290	Research Methods in Biopsychology	1
or PSYC 293	Research Methods in Learning	

Calculus requirement

MATH 201	Calculus I	1
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Physics requirements

PHYS 211 & PHYS 212	Classical and Modern Physics I and Classical and Modern Physics II	2
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Biology core courses

BIOL 205	Introduction to Molecules and Cells	1
BIOL 206	Organismal Biology	1
BIOL 207	Genetics	1
BIOL 208	Principles of Ecology and Evolution	1

Psychology core requirements

PSYC 203	Learning	1
PSYC 250	Biopsychology	1

Statistics requirement

PSYC 215	Psychological Statistics	1
or MATH 216	Statistics I	

Chemistry requirement

Select one of the following: 2

CHEM 211 & CHEM 212	Organic Chemistry I and Organic Chemistry II	
CHEM 201 & CHEM 202	General Chemistry I and General Chemistry II	
Upper-level animal behavior electives ¹		
Select three of the following:		3
ANBE 314	Amphibian Biology and Conservation	
ANBE 319	Topics in Animal Behavior	
ANBE/BIOL 321	Behavioral Ecology	
ANBE/BIOL 341	Evolution	
ANBE/BIOL 342	Neuroethology	
ANBE/BIOL 354	Tropical Ecology	
ANBE/BIOL 355	Social Insects	
ANBE/BIOL 357	Ornithology	
ANBE/BIOL/PSYC 370	Primate Behavior and Ecology	
ANBE/PSYC 371	Primate Cognition	
ANBE 372	Evolution of Acquired Behavior	
BIOL 309	Wildlife and Emerging Diseases	
BIOL 312	Comparative Vertebrate Anatomy	
BIOL 313	Mammalogy	
BIOL 318	Principles of Physiology	
BIOL 324	Neurophysiology	
BIOL 328	Endocrinology	
BIOL 353	Ecosystem Ecology	
BIOL 358	Invertebrate Zoology	
BIOL 359	General Entomology	
BIOL 361	Systematic Biology	
PSYC 324	Advanced Psychological Statistics	
Culminating Experience requirement		
ANBE 320	Advanced Topics in Animal Behavior	1
Total Credits		19

¹ Cross-listed courses are indicated. With special permission, other upper-level PSYC/BIOL courses can be considered as electives.

The recommended sequence for the Bachelor of Science major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
ANBE 266		1 BIOL 206	1
BIOL 205		1 PSYC 215 or MATH 216	1
MATH 201	1		
	3		2

Sophomore

First Semester	Credits	Second Semester	Credits
BIOL 207		1 BIOL 208	1
CHEM 211 or 201		1 CHEM 212 or 202	1
PSYC 296 or 250		1 PSYC 296 or 203	1
	3		3

Junior

First Semester	Credits	Second Semester	Credits
Select one of the following:		1 Select one of the following:	1
PSYC 290 or 293		PSYC 290 or 293	
Animal behavior elective		1 Animal behavior elective	1

PHYS 211	1	PHYS 212	1
	3		3
Senior			
First Semester	Credits	Second Semester	Credits
Animal behavior elective		1 Animal behavior elective	
ANBE 320	1		
	2		0

Total Credits: 19

All students are advised to take the biology core courses in sequence, starting with BIOL 205 Introduction to Molecules and Cells. BIOL 208 Principles of Ecology and Evolution serves as the prerequisite for most of the elective courses. A student's choice of the chemistry sequence (either CHEM 201 General Chemistry I-CHEM 202 General Chemistry II or CHEM 211 Organic Chemistry I-CHEM 212 Organic Chemistry II) should be made in consultation with the student's academic adviser. Note that one semester of independent research (ANBE 391 Research) or honors credit (ANBE 399 Senior Thesis) may count toward the upper-level electives for the BA or BS.

Off-campus study and research are encouraged. Recent students have studied in Africa, Australia, New Zealand and Ecuador. Other programs in Europe, Asia, South and Central America are also appropriate. Students are advised to explore opportunities through The Office of Global and Off-campus Education (OGO) and to coordinate off-campus coursework in consultation with a faculty adviser. Many minors complement studies in animal behavior and students are encouraged to explore options within the humanities and social sciences in consultation with a faculty adviser.

Majors in Animal Behavior will:

1. Understand evolutionary theory as a unifying construct that brings together teachings of many diverse disciplines.
2. Understand the proximate and ultimate bases for behavior (how and why animals behave as they do).
3. Understand the process through which scientific information is derived, evaluated, and communicated.

Anthropology (ANTH)

Faculty

Associate Professors: Coralynn V. Davis, Michelle C. Johnson (Chair), Susan A. Reed, Edmund Searles

Assistant Professors: Clare Sammells, Allen L. Tran

Visiting Assistant Professors: Ahrum Lee, Stephen C. Rea

The department encompasses two disciplines, sociology and anthropology, and offers separate majors and minors in each.

Cultural anthropology explores the basis of and implications for human diversity by posing general and specific questions about the varieties of human experience. The study of human diversity contributes essential elements to a liberal arts education.

The aim of the anthropology major is to introduce students to the theories and methods anthropologists use to study and analyze different cultures around the world. Instruction is offered on various topical issues (e.g. the anthropology of economics, religion, medicine, and emotions), and on the ways anthropologists research problems that are both practical and intellectual in nature. Students may go on to graduate work in anthropology but a major in anthropology furnishes skills and conceptual tools useful in a wide variety of paths.

We encourage anthropology majors to include original research and off-campus experiences in their program of study. We make field research a required component in several of our courses, and we encourage students to take anthropology courses in off-campus study programs in the U.S. and abroad. We encourage students interested in off-campus field research to take research methods courses beginning in their second or third year at Bucknell, although seniors with no prior experience are usually admitted to field study courses.

Honors

The department strongly encourages qualified majors to consider working for honors in anthropology. Such students should consult with one or more members of the faculty of the department to begin defining a research topic and writing a proposal **in their junior year**. Normally, during the senior year, an honors student will enroll in ANTH 319 Honors Course in Anthropology and, if agreed to by the academic adviser, a second semester in ANTH 320 Honors Course in Anthropology. The honors proposal is to be approved by the department chairperson and submitted to the Honors Council by mid-October of the senior year. Further information can be obtained from the student's academic adviser, the department chairperson, and from the Honors Council.

Anthropology Major

The major in anthropology requires that students complete nine courses. Students may count a total of two sociology courses (one methods/theory course and one elective course) toward the anthropology major. Requirements are as follows:

ANTH 109	Introduction to Cultural Anthropology	1
ANTH 201	Field Research in Local Communities	1
ANTH 283	Theory in Anthropology	1
ANTH 330	Advanced Seminar in Anthropology ¹	1
ANTH Electives (one must be at the 300-level)		4

In addition, students must take ONE of the following courses:

SOCI 208	Methods of Social Research	1
SOCI 209	Analyzing the Social World	1
SOCI 211	Classical Sociological Theory	1
SOCI 212	Contemporary Sociological Theory	1

¹ This course serves as the Culminating Experience.

The major in anthropology provides students with an overview of the discipline, broad exposure to cultural issues and anthropological concerns, and a variety of specialty areas in the field, reading and writing skills, and information literacy. Courses emphasize careful reading and analysis of ethnographic and theoretical texts, writing as part of both research process and presentation of results, presentation to multiple audiences, and how to find and use information from multiple sources. Students will graduate prepared for the workforce or graduate/professional study.

The department strongly recommends that core courses be taken as early as possible in a student's career (preferably during the sophomore or junior year). Students should take at least one anthropology course at the 100 or 200-level before taking the methods courses (ANTH 201, SOCI 208, or SOCI 209). Methods courses are not intended for first-year students.

Courses that are cross-listed as anthropology and sociology courses count as anthropology courses and still allow anthropology majors to take one elective designated solely as a sociology course.

Up to two off-campus courses may be counted toward 200-level electives in the major. The department chair may allow off-campus courses to count toward other major requirements if these courses adequately substitute for material that is taught in our department.

Minor in Anthropology

The minor in anthropology requires a minimum of five courses in anthropology, with no more than one course at the 100-level. No more than one off-campus course ordinarily counts toward the minor.

Anthropology Learning Goals

Majors in Anthropology will be able to:

Demonstrate knowledge of cultural variability within one geographical region of the world. (3,4,6,9)

Demonstrate knowledge of the major theoretical perspectives in anthropology. (1,3,4,5,6,7,8,9)

Non-majors in Anthropology will be able to:

Demonstrate knowledge of how anthropologists define culture. (1,3,4,9)

Demonstrate knowledge of the subfields within anthropology (biological, archaeology, linguistic, cultural, and applied). (1,3,4,6)

Demonstrate knowledge of the methods of ethnographic research. (1,2,4,5,6,7,8,9)

Apply anthropological concepts and/or principles to individual experiences and/or the social world. (1,4,5,6,9)

Art and Art History (ART)

Faculty

Professors: Christiane D. Andersson, Roger I. Rothman

Associate Professors: Tulu Bayar, Janice E. Mann (Chair)

Assistant Professors: Anna Kell, Joseph Meiser

Visiting Assistant Professor: James Dunlap

Lecturers: Laura Freitas Almeida, Jeremiah C. Johnson

- Art History (p. 31)
- Studio Art (p. 33)

The Department of Art and Art History offers students the opportunity to explore their own artistic impulses and the creative vision of visual artists through its two majors – studio art and art history. We connect the visual arts to ideas and to global culture.

Majors

The department offers majors in studio art and art history. It also offers minors in studio art and art history. Students contemplating either of these majors are encouraged to discuss their interests and programs with the department chair or an appropriate department faculty member prior to declaring a major in the spring of the sophomore year. The skills of writing, speaking, researching, and learning to analyze various sources (i.e. information literacy), and cultural fluency are integral to the disciplines of studio art and art history and play an important role in the department's curriculum.

Resources

We have well-equipped studios in areas of painting, photography, printmaking, and sculpture, as well as drawing and graphic design. In addition, we have a computer lab for digital media. The Samek Art Museum, located in the Elaine Langone Center, organizes exhibitions and installation projects that put contemporary art and historical art in dialogue with other disciplines. Its permanent collection – which includes especially strong holdings in the graphic arts and photography as well as the Samuel H. Kress Collection of European paintings and sculpture – is used for study and research by classes in studio art and art history. Together, the Department of Art and Art History and the Samek Art Museum sponsor workshops, lectures, and on-site installations by visiting artists, critics, and historians. Faculty and students take advantage of Bucknell's proximity to major museums and galleries through organized trips and individual travel to sites including New York City, Philadelphia, Baltimore, and Washington, D.C.

Honors in Studio Art or Art History

A program leading to a major with honors in studio art or art history may be proposed by the student in consultation with the department chair and appropriate department faculty. The student generally undertakes a specifically designed sequence of courses and independent research culminating in a significant studio project or written thesis.

Graduate Study and Careers in Studio Art and Art History

Students considering graduate studies in studio art, art history, art administration, art conservation, museum studies, or related fields, should consult College Art Association (CAA) guides and other materials available online and in the art department office. Department faculty members will be glad to provide information on careers in art and art history and on M.A., M.F.A., and Ph.D. programs and fellowships.

Production and Design

For courses in theatre production and design, see listing in Theatre and Dance (p. 183).

Art History (ARTH)

Art History majors graduate from Bucknell with a thorough grounding in the history of art, highly developed critical thinking skills, and a global cultural awareness thanks to our wide-ranging curriculum and individual attention. We offer majors and non-majors the opportunity to explore and analyze the creative vision of artists from the anonymous painters of prehistoric caves to today's art superstars such as Ai Wei Wei and Dale Chihuly.

Art History Major

The Art History major consists of a minimum of nine courses: eight of which must be in art history and one of which must be in studio art. No more than two of the nine required courses may be taken for credit elsewhere.

Distribution of required courses for the **Art History major**:

ARTH 101	World Art I: Caves to Cathedrals	1
ARTH 102	World Art II: Renaissance to Now	1
Studio art course		
200-level or higher courses in three of the following areas:		3
Ancient and Medieval		
Renaissance and Baroque		
Modern and Contemporary		
Non-European art or art of minorities or women		

Art history elective (at least one)

300-level or higher course	1
ARTH 402 Culminating Experience	1

Students will explore individual research projects on any art historical topic using their experience in the major in Culminating Experience. The class will culminate in an original research paper and a 20-minute paper delivered at a departmental symposium. This class will normally be taken in the fall semester of the senior year. Second-semester juniors may complete a Culminating Experience in the major with permission of the adviser and the department.

Sequencing of Courses

Although few art history courses have prerequisites, students are encouraged to begin their study of art history with at least one introductory course before engaging in course work on the 200-level or above. ARTH 101 World Art I: Caves to Cathedrals and ARTH 102 World Art II: Renaissance to Now (World Art I and II) familiarize students with the monuments and methods of the discipline. In addition, it is advisable to take a broad survey of an art historical period before engaging in more specialized study of that period. For example, it is recommended that students take ARTH 101 World Art I: Caves to Cathedrals before taking ARTH 204 Castle, Cathedral and Cloister and ARTH 204 Castle, Cathedral and Cloister before ARTH 300 Special Topics in Medieval Art.

Interdisciplinary Study

The department recommends that students select courses in other disciplines that will complement their art history major. Permission from the chair may be obtained to count one appropriate course taken in another Bucknell department (for example, in ancient archaeology, cultural anthropology, or film studies) toward the major. Students considering this option should discuss it with their art history adviser and department chair.

Language Study

Because a knowledge of languages is essential to the cross-cultural nature of art history, majors contemplating graduate study are strongly encouraged to become competent in at least one language beyond English (competency is normally defined as the completion of a 200-level language course). Students should consult with their art history adviser about which language (or languages) is (or are) most appropriate to their particular field of study.

Study Abroad and Internships

Art history majors are encouraged to pursue opportunities for study abroad and for internships in galleries, museums, and other settings. Students planning to undertake off-campus or non-traditional study are expected to consult closely with their art history adviser and department chair.

Art History Minor

Required courses for the **Art History minor**:

ARTH 101	World Art I: Caves to Cathedrals	1
ARTH 102	World Art II: Renaissance to Now	1
Select three of the following, covering at least two areas:		3
Ancient and Medieval		
ARTH 204	Castle, Cathedral and Cloister	
ARTH 221	Visual Cultures of the Mediterranean 1 - 1000 CE	
ARTH 300	Special Topics in Medieval Art	
Renaissance and Baroque		
ARTH 225	Popular Culture and Prints	
ARTH 264	Museum Studies: Gillray Exhibition	
ARTH 271	Leonardo da Vinci and Renaissance Art	
ARTH 273	Northern Renaissance Art	
Modern and Contemporary		
ARTH 207	Modern Art: 1850-1915	
ARTH 208	Modern Art: 1915-Now	
ARTH 323	Contemporary Art	
non-European art or art of the minorities or women		
ARTH 275	Art and Architecture of the Islamic World	

Demonstrate a basic knowledge of (1) the canonical works of western art and architecture, and (2) representative works of non-western art, the art of minorities and women, through the ability to recognize the works, their artists, their stylistic period and their art historical significance. (1, 3, 4, 6, 7, 8, 9)

Recognize that different interpretive frameworks can be used to analyze works of art. (1, 2, 6, 9)

Demonstrate effective oral and written communication. (7)

Execute research projects in art history that are thoroughly researched, insightful, and cogently argued. (1, 2, 3, 4, 6, 7, 8, 9)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Studio Art (ARST)

Classes in studio art allow students to translate their creative vision into works of art. Small classes allow the faculty to offer one-on-one instruction that encourages a synergy between technical skill, imagination, and conceptual depth. Studio majors graduate with confidence in their ability to be innovative thinkers and imaginative creators in any endeavor.

Studio Art Major

The Studio Art major consists of a minimum of nine courses, seven of which must be in studio art and two of which must be in art history. No more than two of the nine required courses may be taken for credit elsewhere.

Distribution of required courses for the **Studio Art major**:

One elective course in Studio Art	1
100-level studio art course ¹	1
200-level course in photography ²	1
200-level course in painting ²	1
200-level course in printmaking/design ²	1
200-level course in sculpture ²	1
ARST 450 Senior Projects in Studio Art ³	1

Two Art History courses. One must be chosen from the list below:

ARTH 102 World Art II: Renaissance to Now	1
ARTH 208 Modern to Postmodern Art: 1915 to the Present	1
ARTH 323 Contemporary Art	1

¹ No more than one 100-level studio art course will count toward major, ideally completed in the first year.

² One 200-level course in each of the four areas of: 1) photography 2) painting 3) sculpture 4) printmaking/design.

³ Studio Art Culminating Experience: in the fall semester, majors will take ARST 450 Senior Projects in Studio Art to work toward creating a portfolio of professional standards. In the spring semester, majors will install and exhibit the work created in ARST 450 in the Samek Art Gallery. During this exhibition, a final review will take place between the Senior Projects students and the members of the Studio Art faculty. Note: At the end of the fall semester, each Senior Projects student will be assigned the grade of IP (in progress) for ARST 450. Upon completion of their exhibition at the Samek Art Gallery in the spring semester, the IP will be removed from the transcript and the final grade will be issued.

Studio Art Minor

The minor in Studio Art enables students the flexibility to focus on one studio area, or sample a range of courses in photography, painting, sculpture, printmaking, and design. The minimum requirement for a minor in Studio Art is five courses, three of which should be above the 100-level. No more than one course may be taken elsewhere for credit.

The ability to think critically, analytically, and conceptually about works of art, and communicate their thoughts effectively in speech and in writing. The more advanced students would begin to develop a greater understanding of theoretical frameworks for understanding art. (1, 2, 4, 5, 6, 8)

Produce creative works that demonstrate imagination and inventive use of processes, materials, and concepts. (1, 2, 4, 5, 6, 8)

Exhibit visual literacy by communicating ideas through visual means and effectively interpreting visual culture in their portfolios. (4, 5, 6, 7, 8)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Arts Entrepreneurship Minor

Faculty

Coordinator: Barry Long

The goal of this minor is to add to the University curriculum an opportunity for interested students to acquire entrepreneurial acumen in the field of arts management. Through this interdisciplinary minor, students interested in working in and with the arts will acquire practical tools by which to become arts professionals – to manage, market and promote arts organizations and both commercial and not-for-profit arts endeavors in the visual, performing, media, and/or literary arts.

The purpose of the proposed grouping of courses and experiences is to bridge the gap between the necessary disciplinary depth of each arts-based major with a skill set that can facilitate entry into various entrepreneurial endeavors in the arts. The minor also allows majors in disciplines other than arts to expand their marketability as individuals ready to work as creative professionals. This minor is invaluable for students who anticipate careers in and related to the arts. As a program designed for the entire student body, the Arts Entrepreneurship minor is a rigorous course of study for students interested in exploring entrepreneurial opportunities in the arts and arts-related fields, regardless of their major course of study.

The minor incorporates historical, theoretical, and practical objectives including courses and internships that enable students to meet these goals.

Description

The minor in Arts Entrepreneurship introduces students to a variety of methods arts entrepreneurs employ to make decisions about, plan, execute and sustain an arts or arts-related venture and/or career.

The Arts Entrepreneurship minor assists students' efforts to capitalize on opportunities in the wide-array of potential arts economies. The minor also encourages students to self-define their role as artists in communities or their role in providing innovative production of art. The minor introduces students to the challenges and rewards of being an emerging arts entrepreneur through the experiential practices of the required internship.

The Arts Entrepreneurship minor is an example of the interdisciplinary nature of creative and artistic enterprise and illustrates the strong commitment to interdisciplinarity at Bucknell.

Administration

The Bucknell Arts Council coordinates the Arts Entrepreneurship minor, which is a collaboration between the College of Arts and Sciences and the School of Management. Inquiries can be directed to the University Arts Coordinator.

Curriculum

The minor is composed of **five courses**. Students must fulfill the requirements of each of sections A, B, C, and D. **Students can take a maximum of two courses in any one discipline.** Students must select from approved courses for the minor without exception.

Section A – Core course (one credit)

UNIV 199

Arts Entrepreneurship

1

This survey course explores the theories, processes, and practices involved in entrepreneurship in arts and cultural organizations. The course will feature a series of guest lectures by faculty and staff who are expert in the various aspects of the field. Each lecture will focus on developing concrete strategies and plans for managing arts and cultural organizations, including (but not limited to) business plans and organizational development, managing boards, fundraising, human resources, grant writing, facilities, program development including arts education programs, community collaborations, and effective evaluation. Focus on specific aspects of entrepreneurship in arts and/or cultural organizations will depend upon the group of arts entrepreneur experts presenting during the semester.

This course will rotate in consecutive years through the departments of English, Art and Art History, Music, and Theatre and Dance. Although the course will be offered by faculty in different disciplines, the course content will remain consistent. Generally, the course will be offered each year during the spring semester. Occasionally, there may be two sections in one academic year, one in the fall and one in the spring. The rotation through the arts disciplines offering the course progresses as noted below:

- English
- Theatre and Dance
- Art and Art History
- Music
- English (cycle repeats)

Section B – Approaches and Foundations of Entrepreneurship (one or two credits)

It should be noted that while the following list is inclusive, some of the courses of interest are not offered every year. Additionally, a few of the courses have prerequisites.

Economics

ECON 103	Economic Principles and Problems	1
ECON 280	Political Economy of Media and Advertising	1

Management

MGMT 101	Introduction to Organization and Management	1
MGMT 102	Quantitative Reasoning for Managers	1
MGMT 200	Foundations Accounting and Financial Management I	1
MGMT 201	Marketing	1
MGMT 202	Operations	1
MGMT 203	Managerial Finance	1

Section C – Skills and Practices of Entrepreneurship (one or two credits)

It should be noted that while the following list is inclusive, some of the courses of interest are not offered every year. Additionally, a few of the courses have prerequisites.

UNIV 399	Extreme Creativity: art(l)facts (also crosslisted under various arts disciplines) ¹	1
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Accounting and Financial Management (counts as a management course)

ACFM 220	Business Law I	1
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Art and Art History

ARST 112	Photography I	1
ARST 128	Introduction to Web Design	1
ARST 234	Digital Photography (prerequisites ARST 112 and ARST 131)	1
ARST 243	Graphic Design (prerequisite ARST 112)	1
ARTH 103	Museums, Galleries, Curators: Working with Real Art @ Samek Museum	1
ARTH 227	Introduction to Visual Culture	1
ARST 247	Photography II	1
ARST 340	Video Art and Installation (prerequisite ARST 112 or ARST 229 or ARST 237 or ARST 250)	1
ARST 349	Digital Sculpture (prerequisite permission of instructor)	1

English

ENFS 130	Introduction to Film/Media Studies	1
ENFS 253	Introduction to Film/Media Production	1
ENFS 254	Film Exhibition and Programming	1
ENFS 256	Writing about Film/Media	1
ENFS 335	Special Topics in Film/Media Production	1
ENFS 339	Film/Video Production	1

Markets, Innovation and Design (counts as a management course)

MIDE 243	Social Media for Managers	1
MIDE 300	Markets, Innovation, and Design (prerequisite MGMT 201)	1
MIDE 301	Understanding Consumers (prerequisite MGMT 201)	1
MIDE 303	Entrepreneurship	1
MIDE 304	Marketing Management (prerequisite MGMT 201)	1
MIDE 330	Innovating Organizations (prerequisite MGMT 101 or permission of instructor)	1
MIDE 375	Should We Start This Company?	.5

Management for Sustainability (counts as a management course)

MSUS 301	Managing for Sustainability II (prerequisite: MGMT 200. Juniors or seniors only)	1
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Music

MUSC 220	Performance for Laptop	1
MUSC 232	Music Technology	.5

MUSC Private Lessons (check current course catalog for specific vocal, instrumental, and ensemble course numbers and sections, as they vary by semester.)

MUSC Ensemble (check current course catalog for specific vocal, instrumental, and ensemble course numbers and sections, as they vary by semester.)

Theatre and Dance		
THEA 110	Acting I	1
THEA 145	Bucknell Backstage	1
THEA 149	Live! On Stage	1
THEA 245	Entertainment Technology	1
THEA 251	Costume Design	1
DANC 250	History of Dance	1

¹ Recommended course for Arts Entrepreneurship minor.

Section D – One credited arts internship (either at Bucknell or off campus that is related to the student's arts interest in media arts, visual arts, performing arts, literary arts) (one credit)

Internships are competitive; therefore, students are encouraged to fulfill this requirement before the fall of their senior year. Internships may occur in the summer and/or overseas but must have an arts focus. Please check with the relevant center for application procedures for Bucknell Arts internships.

Bucknell Arts Internships

Department of Theatre and Dance Internship contact: Chair of the Department of Theatre and Dance

Film/Media Studies Campus Theatre Internships contact: Rebecca Meyers, Film/Media Studies

Stadler Center Internships contact: Andrew Ciotola, Program Manager

University Press Internship contact: Pam Dailey, Operations Manager

West Branch Internship contact: Andrew Ciotola, Managing Editor

External Arts Internships

Arts Internship (off campus)

Off-campus internships for full credit must be approved using the procedures developed by the College of Arts and Sciences for Nontraditional Study.

When the internship opportunity arises, students must contact a faculty mentor to sponsor the internship and with whom to design the required academic content of the experience. In order to receive full credit, students must follow the procedures outlined for Nontraditional Study. Current students can find these procedures in the College of Arts and Sciences section in *myBucknell*.

Astronomy (ASTR)

Faculty

Professors: Sally Koutsoliotas, Edwin F. Ladd, Thomas H. Solomon, Katharina Vollmayr-Lee

Associate Professors: Katelyn Allers, Jiajia Dong, Jack F. Gallimore, Martin K. Ligare, David C. Schoepf, Michele D. Thornley (Chair), Brian C. Utter, Benjamin P. Vollmayr-Lee

Assistant Professors: A. Matthew Amthor, Deepak Iyer, Ibrahim A. Sulai

Astronomy courses are taught by the faculty in Physics and Astronomy (p. 147).

Biology (BIOL)

Faculty

Professors: Mitchell I. Chernin, Kathleen C. Page, DeeAnn M. Reeder

Associate Professors: Elizabeth A. Capaldi, Kenneth A. Field, Julie A. Gates, Mark Haussmann, Matthew B. Heintzelman (Chair), Stephen D. Jordan, Elizabeth C. Marin, Christopher Martine, Matthew E. McTammany (Associate Chair), Leocadia V. Paliulis, Marie C. Pizzorno, Mark D. Spiro, C. Tristan Stayton, Emily Stowe

Assistant Professors: Z Morgan Benowitz-Fredericks, Mizuki Takahashi

Visiting Assistant Professors: Joseph Johnson, Gregory P. Krukoniis

Lecturer: Alison Patterson

Laboratory Directors: Karin I. Knisely, Rebekah Stevenson, Kathryn B. Toner

Microscopy Specialist: Joseph G. Moore

Biology is the natural science that concerns itself with study of the living world. The faculty of the biology department approaches the principles of the science from the unifying perspective of the theory of evolution. Emphases include the theory and practice of the way scientific investigations are conducted as well as the more practical applications of biology.

A major in biology may serve as a sound preparation for those interested in careers in the life sciences including those who go on to graduate or medical school. Majoring in biology also adds to students' understanding of the issues concerned with health, the environment, and agriculture. In addition, Bucknell's biology majors are given the opportunity to become broadly educated "whole" scientists. They are encouraged to explore their interests within the humanities and social sciences.

Biology Majors

Two degree programs are offered through the biology program.

Bachelor of Arts

The **Bachelor of Arts major** requires eight courses in biology.

Core Sequence

BIOL 205	Introduction to Molecules and Cells ¹	1
BIOL 206	Organismal Biology ¹	1
BIOL 207	Genetics ¹	1
BIOL 208	Principles of Ecology and Evolution ¹	1
Four 300-level electives ²		
CHEM 211 & CHEM 212	Organic Chemistry I and Organic Chemistry II ³	2
MATH 201	Calculus I	1
MATH 216	Statistics I	1

¹ Must be completed by the end of the third year.

² One elective can be BIOL 399 Undergraduate Research, but additional 399 credit may be applied as electives beyond the courses offered for the major.
At least one elective must be in each of the three areas listed below. Two of these courses from different areas must be a laboratory or field course.

³ Must be completed by the end of the sophomore year.

Area I - Cellular/Molecular

BIOL 302	Microbiology	1
BIOL 304	Biology of Cancer	1
BIOL 322	Physiological Mechanisms	1
BIOL 323	Mammalian Histology	1
BIOL 324	Neurophysiology	1
BIOL 326	Cytogenetics	1
BIOL 327	Molecular Biology	1
BIOL 331	Functional Genomics	1
BIOL 332	Developmental Neurobiology	1
BIOL 340	Biochemical Methods	1
BIOL 347	Virology	1
BIOL 348	Immunology	1
BIOL 352	Cell Biology	1
BIOL 365	Introduction to Microscopy	1

Area II - Organismal

BIOL 312	Comparative Vertebrate Anatomy	1
BIOL 313	Mammalogy	1
BIOL 314	Amphibian Biology and Conservation	1

BIOL 316	Plant Growth and Development	1
BIOL 318	Principles of Physiology	1
BIOL 328	Endocrinology	1
BIOL 336	Anatomy and Microscopy of Plants	1
BIOL 337	Biology of Aging	1
BIOL 339	Developmental Biology	1
BIOL 342	Neuroethology	1
BIOL 357	Ornithology	1
BIOL 358	Invertebrate Zoology	1
BIOL 359	General Entomology	1

Area III - Ecological/Evolutionary

BIOL 321	Behavioral Ecology	1
BIOL 330	Plant Systematics	1
BIOL 334	Limnology	1
BIOL 341	Organic Evolution	1
BIOL 351	Field Botany	1
BIOL 353	Ecosystem Ecology	1
BIOL 354	Tropical Ecology	1
BIOL 355	Social Insects	1
BIOL 361	Systematic Biology	1
BIOL 370	Primate Behavior and Ecology	1

Bachelor of Science

The Bachelor of Science major requires nine courses in biology. The major provisions in biology are the same as those noted above under the Bachelor of Arts major, but five rather than four 300-level electives are required, only one of which can be BIOL 399 Undergraduate Research.

The Bachelor of Science major also requires:

CHEM 211 & CHEM 212	Organic Chemistry I and Organic Chemistry II ⁴	2
MATH 201	Calculus I	1
MATH 216	Statistics I	1
PHYS 211 & PHYS 212	Classical and Modern Physics and Classical and Modern Physics	2

Select two of the following: ⁵

BMEG 431	Biomimetic Materials	
CHEM 221	Inorganic Chemistry I	
CHEM 231	Analytical Chemistry	
CHEM 313	Synthetic Organic Chemistry	
CHEM 314	Mechanistic Organic Chemistry	
CHEM 317	Special Topics in Organic Chemistry	
CHEM 351	Biochemistry I	
CHEM 352	Biochemistry II	
CSCI 203	Introduction to Computer Science I	
CSCI 204	Introduction to Computer Science II	
ENST 211	Environmental Pollution and Control	
ENST 215	Environmental Planning	
ENST 230	Introduction to Ecological Design	
ENST 240	Sustainable Resource Management	
GEOG 204	Applied G.I.S.	
GEOG 345	Food and the Environment	
GEOL 107	Global Change - Past and Present	
GEOL 203	Physical/Environmental Geology	

GEOL 204	Evolution of the Earth
GEOL 230	Environmental GIS
GEOL 305	Introduction to Geochemistry
GEOL 316	Geomorphology
GEOL 317	Paleontology
LING 225	Language and the Brain
LING 230	Psycholinguistics
MATH 202	Calculus II
MATH 211	Calculus III
MATH 217	Statistics II
PHIL 103	Logic
PHIL 201	Symbolic Logic
PHIL 218	Ecology, Nature, and the Future
PHIL 220	Philosophy of Science
PHIL 272	Philosophy of Biology
PSYC 203	Learning
PSYC 204	Human Cognition
PSYC 250	Biopsychology
PSYC 252	Sensation and Perception
PSYC 317	Comparative Animal Cognition
UNIV 200	Integrative Perspectives Course

⁴ Typically completed during the first year.

⁵ Other courses may be substituted with department approval.

Students interested in behavioral aspects of biology may wish to consider the animal behavior major; those interested in biochemistry, the cell biology/biochemistry major; those interested in environmental issues, the environmental science BA within the environmental studies program; and those interested in neural biology, the neuroscience program. Students planning to continue with graduate training in biology are encouraged to elect MATH 217 Statistics II and/or MATH 202 Calculus II and to consult their academic adviser or pre-health professions adviser.

The recommended sequence for the Bachelor of Science major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
BIOL 205	1	BIOL 206	1
CHEM 211	1	CHEM 212	1
MATH 201	1	MATH 216	1
Foundation Seminar	1	Elective	1
	4		4

Sophomore

First Semester	Credits	Second Semester	Credits
BIOL 207	1	BIOL 208	1
Related area course	1	Related area course	1
Elective	1	Elective	1
Elective	1	Elective	1
	4		4

Junior

First Semester	Credits	Second Semester	Credits
Elective in biology	1	Elective in biology	1
PHYS 211	1	PHYS 212	1
Elective	1	Elective	1
Elective	1	Elective	1
	4		4

Senior

First Semester	Credits	Second Semester	Credits
Two electives in biology		2 Elective in biology	1
Elective		1 Elective	1
Elective		1 Elective	1
		Elective	1
		4	4

Total Credits: 32

College Core Curriculum – Disciplinary Depth Requirements

Students in the biology major will satisfy the writing and the information literacy requirement by completing BIOL 205 Introduction to Molecules and Cells and BIOL 206 Organismal Biology and at least two 300-level biology laboratory/field courses. They will satisfy the formal presentation requirement by completing BIOL 206 Organismal Biology as well as at least two 300-level courses in biology, which will include a required oral presentation. The Culminating Experience in Biology requirement will be fulfilled by taking one 300-level laboratory or field course from a list provided by the department in one of a student's last three semesters.

Transfer students must complete at least four courses in biology in residence at Bucknell, only one of which may be BIOL 399 Undergraduate Research.

For Bucknell students who elect to study abroad, at least three upper division courses toward the major and at least one toward the minor must be taught by Bucknell faculty.

Students who pass BIOL 121 Biology for Non-majors-BIOL 122 Biology for Non-majors with a grade of B or better in both courses may receive one core credit toward the biology major pending consultation with the department chair.

Biology Minor

A minor in biology consists of five courses.

At least two 300-level courses ¹

Select two of the following:

BIOL 205	Introduction to Molecules and Cells
BIOL 206	Organismal Biology
BIOL 207	Genetics
BIOL 208	Principles of Ecology and Evolution

¹ Cannot be BIOL 399 Undergraduate Research

Biology Department Learning Goals

(Numbers in parentheses are university-learning goals.)

I. Knowledge

Students completing the BA or BS major in Biology will:

1. Demonstrate a proficiency with the concepts and methodologies of the traditional core of biology (1, 4, 6, 8, 9)
2. Demonstrate the ability to use the scientific method (1, 8)
3. Demonstrate the ability to apply concepts from diverse sub-disciplines of biology (1, 6, 8)
4. Develop critical thinking skills to formulate and test biological questions (1, 4, 6)

In addition students completing a BS in biology will:

1. Apply and integrate other related disciplines with their knowledge of Biology (1, 2, 6)

II. Communication

Students completing the BA or BS major in Biology will:

1. Be able to write a well organized, logical and scientifically sound research paper or report (1, 7, 8)
2. Be able to present a well organized, logical and scientifically sound oral presentation on a topic in Biology (1, 7, 8)

III. Career

Students completing the BA or BS major in Biology will:

1. Be encouraged to pursue research experiences both on and off campus (1, 9)
2. Be educated about the wide variety of career paths in Biology via seminars and invited speakers

Faculty in the department will provide strong personalized advising allowing students to make informed post-graduation decisions.

Non-STEM students fulfilling their natural sciences requirements will:

1. Demonstrate a familiarity with biological principles and practices (4, 6, 8, 9)
2. Appreciate the impact of biology on society and gain confidence in their ability to understand biologically related issues (4, 6, 8, 9)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Cell Biology/Biochemistry (BICH)

Faculty

Director: Charles H. Clapp

Coordinating Committee: Mitchell I. Chernin, Charles H. Clapp, Kenneth A. Field, Matthew B. Heintzelman, Elizabeth C. Marin, Marie C. Pizzorno, David Rovnyak, James S. Swan, Rebecca L. Switzer

Other Participating Faculty: Dee Ann Casteel, Julie A. Gates, Kathleen C. Page, Leocadia V. Paliulis, Emily Stowe, Timothy G. Strein, Brian W. Williams

Developed jointly by the biology and chemistry departments, the major in cell biology and biochemistry at Bucknell is interdisciplinary in nature. The Bachelor of Science major is designed for students who are interested in understanding living organisms at the cellular and molecular level. This course of study will provide strong foundations in both biology and chemistry and will offer the student both the intellectual and the laboratory skills to grapple with questions at the interface of these two disciplines. In addition to a rigorous scientific education, this program enables students to gain a strong background in the liberal arts and to think critically about the impact of biotechnology on social and ethical issues.

The major in cell biology/biochemistry will focus on subdisciplines within biology and chemistry such as immunology, genetic engineering, nucleic acids, biomembrane function, cell biology of cancer, and enzymology. This program strongly emphasizes independent student research, including both seminar programs and hands-on research. A major in cell biology/biochemistry offers students an excellent preparation for careers in biotechnology, biomedical technology, medicine, pharmacology and bioengineering. It also is an excellent foundation for students preparing for entrance into Ph.D. programs in cell and molecular biology or biochemistry or Ph.D./M.D. programs in medically related fields.

Cell Biology/Biochemistry Major

The **major** requires:

BIOL 205	Introduction to Molecules and Cells ¹	1
BIOL 206	Organismal Biology ^{1,2}	1
BIOL 207	Genetics	1
BIOL 327	Molecular Biology	1
BIOL 352	Cell Biology	1
CHEM 211	Organic Chemistry I	1
CHEM 212	Organic Chemistry II	1
CHEM 221	Inorganic Chemistry I	1
CHEM 231	Analytical Chemistry	1
CHEM 340 or CHEM 341	Biological Physical Chemistry Physical Chemistry I	1
CHEM 351	Biochemistry I	1
BIOL 340/CHEM 358	Biochemical Methods ¹	1
PHYS 211	Classical and Modern Physics I	1
PHYS 212	Classical and Modern Physics II	1
MATH 201	Calculus I	1
MATH 202	Calculus II	1
Select three of the following: ³		3
BIOL 302	Microbiology	

BIOL 304	Biology of Cancer
BIOL 316	Plant Growth and Development
BIOL 318	Principles of Physiology
BIOL 322	Physiological Mechanisms
BIOL 323	Mammalian Histology
BIOL 324	Neurophysiology
BIOL 326	Cytogenetics
BIOL 328	Endocrinology
BIOL 331	Genomics
BIOL 337	Biology of Aging
BIOL 339	Developmental Biology
BIOL 347	Virology
BIOL 348	Immunology
BIOL 365	Introduction to Microscopy
BIOL 399	Undergraduate Research ⁴
CHEM 313	Synthetic Organic Chemistry
CHEM 314	Mechanistic Organic Chemistry
CHEM 317	Special Topics in Organic Chemistry
CHEM 322	Inorganic Chemistry II
CHEM 332	Analytical Chemistry II
CHEM 342	Physical Chemistry II
CHEM 352	Biochemistry II
CHEM 360	Advanced Environmental Chemistry
CHEM 375	Undergraduate Research ⁴
CHEM 376	Undergraduate Research ⁴
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Total Credits	19

- ¹ Contributes to satisfying the writing in the major and information literacy requirements.
- ² Satisfies the formal presentation requirement.
- ³ At least one of these biology or chemistry electives must be a laboratory course.
- ⁴ One full credit of a research course may be counted as an elective toward the major.

The Culminating Experience requirement will be fulfilled by cell biology/biochemistry students after completing one of the following:

- Enrolling in a 300-level laboratory course in biology during their last three semesters. These classes will utilize inquiry-based learning and require students to demonstrate writing, information literacy, and speaking at a level that is appropriate for a graduating cell biology/biochemistry major.
- Registering for independent research in either biology (BIOL 399 Undergraduate Research) or chemistry (CHEM 375 Undergraduate Research or CHEM 376 Undergraduate Research).
- Completing an Honors thesis.

The recommended sequence for the Bachelor of Science major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
BIOL 205	1	BIOL 206	1
CHEM 211	1	CHEM 212	1
MATH 201	1	MATH 202	1
<hr/>		<hr/>	
		3	3

Sophomore

First Semester	Credits	Second Semester	Credits
BIOL 207	1	BIOL 327	1
CHEM 221	1	CHEM 231	1
<hr/>		<hr/>	
		2	2

Junior		
First Semester	Credits Second Semester	Credits
BIOL 352	1 BIOL 340 or CHEM 358	1
CHEM 351	1 PHYS 212	1
PHYS 211	1 Elective in biology or chemistry	1
	3	3
Senior		
First Semester	Credits Second Semester	Credits
Select one of the following:	1 Select one of the following:	1
CHEM 341	CHEM 340	
Elective in biology or chemistry	Elective in biology or chemistry	
	Elective in biology or chemistry	1
	1	2

Total Credits: 19

Learning Goals (mapped to University Learning Goals)

Majors in Cell Biology/Biochemistry will be able to:

1. Demonstrate a working conceptual knowledge of relevant sub-disciplines of biology and chemistry, including molecular and cell biology, genetics, organismal biology, organic, inorganic, analytical and physical chemistry and biochemistry (1, 4).
2. Demonstrate laboratory skills in both chemistry and biology (1, 6).
3. Write a well-organized, logical and scientifically sound research report (1, 6, 7).
4. Communicate scientific information through a well-organized, logical and scientifically sound oral presentation (1, 6, 7).
5. Formulate and test hypotheses, critically analyze evidence and draw logical conclusions (1, 4, 6).
6. Skillfully utilize the scientific literature and databases in biochemistry, molecular and cell biology (1, 8, 9).
7. Be aware of current research opportunities and career paths at the interface of chemistry and biology (1, 9).

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Chemistry (CHEM)

Faculty

Professors: Charles H. Clapp, David Rovnyak, George C. Shields (Dean, College of Arts and Sciences), Robert A. Stockland, Timothy G. Strein, Eric S. Tillman, Brian W. Williams

Associate Professors: Dee Ann Casteel (Chair), Karen J. Castle, Molly M. McGuire, James S. Swan

Assistant Professors: William D. Kerber, Michael R. Krout, Rebecca L. Switzer

Visiting Assistant Professors: Andrew W. Baggett, Dabrina Dutcher, Paul Kennedy

Laboratory Directors: Patrick Martino, Erica Merriett, Neluni Perera

GC/MS Specialist: Peter M. Findeis

Computer, Instrument and NMR Specialist: Brian Breczinski

Chemistry is the science that seeks to understand the structure and composition of matter and the changes that it undergoes. The atomic/molecular perspective of chemistry provides fundamental insight into the macroscopic world of materials and organisms. Chemists apply this insight in many ways, such as the synthesis of new substances with useful technological or therapeutic properties and the discovery of new analytical methods that can be used in medicine and environmental science. Coursework in chemistry introduces students to fundamental chemical principles, teaches students to apply these principles broadly and effectively, and enables students to evaluate critically the impact of chemistry on society.

In addition to providing a working knowledge of chemical principles, a major in chemistry offers experience in critical thinking, data analysis and experimental design. Chemistry graduates pursue a variety of careers in which these skills are important. Many work as chemists in chemical or pharmaceutical companies or in government labs. Others apply their chemical skills to careers in medicine, law, business, chemical or pharmaceutical sales, biotechnology, pharmacology, toxicology, or environmental science. Many chemistry graduates pursue careers in education at the secondary, college or university level.

The department emphasizes the importance of research experience. The opportunity to engage in an original research investigation, in collaboration with a faculty member, is a distinctive feature of this program.

The chemistry major may be pursued under either the Bachelor of Arts or the Bachelor of Science degree programs. Students interested in biochemistry should consider either the Bachelor of Science in chemistry curriculum with biochemistry and biology electives or the Bachelor of Science program in cell biology/biochemistry offered jointly by the chemistry and biology departments.

Bachelor of Arts Major

A **Bachelor of Arts major** consists of eight course credits in chemistry numbered 211 or above, five of which are required:

Required Courses

CHEM 211	Organic Chemistry I	1
CHEM 212	Organic Chemistry II	1
CHEM 221	Inorganic Chemistry I ¹	1
or CHEM 222	Accelerated General Chemistry: Inorganic	
CHEM 231	Analytical Chemistry	1
CHEM 340	Biological Physical Chemistry	1
or CHEM 341	Physical Chemistry I	
MATH 201	Calculus I ²	1
PHYS 211	Classical and Modern Physics ³	1

Electives

3 CHEM courses numbered 211 or above ⁴	3
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¹ CHEM 222 Accelerated General Chemistry: Inorganic by permission

² MATH 202 Calculus II is strongly recommended.

³ PHYS 212 Classical and Modern Physics is strongly recommended.

⁴ A maximum of one course credit of CHEM 375 Undergraduate Research or CHEM 376 Undergraduate Research can count toward the eight course credit requirement.

Bachelor of Science Major

A **Bachelor of Science major** consists of 10 course credits in chemistry numbered 211 or above, eight of which are required:

Required Courses

CHEM 211	Organic Chemistry I	1
CHEM 212	Organic Chemistry II	1
CHEM 221	Inorganic Chemistry I ⁵	1
or CHEM 222	Accelerated General Chemistry: Inorganic	
CHEM 231	Analytical Chemistry	1
CHEM 322	Inorganic Chemistry II	1
CHEM 332	Analytical Chemistry II	1
CHEM 341	Physical Chemistry I	1
CHEM 342	Physical Chemistry II	1
MATH 201	Calculus I	1
MATH 202	Calculus II	1
MATH 211	Calculus III	1
PHYS 211	Classical and Modern Physics I	1
PHYS 212	Classical and Modern Physics II	1
PHYS 235	Applied Electronics	1
Science elective		1

Electives

2 CHEM courses numbered 211 or above	2
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⁵ CHEM 222 Accelerated General Chemistry: Inorganic by permission

The sequence of chemistry courses indicated below is strongly recommended; exceptions to this sequence are rare, and each must be negotiated with the student's adviser on the merits of the particular case.

The recommended sequence for the Bachelor of Science major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
CHEM 211	1	CHEM 212	1
MATH 201	1	MATH 202	1
		2	2

Sophomore

First Semester	Credits	Second Semester	Credits
CHEM 221	1	CHEM 231	1
MATH 211	1	PHYS 212	1
PHYS 211	1		
		3	2

Junior

First Semester	Credits	Second Semester	Credits
CHEM 341	1	CHEM 322	1
Science elective (see table below)	1	CHEM 342	1
		PHYS 235 ⁶	1
		2	3

Senior

First Semester	Credits	Second Semester	Credits
CHEM 332	1	Elective in chemistry	1
Elective in chemistry	1		
		2	1

Total Credits: 17

⁶ ECEG 205 Electrical and Computer Engineering Fundamentals may be substituted for PHYS 235 Applied Electronics in either semester.

Science Electives

BIOL 205	Introduction to Molecules and Cells	1
CHEG 450	Polymer Science	1
CSCI 203	Introduction to Computer Science I	1
ENGR 240	Science of Materials	1
GEOL 305	Introduction to Geochemistry	1
MATH 212	Differential Equations	1
PHYS 310	Experimental Physics	1
PHYS 317	Thermodynamics and Statistical Mechanics	1
PHYS 332	Quantum Mechanics	1
PHYS 333	Electromagnetic Theory I	1
Other courses with department approval		1

Electives in chemistry during the senior year may be chosen from any of the 300-level undergraduate courses in chemistry.

No more than two credits of research, CHEM 375 Undergraduate Research or CHEM 376 Undergraduate Research, may be applied toward the minimum 10-course major.

Advanced placement credit accepted by the University will count as a credit toward graduation, but will not replace the number of chemistry courses above 211 that are required for a major in chemistry.

Transfer students who are given at least 1.5 transfer credits toward graduation based on two semesters of general chemistry taken prior to transfer will be given an adjustment such that those two courses will replace the specific requirement for CHEM 221 Inorganic Chemistry I and will count as one of the chemistry courses required for the chemistry degree.

Bachelor of Science graduates will not automatically achieve the American Chemical Society's certification. To fulfill these requirements, Bachelor of Science chemistry students should take the equivalent of at least two additional laboratory or research courses, and CHEM 351 Biochemistry I.

Of the 11 electives to be taken during the four undergraduate years, an additional mathematics course is desirable. Since science is an international enterprise, chemistry majors are encouraged to take a foreign language.

Students interested in coordinating graduate with undergraduate work should consult the department chair before the end of the sophomore year. The department offers a combined B.S./M.S. program for students who desire both more research and more advanced chemistry courses than are obtainable under the Bachelor of Science program. The B.S./M.S. program normally is elected in the sophomore year and is completed in the summer following the senior year.

Satisfying Disciplinary Depth Component of the College Core Curriculum

Culminating Experience

Chemistry majors (B.S. and B.A.) will meet the Culminating Experience requirement in one of the following ways.

- Carry out a research or independent study project in the chemical sciences and take CHEM 371 Chemistry Lecture Series, a 0.25-credit research seminar in the senior year. Each student enrolled in the research seminar will give a formal presentation on the research or independent study project that s/he has undertaken. The research or independent study component can be any one of the following:
 - a. at least one credit of undergraduate research (CHEM 375 Undergraduate Research or CHEM 376 Undergraduate Research),
 - b. a summer research project carried out either at Bucknell or elsewhere (research projects carried out elsewhere must have prior approval by the department),
 - c. an independent study project that involves some form of scholarly work in the chemical sciences other than a laboratory research project.
- Take, during the senior year, one of the 0.5-credit special topics seminar courses (CHEM 385 Seminar or CHEM 386 Seminar) that the department offers. These seminars apply principles that students have learned in their core chemistry courses to topics of current interest, and require each student to give a formal presentation.

Writing Within the Major

The writing requirement within the major can be satisfied with CHEM 322 Inorganic Chemistry II, CHEM 332 Analytical Chemistry II, or CHEM 342 Physical Chemistry II. All chemistry majors are required to take either CHEM 340 Biological Physical Chemistry or CHEM 341 Physical Chemistry I, both of which involve writing formal lab reports.

Formal Presentation Experience

Each of the ways in which B.A. and B.S. chemistry majors can satisfy the Culminating Experience requirement will require formal presentation(s) under the guidance of the research mentor or seminar course instructor.

Information Literacy

Any 0.5 or 1.0 credit chemistry course at the 300 level will satisfy this requirement.

Two **minors** are available in the department of chemistry:

Chemistry Minor

The minor in chemistry requires six chemistry course credits.

Select one of the following: ¹

CHEM 160	Introduction to Environmental Chemistry	1
CHEM 201	General Chemistry	
CHEM 202	General Chemistry	
CHEM 221	Inorganic Chemistry I	
CHEM 222	Accelerated General Chemistry: Inorganic	
AP chemistry credit		
Chemistry courses numbered higher than 211, including:		5
CHEM 375	Undergraduate Research ²	
CHEM 376	Undergraduate Research ²	

¹ Not required. No more than one course may count toward the minor.

² A maximum of one course credit may be applied toward a chemistry minor.

Biochemistry Minor

The chemistry (biochemistry) minor requires:

Required Courses

CHEM 351	Biochemistry I	1
CHEM 352	Biochemistry II	1

Electives

4 CHEM courses numbered 211 or above ³		4
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³ A maximum of one course credit in research (CHEM 375/376) may be applied toward a biochemistry minor.

Learning Outcomes for Undergraduate Chemistry Majors

(Mapped to Bucknell University Education Goals)

Students will:

1. Demonstrate proficiency in the traditional core areas of chemistry (organic, inorganic, analytical, and physical). (1, 4, 6, 9)
2. Demonstrate proficiency in at least one specialty area of chemistry and/or chemical research. (1, 4, 6, 8, 9)
3. Demonstrate the ability to apply quantitative or qualitative theories of molecular behavior to chemical problems. (1, 4, 6, 9)
4. Perform analytical and/or synthetic procedures and demonstrate the ability to critically evaluate the results. (1, 4, 6)
5. Find, retrieve, and evaluate information from the chemical literature and use it properly. (1, 4, 6, 8)
6. Write well-organized and scientifically accurate laboratory and/or research reports. (7)
7. Effectively communicate scientific information through oral presentation. (7)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Children's Studies Minor

Faculty

Co-coordinators: Chris J. Boyatzis, Lori A. Smolleck

The interdepartmental Children's Studies minor offers a multidisciplinary perspective on children and childhood to help students achieve a deeper and broader understanding of children and childhood. Children are examined in contexts of culture, historical era, educational systems, socioeconomic class, geographic setting, religious ideology, political and economic systems, and so on. In addition, Children's Studies is concerned with children's "lived" experience. Thus, some courses may examine exigencies that affect hundreds of millions of children globally (e.g., poverty, hunger, war, disease, labor, etc.). Children's Studies also emphasizes advocacy and service for children. Thus, many courses in the minor involve a service-learning or fieldwork component in which students work with children directly (e.g., in a hospital, community center, counseling clinic, school). These opportunities not only enrich students' understanding of children but enhance students' growth as involved citizens and also benefit children and organizations in the community.

The Children's Studies minor could benefit students from many departments. Many education and psychology students could be interested but there are other audiences and specialized interests: pre-med students interested in pediatrics, English majors interested in children's literature, pre-law students interested in family law or child advocacy, computer science or engineering students interested in educational or recreational software, and so on. Collectively, the courses in the minor will expose students to new undergraduate opportunities as well as varied educational and career options.

The minor consists of five courses from the list below, with the following stipulations. At least four courses must be at the 200-level or above, and no more than two courses taken in any one department may count toward the minor. Per University policy, students cannot double count courses for a major and a minor. (Thus, for example, an education major could not count EDUC 201 Educational Psychology for this minor because it is required for the education major, but the student could use PSYC 307 Culture and Child Development to count for the minor.)

EDUC 201	Educational Psychology	1
EDUC 230	Foundations of Classroom Assessment	1
EDUC 235	Integrated Arts in Learning	1
EDUC 316	Teaching in Diverse Environments	1
EDUC 318	Multiculturalism and Education	1
EDUC 323	Education of Young Children	1
EDUC 334	Later Childhood and Adolescence	1
EDUC 335	Child & Adolescent Development	1
EDUC 347	Family, School, and Community Partnerships	1

ENLS 218	Studies in Children's Literature	1
ENLS 220	Young Adult Fiction	1
ENLS 290	Special Topics	1
MATH 117	Introduction to Mathematical Thought	1
MATH 118	Elementary Geometry and Statistics	1
PSYC 207	Developmental Psychology	1
PSYC 307	Culture and Child Development	1
PSYC 320	Children's Studies	1
PSYC 337	Child Development in Denmark	1
SPAN 323	Latin American Short Story	1

Chinese Language (CHIN)

Faculty

Associate Professors: Erik R. Lofgren, James J. Orr (Chair)

Assistant Professors: Song Chen, Xi Tian

Visiting Assistant Professor: Fredric Ye Tian

Adjunct Associate Professor: Elizabeth L. Armstrong

See East Asian Studies (p. 58).

Classics and Ancient Mediterranean Studies (CLAS)

Faculty

Chair: George R. Exner

Professor: Janet D. Jones

Associate Professors: Kevin F. Daly, Stephanie Larson

Assistant Professors: Ashli Baker, Kristine Trego

Visiting Assistant Professors: Thomas H. Beasley, Melissa Haynes, Mitchell H. Parks

The curriculum of the department of Classics and Ancient Mediterranean Studies offers students multidisciplinary opportunities to study the Mediterranean world of the ancient Greeks and Romans and, to a more limited extent, the ancient societies of the Near East and Egypt. Some courses also stress the classical tradition, the western inheritance of Greco-Roman ideas and art forms. The department offers varied kinds of courses through which students may approach the study of the ancient world, including courses in Greek and Latin.

The Classics and Ancient Mediterranean Studies curriculum offers a broad interdisciplinary approach to classical studies and therefore prepares students well for a wide range of careers. A broad liberal arts education and training in critical, rigorous thinking; oral presentations; and writing provide our students with the tools necessary to succeed in such varied careers as law, teaching, journalism, and management, and to adapt well to the rapid pace of change characteristic of contemporary life.

To facilitate students' exploration of the diversity and complexity of the ancient world and the contemporary disciplines that study it, the department groups its courses into five categories:

1. Ancient History and Society
2. Archaeology and Material Culture
3. Myth and Text
4. Greek
5. Latin

Ancient History and Society

Courses in this category focus upon the study of the culture and society of ancient Greece, Rome, and the Near East, including religion, politics, law, sexuality, economics, education, and patterns of thought and behavior, as well as the approaches and methodologies of ancient historians.

CLAS 132	Roman Civilization	1
CLAS 217	Greek History	1
CLAS 218	Roman History	1
CLAS 219	Ancient Egyptian Literature	1
CLAS 220	Preindustrial Environment	1
CLAS 227	Ancient Near Eastern Mythology	1
CLAS 228	Ancient Near Eastern History	1
CLAS 229	Ancient Biography	1
CLAS 233	The Age of Alexander the Great	1
CLAS 236	The Age of Augustus	1
CLAS 237	Ethnicity, Gender, and Identity in Antiquity	1
CLAS 332	Classical Athens	1
CLAS 333	Hellenistic Cultural Landscape	1
CLAS 334	Women in Antiquity	1

Archaeology/Material Culture

Courses in this category focus upon the study of the physical evidence, including the processes by which material objects from the ancient world are uncovered and analyzed; the evolution of urban forms; the expressions of architecture and art; the theories and practices of ancient technology; and the relationships that ancient cultures had with their environments and ecosystems.

CLAS 141	Ancient Cities	1
CLAS 241	Archaeology of Egypt	1
CLAS 242	Archaeology of Greece	1
CLAS 243	Archaeology of Rome	1
CLAS 247	Ancient Technology	1
CLAS 251	Biblical Archaeology	1
CLAS 253	Ancient Ships and Seafaring	1

Myth and Text

Courses in this category focus upon the study of the traditions of ancient mythology, the major Greek and Roman literary works and authors in translation, and the ways in which images and ideas from ancient myths and texts found shape in later literary traditions. Students interested in these topics also may want to consider the literature courses in Greek and Latin (see below).

CLAS 215	Classical Myth	1
CLAS 221	Heroic Epic	1
CLAS 222	Greek Tragedy	1
CLAS 224	Poetry of Passion in Greece and Rome	1
CLAS 225	The Classical Tradition	1

Classical Languages: Greek

The courses in Classical Languages are grouped into Greek and Latin and involve the study of the language and reading of primary authors. Although Latin and ancient Greek are no longer spoken, we encourage students to study language knowing that work with the ancient languages encourages logical thought, provides a sophisticated grasp of the possibilities of language, enhances an understanding of the culture, and gives the student opportunities to study at first hand some of the greatest works of the human spirit.

Beginning and Intermediate sequences GREK 101, GREK 102, GREK 151 are offered in both languages each year. Courses beyond the intermediate level are offered according to demand. Students with previous Greek experience should consult a member of the department when choosing where to start in the sequence. The sequence begins with GREK 101 in the fall semester.

LATN 101 & GREK 101	Introductory Latin and Introductory Ancient Greek	2
LATN 102 & GREK 102	Introductory Latin and Introductory Ancient Greek	2
LATN 151 & GREK 151	Intermediate Latin and Intermediate Greek	2

Classical Languages: Latin

The courses in Classical Languages are grouped into Greek and Latin and involve the study of the language and reading of primary authors. Although Latin and ancient Greek are no longer spoken, we encourage students to study language knowing that work with the ancient languages encourages logical thought, provides a sophisticated grasp of the possibilities of language, enhances an understanding of the culture, and gives the student opportunities to study at first hand some of the greatest works of the human spirit.

Beginning and Intermediate sequences LATN 101, LATN 102, LATN 151 are offered in both languages each year. Courses beyond the intermediate level are offered according to demand. Students with two or fewer years of secondary school Latin should enroll in LATN 101 or LATN 102; consultation with a member of the department is advised.

LATN 101 & GREK 101	Introductory Latin and Introductory Ancient Greek	2
LATN 102 & GREK 102	Introductory Latin and Introductory Ancient Greek	2
LATN 151 & GREK 151	Intermediate Latin and Intermediate Greek ¹	2

¹ Intended for students with at least two semesters of college Latin or three or more years of secondary school Latin.

Major in Classics and Ancient Mediterranean Studies

The department recommends that a student choosing a major or minor in classics develop a focus in one of the categories within the department, as described in the Overview. Students who are interested in pursuing graduate studies in classics are strongly recommended to include several years of concentrated language study of both Greek and Latin in their curriculum.

A **major** in classics and ancient Mediterranean studies consists of a minimum of eight courses, with the following requirements:

At least two courses in Greek or Latin	2
At least two courses in classics and ancient Mediterranean studies ²	2
Culminating Experience	
Select one of the following: (during or after the second semester of junior year)	
One 300-level classics and ancient Mediterranean studies seminar	
A credit-bearing classics experience outside Bucknell ³	
Writing an honors thesis (a one-year sequence reserved for GPA of 3.5 or higher)	

² Additional courses that relate to classics offered by other departments (e.g., ARTH 101 World Art I: Caves to Cathedrals) may be applied to the major in classics with the adviser's approval. No more than two such courses at the 100-level can count toward the major.

³ Such as: archaeological field experience in Greece, Italy, or other ancient sites in the Mediterranean area. This option must be cleared by both the student's academic adviser and the chair of the classics and ancient Mediterranean studies department in order to count for the Culminating Experience.

In these and other experiences within the classics and ancient Mediterranean studies major, professors will also emphasize the following main areas of competence: written and oral communication skills and information literacy.

Students are encouraged to choose an honors program in classics, Greek, or Latin. Candidates for honors must take CLAS 321 Honors Tutorial and Thesis-CLAS 322 and pass with distinction the oral examination on the thesis.

The department strongly encourages its majors to study abroad in a Mediterranean setting, in Italy or Greece especially. Several options for a semester, a year, or a summer, are available, including a classics-based Bucknell study abroad semester in Athens, Greece, offered every spring.

Minors in Classics and Ancient Mediterranean Studies

Three **minors** are offered by the department of classics and ancient Mediterranean studies.

Greek Minor

The Greek minor consists of four full-credit courses in Greek at any level taken at Bucknell.

Latin Minor

The Latin minor consists of four full-credit courses in Latin at any level taken at Bucknell.

Classics and Ancient Mediterranean Studies Minor

The minor in classics and ancient Mediterranean studies consists of five courses in classics (CLAS), including no more than two courses in Greek and/or Latin. The minor in classics may include up to two courses offered by other departments or programs, chosen from a list that is periodically updated. This list includes:

ARTH 101	World Art I: Caves to Cathedrals	1
PHIL 205	Greek Philosophy	1
POLS 250	History of Western Political Thought I	1
RESC 098	Foundation Seminar in Residential Colleges (Myth, Reason, & Faith)	1

Learning Goal: Competence/proficiency in language.

- Students in introductory Greek and Latin language courses will demonstrate competence in language by being able to a) analyze grammatical structure and b) read (translate) and understand appropriate Latin and Greek passages.
- Majors in advanced language courses will demonstrate proficiency by being able to a) do all of the above including being able to generate a translation of a selection of a work read that accurately reflects the structure of the original language while at the same time demonstrating the ambiguity the language possesses and b) be able to recognize and to comment meaningfully on aspects of style, word choice, overall structure, basic textual problems, context and current scholarly approaches to the work

Learning Goal: Knowledge of historical/cultural contexts in the ancient world.

- Classics majors will be able to comment meaningfully on major ancient historical events and cultural developments, setting them within the context of Greek and Roman history.
- Classics majors demonstrate an ability to recognize the ways in which the interpretation of texts and artifacts is influenced by literary, philosophical, social, and cultural developments.

Learning Goal: Research and presentation methods and skills.

- Students graduating with a major in classics will demonstrate facility with discipline-specific research and presentation methods.

College Major (COLL)

Whereas most majors are based upon a field of study and primarily emphasize mastery of the subject, the college major does not require competence in only one academic discipline, but focuses instead upon the overall intellectual development of the individual student. In so doing, it offers maximum freedom in meeting educational interests, but at the same time imposes unusual responsibility for designing a coherent program. In cooperation with their advisers, an acceptable course of study is prepared. They also must complete a senior project which will integrate the diverse material they have studied. This project is planned not later than the final months of the junior year.

To register as a college major, students must prepare a detailed statement of educational goals, projecting a series of courses for the ensuing semester and providing a rationale for their program. This statement must be endorsed in writing by three faculty members, one of whom will initially become the student's adviser. At registration for each succeeding semester, another proposal specifying courses for that term must be submitted to the adviser and the associate dean. Admission to the college major program after five semesters of study requires approval of the associate dean. Additional information about the college major may be obtained from the Office of the Dean of the College of Arts and Sciences.

Comparative Humanities (HUMN)

Faculty

Professor: Katherine M. Faull (Director)

Associate Professors: John C. Hunter, James Mark Shields

Visiting Assistant Professor: Erica Delsandro

Lecturer: Diane Jakacki

The Comparative Humanities program approaches global traditions of ideas, history, literature, music, and art in an interdisciplinary fashion. Designed to reflect contemporary trends in humanistic scholarship, it teaches students how to compare, analyze, and integrate materials from different cultures, media, and/or historical periods; these are vital skills for the 21st century world that conventional undergraduate disciplinary boundaries often exclude. These include the various ways in which, for example, digital technology has changed our relations to knowledge; the categories "Asia" and the "West" have been constructed and represented; how translation works in a globalized world; how science and the humanities interact; and the historical and cultural shifts in the way knowledge has been classified. Our courses, taught by faculty from Comparative Humanities and from other humanities departments, are designed to help students develop a set of intellectual tools that can be applied in any professional or academic context. Classes are limited in size so that students may share through discussion their reactions to the works studied, relate them to their own lives, and

attempt to judge their relevance to the contemporary “globalized” world. Inasmuch as language and culture are central to this interdisciplinary project, students who declare a major in the comparative humanities are required to satisfy a language requirement.

The major is especially suitable for students interested in broad study of the humanities and comparative studies, e.g., individuals otherwise focusing their education in the sciences and other non-humanities disciplines or students interested in advanced study of the humanities in graduate programs and seeking a balance of disciplinary and interdisciplinary studies for this purpose.

Students interested in the major are encouraged to contact the program director listed above as soon as possible to begin the advising process.

Comparative Humanities Major

The **major** consists of eight courses, a pass/fail oral examination and a demonstration of reading proficiency in a foreign language. The courses include:

HUMN 128	Myth, Reason, Faith ¹	1
HUMN 150	Enlightenments ¹	1
HUMN 250	Modernism and Crisis (May also be taught as UNIV 200) ¹	1
Two courses in Humanities or related disciplines, one of which must be at the 200-level or above.		2
Two 300-level interdisciplinary humanities seminars ²		2
HUMN 350 or HUMN 351	Senior Thesis Workshop ⁴ Honors Tutorial and Senior Thesis	1
Oral examination ⁵		

¹ These courses ground students in the broad outlines of world intellectual traditions. As W2 courses, HUMN 150 Enlightenments and HUMN 250 Modernism and Crisis teach analytical writing skills. All three courses teach information literacy skills through mandatory research assignments in close consultation with the instructor and library staff. Public-speaking skills are taught through the preparation for oral reports in HUMN 128 Myth, Reason, Faith and HUMN 150 Enlightenments and an oral exam following the completion of HUMN 150 Enlightenments.

² Courses encourage comparative studies across cultural, historical, and formal boundaries.

³ Approved by the student’s major adviser or program director.

⁴ Course gives students a chance to pursue focused research on a subject of particular interest to them. Discussion of the thesis topic must begin in the spring of the student’s junior year and the topic must have attained final approval by the faculty adviser by the end of September of the senior year. The thesis project may be submitted to the Honors Council for consideration as an honors thesis but this is not required in order to complete the major. Successful completion of the thesis requirement (including an oral defense) counts as the Culminating Experience in comparative humanities.

⁵ Intended as an integrative discussion covering all of the material in HUMN 128 Myth, Reason, Faith and HUMN 150 Enlightenments, must be taken after completing both of these courses. It is graded on a pass/fail basis and offered at the end of every spring semester. Students who fail the exam may re-take it when it is next offered.

In keeping with the program’s goal of exposing students to different modes of thought, the program asks students to demonstrate work in a foreign language in addition to the eight courses required for the major. Such competency can be attained by passing a one-credit course at the level of the fourth course or higher in a particular language sequence. Students also are encouraged to develop language competency elsewhere, as in summer school or abroad; however, all such programs must first be approved by the comparative humanities program director. Students whose native language is not English, or who are bilingual, are exempted from the language requirement.

Minor in Comparative Humanities

A **minor** in comparative humanities consists of five courses.

Select at least two of the following:

HUMN 128	Myth, Reason, Faith	
HUMN 150	Art, Nature, Knowledge	
HUMN 250	Nihilism, Modernism, Uncertainty	
300-level Humanities seminar ⁶		1
Humanities course ⁷		1

⁶ At least one 300-level Humanities seminar is required.

⁷ Remaining courses may be selected from all Humanities courses.

Department and Program Learning Objectives

Majors in Comparative Humanities will be able to:

Understand the central movements of the Western tradition and the ways in which that tradition has been constructed. (2, 3)

Understand all cultural norms as provisional positions in a historical process of change and conflict. (2, 5)

Compare and evaluate cultural differences in a non-hierarchical manner across boundaries of all kinds:

Historical (including situations, intellectual products, and material remains of different periods);

Cultural (including race, gender, nationality, religion, and sexual orientation); and

Formal (between different modes of thought and expression). (2, 5, 6)

Meaningfully compare intellectual materials of different or opposing types: textual with material artifacts; narrative with non-narrative texts; artistic with analytical modes of thought. (6, 8)

Appreciate the benefits, problems, and intellectual challenge of comparative study across historical, cultural, or generic boundaries. (5, 6)

Demonstrate effective expository skills, both orally and in writing. (7, 8)

Understand the intellectual and personal benefits of knowing and using a foreign language. (3)

Numbers in parentheses reflect related Educational Goals (<https://www.bucknell.edu/interested-in-bucknell/who-we-are/recent-strides-future-plans/goals-and-educational-outcomes/educational-goals.html>).

Computer Science (CSCI)

Faculty

Professor: Xiannong Meng

Associate Professors: Stephen M. Guattery (Chair), Daniel C. Hyde, Luiz Felipe Perrone, Lea D. Wittie, Richard J. Zaccone

Assistant Professors: Christopher L. Dancy II, Brian R. King, Alan Marchiori, Darakhshan Mir, Evan M. Peck, Benoit Razet

The undergraduate programs in computer science stress fundamental principles of computational thinking, including solid theoretical underpinnings, computational methods and models for solving problems, principles for designing computing systems to meet human needs, and techniques for analyzing the effectiveness of these methods, models, and systems. They provide students with the conceptual foundation needed to stay at the front of this fast-changing field. For most courses, classroom learning is enhanced through significant faculty-directed hands-on experience, typically in the form of a regularly scheduled laboratory.

Graduates typically take entry-level positions in hardware and software systems application and design or continue their education at the graduate level.

Program Educational Objectives for the Bachelor of Science Degree

Computer Science degree graduates will be successful professionals in computer science or other fields, and will be recognized for qualities associated with their Bucknell education. Such qualities include critical thinking, problem solving, and effective communication. Graduates will be prepared to pursue lifelong learning such as professional or advanced education.

A computer science major may be pursued under any one of three degree programs: Bachelor of Arts, Bachelor of Science, and Bachelor of Science in computer science and engineering (see College of Engineering (p. 194)). The Bachelor of Science in computer science degree program is accredited by the Computing Accreditation Commission of ABET (ABET.org (<http://www.abet.org>)). Students interested in the computer science major should consult the department concerning the choice of degree program.

Bachelor of Arts Major

The **Bachelor of Arts major** curriculum provides the student with an opportunity to combine the liberal arts tradition with strong preparation in computer science. It requires 8 and one-half course credits in Computer Science.

CSCI 203	Introduction to Computer Science I	1
CSCI 204	Introduction to Computer Science II	1
CSCI 205	Software Engineering and Design	1
CSCI 206	Computer Organization and Programming	1
CSCI 208	Programming Language Design ¹	1
CSCI 240	Computers and Society ²	.5

CSCI 311	Algorithms and Data Structures ¹	1
CSCI 315	Operating Systems Design	1
CSCI 479	Computer Science Design Project ^{3,4}	1
MATH 201	Calculus I	1
MATH 202	Calculus II	1
MATH 211	Calculus III	1
MATH 226	Probability and Statistics for Engineers ²	.5
MATH 241	Discrete Structures ⁵	1
Total Credits		13

¹ Students may substitute one 300-level elective for either CSCI 208 or CSCI 311.

² Half course.

³ Course addresses the writing, presentation, and information literacy requirements of the College Core Curriculum.

⁴ Serves as the Culminating Experience in computer science.

⁵ Students, particularly those interested in a mathematics double major, may substitute the 1.5-credit combination of MATH 280 and MATH 240 for MATH 241.

The recommended sequence for the Bachelor of Arts major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
CSCI 203		1 CSCI 204	1
MATH 201		1 MATH 202	1
Foundation Seminar		1 Lab Science	1
Elective		1 CCC ⁶	1
		4	4

Sophomore

First Semester	Credits	Second Semester	Credits
CSCI 205		1 CSCI 206	1
MATH 211		1 MATH 241 ⁸	1
CCC ⁶		1 CCC ⁶	1
Elective		1 Elective	1
		4	4

Junior

First Semester	Credits	Second Semester	Credits
CSCI 208 ⁷		1 CSCI 240	.5
CSCI 315		1 CSCI 311 ⁷	1
MATH 226		.5 CCC ⁶	1
CCC ⁶		1 Elective	1
Elective		1	
		4.5	3.5

Senior

First Semester	Credits	Second Semester	Credits
CSCI 479		1 CCC ⁶	1
CCC ⁶		1 CCC ⁶	1
CCC ⁶		1 Elective	1
Elective		1 Elective	1
		4	4

Total Credits: 32

⁶ Must include courses to satisfy the College Core Curriculum (CCC) requirements of the College of Arts and Sciences.

⁷ Bachelor of Arts students may substitute a 300-level computer science elective for either CSCI 208 or CSCI 311 if they desire.

⁸ Students, particularly those interested in a mathematics double major, may substitute the 1.5-credit combination of MATH 280 and MATH 240 or MATH 241.

Bachelor of Science Major

Requires 11 and one half credits.

CSCI 203	Introduction to Computer Science I	1
CSCI 204	Introduction to Computer Science II	1
CSCI 205	Software Engineering and Design	1
CSCI 206	Computer Organization and Programming	1
CSCI 208	Programming Language Design	1
CSCI 240	Computers and Society ⁷	.5
CSCI 311	Algorithms and Data Structures	1
CSCI 315	Operating Systems Design	1
CSCI 341	Theory of Computation	1
CSCI 479	Computer Science Design Project ^{8,9}	1
Two 300-level or above computer science electives ⁹		2
MATH 201	Calculus I	1
MATH 202	Calculus II	1
MATH 211	Calculus III	1
MATH 226	Probability and Statistics for Engineers ⁷	.5
MATH 241	Discrete Structures ¹⁰	1
PHYS 211	Classical and Modern Physics I	1
PHYS 212	Classical and Modern Physics II	1
PHYS 235	Applied Electronics	1
Science course		1
Total Credits		20

⁷ Half course.

⁸ Serves as a Culminating Experience in computer science.

⁹ At most one credit for any combination of CSCI 376 Computer Science Honors Thesis and CSCI 378 Individual Study in Computer Science may count toward this requirement.

¹⁰ Students, particularly those interested in a mathematics double major, may substitute the 1.5-credit combination of MATH 280 and MATH 240 for MATH 241.

The recommended sequence for the Bachelor of Science major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
CSCI 203	1	CSCI 204	1
MATH 201	1	MATH 202	1
Foundation Seminar	1	Lab Science	1
Elective	1	CCC ¹²	1
		4	4

Sophomore

First Semester	Credits	Second Semester	Credits
CSCI 205	1	CSCI 206	1
MATH 211	1	MATH 241 ¹⁵	1
PHYS 211	1	PHYS 212	1
CCC ¹²	1	CCC ¹²	1
		4	4

Junior

First Semester	Credits	Second Semester	Credits
CSCI 208	1	CSCI 240 ¹¹	.5

CSCI 315	1 CSCI 311	1
MATH 226 ¹¹	.5 PHYS 235	1
CCC ¹²	1 Computer Science Elective ¹⁴	1
	CCC ¹²	1
		4.5

Senior

First Semester	Credits Second Semester	Credits
CSCI 341	1 Computer Science Elective ¹⁴	1
CSCI 479 ¹³	1 CCC ¹²	1
CCC ¹²	1 CCC ¹²	1
CCC ¹²	1 Elective	1
		4

Total Credits: 32

¹¹ Half course.¹² Must include courses to satisfy the College Core Curriculum (CCC) requirements of the College of Arts and Sciences.¹³ Serves as a Culminating Experience in computer science.¹⁴ At most one credit for any CSCI 376 Computer Science Honors Thesis and CSCI 378 Individual Study in Computer Science may count toward this requirement.¹⁵ Students, particularly those interested in a mathematics double major, may substitute the 1.5-credit combination of MATH 280 and MATH 240 for MATH 241.

Computer Science Minor

The minor in computer science requires five computer science courses.

If a student's first computer science course is CSCI 203 Introduction to Computer Science I, then the four additional courses are:

CSCI 204	Introduction to Computer Science II	1
CSCI 206	Computer Organization and Programming	1
Select two of the following:		2
CSCI 205	Software Engineering and Design	
CSCI 208	Programming Language Design	
300 and 400-level computer science courses		

If a student's first computer science course is a 100-level then the four additional courses are:

CSCI 203	Introduction to Computer Science I	1
CSCI 204	Introduction to Computer Science II	1
CSCI 206	Computer Organization and Programming	1
Select one of the following:		1
CSCI 205	Software Engineering and Design	
CSCI 208	Programming Language Design	
300 and 400-level computer science courses		

Graduates of the program are expected to demonstrate the following learning outcomes, which reflect ABET computing accreditation criteria:

C-a. An ability to apply knowledge of computing and mathematics appropriate to the program's student's outcomes and to the discipline.

C-b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

C-c. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

C-d. An ability to function effectively on teams to accomplish a common goal.

C-e. An understanding of professional, ethical, legal, security and social issues and responsibilities.

C-f. An ability to communicate effectively with a range of audiences.

C-g. An ability to analyze the local and global impact of computing on individuals, organizations, and society.

C-h. Recognition of the need for and an ability to engage in continuing professional development.

C-i. An ability to use current techniques, skills, and tools necessary for computing practice.

C-j. An ability to apply mathematical foundations, algorithmic principles, and computer science theory at the modeling, and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

C-k. An ability to apply design and development principles in the construction of software systems of varying complexity.

Dance Minor (DANC)

See Theatre and Dance (p. 183).

Digital Humanities Minor

Faculty

Coordinator: Katherine M. Faull (Comparative Humanities)

Coordinating Committee: Song Chen (East Asian Studies), David W. Del Testa (History), Katherine M. Faull (Comparative Humanities), John C. Hunter (Comparative Humanities), Diane Jakacki (Digital Scholarship Coordinator)

The interdisciplinary field of Digital Humanities is an area of research and teaching at the intersection of computing and the disciplines of the humanities. It offers innovative ways for scholars to ask new questions and create new knowledge within the humanities.

Students who minor in Digital Humanities will develop critical skills in the interpretation, analysis, and evaluation of humanistic research questions and the methodologies of the Digital Humanities, such as textual analysis, geo-spatial visualization, network visualization, and new media. Students will develop digital literacies, and learn to work in collaborative teams to solve complex, multifaceted problems.

The minor draws from an array of academic courses across disciplines and educational resources at Bucknell University that exhibit interdisciplinary digital engagement. The minor spans humanities departments and programs and includes faculty from non-humanities programs and departments as appropriate.

Digital Humanities Minor Learning Goals

- Students will construct research questions and artifacts that demonstrate proficiency in interpretation, analysis, and evaluation of DH methodologies in their specific contexts.
- Students will exhibit facility with DH conventions regarding forms of composition and communication across academic disciplines and cultural situations.
- Students will demonstrate understanding of the collaborative aspects of DH production and demonstrate the ability to work both individually and in group settings.
- Students will examine cultural, social, ethical, or theoretical implications of DH tools and scholarly discourse.
- Students will be able to compose reflections that articulate superior understanding of the generative process involved in engagement with DH scholarship.

The minor in Digital Humanities consists of:

Two of the following:

HUMN 100	The Humanities Now! ¹	1
UNIV 200	Integrated Perspectives Course (Introduction to the Digital Humanities)	1
HUMN 270	Data Visualization for the Digital Humanities (Data Visualization for the Digital Humanities)	1
HUMN 271	Advanced Text Analysis: Redefining How We Read	1
Students must also complete HUMN 319. ²		1

Students must also complete two of the following elective courses:

ARTH 303	Wright's Fallingwater Digital	1
ARTH 373	The West Encounters the Rest: Cultural Encounters Around the Globe	1
ARST 129	Digital Drawing and Print	1

ARST 234	Digital Photography	1
ARST 243	Graphic Design	1
ARST 349	Digital Sculpture	1
EAST 203		
HIST 201	Introduction to Historical GIS	1
HUMN 272	Interdisciplinary Studies in the Humanities	1
RELI 249	Pilgrimage in South Asia	1

¹ Topics for HUMN 100 include Digging into the Digital, The Humanities Now! and Intro to Text Analysis.

² Students may elect to complete HUMN 319 Independent Study as a full credit independent study or as two .5 credit independent studies.

Students must also complete a final DH portfolio that demonstrates a student's creation of artifacts in courses already taken and also (if appropriate) DH work components of a thesis (departmental/Honors). This portfolio will be submitted to the coordinating committee of the minor in DH for approval.

East Asian Studies (EAST)

Faculty

Associate Professors: Erik R. Lofgren, James J. Orr (Chair)

Assistant Professors: Song Chen, Xi Tian

Visiting Assistant Professor: Fredric Ye Tian

Adjunct Associate Professor: Elizabeth L. Armstrong

The civilizations of East Asia offer a wealth of human experience of invaluable import to every academic discipline. Unbroken cultural lines of great antiquity lead to modern East Asian cultures of ever growing global significance. Whether we look first to the past, the present, or the future, in studying East Asia we study ourselves and our world.

A traditional liberal education, limited to the study of "Western" civilization, is no longer a liberal education. The department of East Asian Studies, therefore, offers courses for all Bucknell students, as well as for the special interests of students choosing either the East Asian Studies major or one of the department's three minors: East Asian Studies, Chinese, or Japanese.

All students majoring or minoring in the East Asian Studies department are strongly encouraged to seek opportunities for summer, semester, or preferably full-year study in China or Japan. Bucknell is a member of the Associated Kyoto Program (<http://www.associatedkyotoprogram.org>), under which students may, if accepted, spend part or all of their junior year at Doshisha University in Japan. Many other opportunities to study in East Asia also are available.

East Asian Studies Major

The **major**, requiring an emphasis on either China or Japan, entails a program of study (created in consultation with a department adviser) that requires a minimum of 11 courses:

Six language courses in the language of one's emphasis (Chinese or Japanese)	6	
Four cultural courses, of which one - to provide a broad historical introduction to East Asian civilizations - must be chosen from the following:	3	
Chinese emphasis:		
EAST 111	East Asian Civilization	
EAST 233	China from Ancient Time to 18th Century	
EAST 234	China Since 1800	
EAST 267	The People's Republic of China	
Japanese emphasis:		
EAST 111	East Asian Civilization	
EAST 254	From Shinto to Shogun: Pre-modern Japan	
EAST 255	Modern Japanese History	
EAST 256	Contemporary Japanese History	
Cultural course outside emphasis (Chinese or Japanese)	1	
EAST 395	East Asian Studies Honors Thesis ¹	1
or EAST 400	East Asian Studies Senior Thesis	

¹ Culminating Experience

The department encourages majors and potential majors, especially those considering a double major, to consult early and frequently with an EAST faculty member to explore ways to systematically connect and expand work done in the culture courses taken for the major with the research project that forms the core of the Culminating Experience.

The Culminating Experience provides students an opportunity to pursue focused research on a subject relevant to their concentration and of interest to them. The Culminating Experience must: involve substantial writing, involve substantial research, incorporate Japanese- or Chinese-language sources, treat in depth some aspect of the culture of Japan or China, and be presented at the spring Majors' Symposium.

All students majoring in East Asian Studies will receive instruction in writing, speaking, and information literacy in the discipline through experiences in the language courses, culture courses, and the Culminating Experience that each major completes.

Minor in East Asian Studies

The department offers three **minors**.

East Asian Studies Minor

Five EAST courses ¹

5

A minor in East Asian Studies consists of five department courses, of which one must be selected from the following: ¹

EAST 111	East Asian Civilization
EAST 233	China from Ancient Time to 18th Century
EAST 234	China Since 1800
EAST 254	From Shinto to Shogun: Pre-modern Japan
EAST 255	Modern Japanese History

¹ Courses offered or crosslisted by department that are a coherent grouping.

Minor in Chinese

A **minor in Chinese** consists of six department courses, of which four must be in the respective language.

Minor in Japanese

A **minor in Japanese** consists of six department courses, of which four must be in the respective language.

At the completion of the program, students in East Asian Studies will be able to:

1. Demonstrate a working knowledge of the history of Japan, China or Korea, and their basic chronologies.
2. Demonstrate a nuanced understanding of contemporary culture of their country of concentration, informed by the unique mix of academic disciplines in each student's curriculum.
3. Discern major issues of cross-regional social, historical, or cultural importance.
4. Present ideas coherently in **speech** in the language of concentration.
5. Present ideas coherently in **writing** in the language of concentration.
6. Read basic fiction and non-fiction and be able to converse confidently about topics related to those materials.
7. Understand Japanese or Chinese spoken at a natural speed.

Economics (ECON)

Faculty

Professors: Marcellus Andrews, Winston H. Griffith, Thomas C. Kinnaman (Chair), Janet T. Knoedler, Christopher S. P. Magee, Berhanu Nega, Geoffrey E. Schneider, Matías Vernengo, Nancy E. White

Associate Professors: Erdogan Bakir, Nina E. Banks, David Kristjanson-Gural, Gregory A. Krohn, Amy M. Wolaver

Assistant Professors: Joaquin Gomez-Minambres, Carl Shu-Ming Lin

Visiting Associate Professor: Rhonda V. Sharpe

Visiting Assistant Professor: Aichatou S. Hassane

The study of economics, as with the other social sciences, attempts to explain various types of human behavior and the impact that society's institutions have in determining that behavior. Of particular interest are the forces that determine an economy's production, employment, distribution of income, poverty, and international economic relationships.

Economics at Bucknell is also an integral part of the liberal arts. The department's primary goal is to cultivate patterns of inquiry that produce economic literacy, independent thinking, and a commitment to lifelong learning and a socially responsible life.

A major in economics offers a background for careers in law, journalism, finance and consulting, government and international affairs, teaching, industrial relations, public service, and many others. The major also provides the essential first stage for students interested in graduate work in economics, and a solid foundation for the graduate study of business, public policy, and the law.

Major in Economics

Requires 10 course credits.

ECON 103	Economic Principles and Problems	1
Three Intermediate theory courses:		
ECON 257	Intermediate Macroeconomic	1
ECON 258	Intermediate Political Economy	1
ECON 259	Intermediate Mathematical Microeconomics	1
Economic electives, at least three; one at the 300-level or above		
Culminating Experience		
Economics electives at the 200, 300 or 400-level		
Major related courses: ¹		
MATH 192 or MATH 201	Topics in Calculus ² Calculus I	1
MATH 216	Statistics I ³	1

¹ Should be taken during the first or second year of study as several economics electives require these courses as prerequisites.

² Or another course to fulfill the calculus requirement.

³ Or another course to fulfill the statistics requirement.

Although economics courses are offered at both the 200 and 300-levels, economics majors must take at least one economics elective at the 300-level. Many economics majors choose to take more than one 300-level elective to fulfill their three-elective requirement. Majors are encouraged to consult with their academic adviser when selecting economics electives.

Students can transfer as many as two off-campus course credits to meet the requirements of the economics major. This restriction does not apply to transfer students. In addition, all economics courses taught by, or sponsored by Bucknell faculty members in the Bucknell *en España*, Bucknell *en France*, Bucknell in Barbados, or Bucknell in London programs will count toward the major and the minor. With the exception of these Bucknell-sponsored programs, courses taken off campus normally may not substitute for 300-level courses. The department chair may allow an exception if provided with clear information about the character and quality of off-campus courses, and if these courses adequately substitute for material that would be taught on campus.

Each academic year, the department will solicit applications from all potential majors. Criteria for acceptance to the program will emphasize academic achievement in economics and mathematics courses.

Students interested in pursuing postgraduate work in economics upon graduation from Bucknell are strongly encouraged to take the following mathematics courses:

MATH 201	Calculus I	1
MATH 202	Calculus II	1
MATH 211	Calculus III	1
MATH 216	Statistics I	1
MATH 303	Probability	1
MATH 304	Statistical Inference Theory	1

Other mathematics courses (for example, MATH 245 Linear Algebra; MATH 212 Differential Equations) are also helpful. In addition, students preparing for graduate study in economics should strongly consider taking ECON 341 Econometrics. Please see the economics department graduate school adviser as early in your degree program as possible for additional information and guidance.

The economics major contributes the College Core Curriculum of the College of Arts and Sciences by introducing three intellectual skills required of all majors. *Information literacy* is introduced in ECON 259 Intermediate Mathematical Microeconomics and ECON 257 Intermediate Macroeconomic, where students will be introduced to microeconomic and macroeconomic data and/or information sources used to perform economic analysis. In statistics (MATH 216 Statistics I), a co-requisite course for the major, students will learn about statistical inference, another key component of information literacy in economics. *Writing within the curriculum* will be introduced in ECON 258 Intermediate Political Economy. Students in this course will be given repeated opportunities to write about economics in a clear and cohesive manner. Finally, *speaking* will be introduced in the senior seminar. In each seminar, students will give a formal presentation and also will write a research paper in economics, which will require them to reference peer-reviewed scholarship.

The senior seminar serves as the Culminating Experience for the economics major. All senior seminars require intermediate theory courses as prerequisites and serve to culminate the accumulated body of economic knowledge and experience. Some senior seminars will also build upon calculus and statistics. The Culminating Experience requirement may also be fulfilled if a student completes an Honors Thesis.

Additional Courses Accepted for Economics Credit

GEOG 209	Economic Geography	1
ANTH 266	Money, Markets and Magic	1
HIST 225	Topics in American Political and Economic History (History of Capitalism)	1

Economics Minor

ECON 103	Economic Principles and Problems	1
Select one of the following:		1
ECON 257	Intermediate Macroeconomic	
or ECON 258	Intermediate Political Economy	
or ECON 259	Intermediate Mathematical Microeconomics	
Three economics electives (200-level or above with the exception of ECON 256)		3

Students in other off-campus programs may count one off-campus course toward the minor.

- Offer a Bachelor of Arts major in economics that exposes students to theories and applications associated with microeconomics, macroeconomics, heterodox political economy to help students to understand the many complexities of our economy
- Spread economic literacy among non-majoring undergraduate students
- Contribute to the goals and objectives of the College of Arts and Sciences

Education (EDUC)

Faculty

Professors: Sue Ellen Henry, Katharyn E. K. Nottis

Associate Professors: Abra N. Feuerstein, Amy Golightly, Lynn Hoffman, Sarah K. MacKenzie-Dawson, Robert M. Midkiff Jr. (Associate Provost), Joseph L. Murray, Lori A. Smolleck (Chair)

Assistant Professors: Ramona Fruja, Richard Henne-Ochoa, Lakeisha Meyer

Visiting Assistant Professor: Jiayi Wu

The Education Department works to prepare students for prominent roles as public intellectuals. We seek to cultivate citizens who are broadly educated, thoughtful, and committed to lifelong learning as a means to better themselves and society. Our blend of social sciences and professional preparation coursework is theoretically grounded and presents educational issues within social contexts that are diverse and evolving. Graduates will use their capacity for self-reflection and ethical reasoning to respond creatively to challenges encountered in their personal and professional lives.

The department offers both the Bachelor of Arts and Bachelor of Science in education. A major in education within either degree program can prepare students to pursue careers in teaching. It also provides the necessary background and preparation for graduate work in an array of disciplines, and for careers in law, business, and public service. Students interested in secondary or K-12 certification seek a degree in the discipline they wish to teach and may either pursue certification only or a dual major in education and the discipline.

The Bachelor of Arts degree with a major in education is designed for students who are interested in studying the process and structure of education and schooling, but who are not necessarily interested in pursuing a career in teaching. Students who want to obtain certification in early childhood education should pursue the Bachelor of Science in education degree. Students interested in secondary certification normally seek a degree in the discipline they wish to teach and may either pursue certification only or a dual major in education and the discipline.

Bachelor of Arts in Education

The field of education is best understood as an interdisciplinary social science that integrates multiple perspectives on human learning and development, processes that occur across the lifespan and in widely varied contexts. The Bachelor of Arts in education is designed for students who are interested in studying education as an academic field – the process and structure of education in both traditional schooling situations as well as other educational arenas of public life – but who are not necessarily interested in a career in public school teaching. Central to the Bachelor of Arts is the examination of the relationship between educational institutions (broadly conceived) and society, as well as deep exploration of the nature of learning and learners. The program is designed to prepare students to make original contributions to knowledge in the field, through research and creative applications of theory.

The Bachelor of Arts **major** in education requires eight (8) courses which fall into two categories. First, all students must complete a core set of four (4) requirements:

EDUC 101	Social Foundation of Education	1
EDUC 201	Educational Psychology	1
EDUC 362 or EDUC 364	Quantitative Research Methods Qualitative Research Methods	1
Select one of the following		
EDUC 315	Senior Thesis	1
EDUC 425	Internship in Education	1

Second, all students must complete four (4) additional courses in one of the following concentrations. Electives, where specified, may be taken abroad in consultation with the student's adviser. Students develop competency in speaking, writing, and information literacy through the completion of small group and individual presentations and research projects within core and concentration courses. To fulfill their Culminating Experience requirement, students either write and defend an undergraduate thesis (EDUC 315 Senior Thesis), or complete an internship experience (EDUC 425 Internship in Education) and document their work via an electronic portfolio.

College Student Personnel

The college student personnel concentration is designed for those who have an interest in student affairs administration in higher education. Student affairs administration is a broad field that includes such areas of specialization as residence life, student activities, admissions, and career services, just to name a few. Bucknell is unique in offering an undergraduate course sequence that introduces students to the foundational literature of the field prior to enrollment in graduate school. This concentration prepares graduates for advanced coursework in the field and serves as a foundation for professional practice in graduate assistantships and other entry-level positions. The recommended academic credential for those aspiring to long-term careers in the field is the master's degree in college student personnel.

The College Student Personnel concentration requires:

EDUC 312 or EDUC 319	Counseling Techniques Group Processes	1
EDUC 350	Higher Education in the United States	1
EDUC 351	Learning and Development in Postsecondary Education	1
EDUC 398	Student Affairs Programs in Higher Education	1

Contemporary Landscapes of Education

In light of the shifting demographics and changes in the context of learning, this concentration is designed for students who are interested in studying entrepreneurial innovations in education such as charter schools, after-school programs, cyber-schools, home schooling, and alternative teacher preparation programs. This concentration aims to prepare students to think critically about the ways in which these alternative educational programs influence education in U.S. society, and supports those who may wish to work within these types of settings.

The Contemporary Landscapes of Education concentration requires:

EDUC 332	Remaking Public Education	1
EDUC 308 or EDUC 320	Advanced Educational Foundations: Democracy and Education Ethics in Education	1
EDUC 318 or EDUC 327	Multiculturalism and Education Immigrant Youth in U.S. Society	1
Elective (selected in consultation with student's adviser)		1

Educational Research

The educational research concentration is designed for those who have an interest in the empirical exploration of issues central to education. This concentration prepares graduates in quantitative, qualitative and mixed research methodologies in a range of contexts relevant to education within and outside of school. Graduates with this concentration may be interested in pursuing graduate study in educational psychology, cognitive psychology, or in a specialty area within education, or they may be interested in working for educational research organizations, public policy organizations, or organizations that are generally concerned with the improvement of education.

The Educational Research concentration requires:

EDUC 305	Advanced Educational Psychology	1
EDUC 328	Tests and Measurement	1
EDUC 362	Quantitative Research Methods (whichever is not taken in the core courses)	1
or EDUC 364	Qualitative Research Methods	
Elective (selected in consultation with the student's adviser)		1

Human Diversity

The human diversity concentration is designed for students interested in examining the relationships between U.S. demographic change and learners in schools and in non-traditional educational settings. This study is both historically and sociologically grounded, with significant attention to identity development and interactions with social institutions across a range of human experience. Those pursuing this concentration may be interested in graduate school in social foundations of education, educational policy, or a related subject area, or may be interested in entering work environments that focus on children's issues, children and the media, educational inequality, and educational reform.

The Human Diversity concentration requires:

EDUC 308	Advanced Educational Foundations: Democracy and Education	1
EDUC 318	Multiculturalism and Education	1
EDUC 290	Gender Issues in Education	1
or EDUC 322	Psychology of the Exceptional Child	
Elective (selected in consultation with the student's adviser)		1

Learning and Development across the Lifespan

This concentration is designed for students who have an interest in examining the ways in which individuals change over the course of the lifespan. Attention is focused on implications for teaching and learning, taking into account cognitive, psychosocial, and physical changes that occur over time. Students also gain exposure to a variety of theoretical orientations toward teaching and learning, including cognitive, behavioral, social, constructivist, and humanistic perspectives. Graduates with this concentration may be interested in working within educational and social service organizations that target the needs of specific age groups or pursuing graduate education in corresponding areas of specialization.

The Learning and Development across the Lifespan concentration requires:

EDUC 323	Education of Young Children	1
EDUC 334	Later Childhood and Adolescence	1
EDUC 351	Learning and Development in Postsecondary Education	1
Elective (selected in consultation with the student's adviser)		1

Support Services for Children and Adolescents

The support services concentration is designed for those who seek to foster the academic, emotional, and behavioral development of children and adolescents. Emphasis is on theoretical knowledge and practical applications of this knowledge. Those pursuing this concentration will develop intervention skills, such as counseling, consultation, applied behavior analysis, and collaboration. Graduates may be interested in entering work environments such as behavioral health or correctional facilities, social service agencies, and school support services. This concentration also prepares students to enter graduate school in the fields of school psychology, applied behavior analysis, and school counseling.

The Support Services concentration requires:

EDUC 312	Counseling Techniques	1
EDUC 334	Later Childhood and Adolescence	1
or EDUC 335	Child & Adolescent Development	
EDUC 347	Family, School, and Community Partnerships	1
Elective (selected in consultation with the student's adviser)		1

Bachelor of Science in Education

The Bachelor of Science with a major in early childhood education (Pre-K-grade 4) is designed for students who have clearly defined professional interests in the field of education and who desire to pursue a career in early childhood education, with certification in grades pre-K-4. The degree requires:

EDUC 101	Social Foundation of Education	1
EDUC 201	Educational Psychology	1
EDUC 230	Foundations of Classroom Assessment	1
EDUC 235	Integrated Arts in Learning	1
EDUC 323	Education of Young Children	1
EDUC 341	Early Literacy	1
EDUC 342	Differentiation and Diversity in Education	1
EDUC 343	Culture and Community	1
EDUC 344	Science as Inquiry	1
EDUC 346	Literacy Across Contexts	1
EDUC 347	Family, School, and Community Partnerships	1
EDUC 349	Student Teaching: Elementary	3
EDUC 449	Professional Seminar in Elementary Education	1

Students develop competency in speaking, writing, and information literacy through small group and individual presentations, research projects, debates, and the creation and presentation of unit and lesson plans within required courses. Candidates' Culminating Experience, the 12-week student teaching semester (EDUC 349 Student Teaching: Elementary and EDUC 449 Professional Seminar in Elementary Education), includes extensive unit research and lesson planning, implementation, and presentation, along with the completion of written assignments pertinent to their experience. In addition, students develop and present electronic program portfolios, further demonstrating their technological expertise.

Additional Certification Requirements

Students seeking certification in early childhood education (Pre-K-4) are also required to take the following courses:

MATH 117	Introduction to Mathematical Thought	1
MATH 118	Elementary Geometry and Statistics	1
ENLS 218	Studies in Children's Literature	1
or ENLS 220	Young Adult Fiction	
PSYC 207	Developmental Psychology	1

Additional requirements ³

² These are preferred courses to fulfill English literature requirement.

³ Other certification requirements are listed on the education department website (bucknell.edu/education). Requirements may change as mandated by the legislature of the Commonwealth of Pennsylvania.

Secondary Education and Teaching Certification

The following list shows the secondary and K-12 certifications offered by the department. Students seeking these certifications also must complete the requirements for the Bachelor of Science or Bachelor of Arts in the discipline listed after the certification area.

Certification Area – Required Major

- Art (K-12) – Art
- Biology (7-12) – Biology
- Chemistry (7-12) – Chemistry
- Earth and Space Science (7-12) – Geology
- English (7-12) – English
- Foreign Language (K-12)
- French – French
- German – German
- Latin – Classics
- Spanish – Spanish
- General Science (7-12)⁴
- Mathematics (7-12) – Mathematics

- Music (K-12) – Music
- Physics (7-12) – Physics
- Social Studies (7-12) – Anthropology, Economics, Geography, History, Political Science, Psychology, or Sociology

⁴ Required additional certification in one of the following areas: Biology, Chemistry, Earth and Space Science, or Physics

Required education courses for secondary and K-12 teaching certification include:

EDUC 101	Social Foundation of Education	1
EDUC 201	Educational Psychology	1
EDUC 230	Foundations of Classroom Assessment	1
EDUC 240	Literacy and Learning in the Diverse Classroom	1
EDUC 334	Later Childhood and Adolescence	1
or EDUC 335	Child & Adolescent Development	
EDUC 339	Inclusive Practices	1
Methods course in content area		1
EDUC 359 & EDUC 459	Student Teaching: Secondary and Professional Seminar in Secondary Education ⁵	4

⁵ Courses are included in semester of student teaching requirement. Courses can be taken only if the student demonstrates that all requirements leading to a recommendation for certification have been or soon will be completed. Students who cannot or choose not to take courses should complete the B.A. or B.S. in the content area or consult with the chair of the education department to select appropriate courses to complete a B.A. in education.

Specific requirements may change as mandated by the legislature of the Commonwealth of Pennsylvania. Lists of courses acceptable for meeting specific requirements are available at the departmental office and website.

ESL Program Specialist

Students completing teaching certification programs in elementary education, early childhood education, English, math, or world language can obtain an additional certification as an ESL Program Specialist. A list of required courses can be found on the department website. Sixty hours of field experience are required for this additional certification.

General Requirements for Teaching Certification

The department of education provides teacher preparation programs which lead to certification in the Commonwealth of Pennsylvania in early childhood education, and selected content areas in secondary education. Students can prepare to become certified teachers by enrolling in a Bachelor of Science in education degree program or by taking a Bachelor of Arts or Bachelor of Science degree in the content area in which they plan to teach. Independent of the degree program into which a student is admitted to the University or the area in which a student may wish to teach, a student also must be formally admitted to the Pre-Certification, Initial Preparation Program (Pre-CIP). Admission to Pre-CIP can occur after the student has completed two courses in mathematics⁶, one course in British or American literature and one in composition⁶, 16 Bucknell University courses or their equivalent, and achieved for the three preceding semesters an overall grade point average of 3.0 (appeals to this requirement should be made to the chair of the department of education). Candidates must also pass the PAPA (Pre-service Academic Performance Assessment) tests in reading, writing, and math. In lieu of the PAPA tests, candidates may submit proof of earning superior scores on either the Scholastic Achievement Test (SAT) or American College Test (ACT) Plus Writing. See department website for scores. Application to Pre-CIP is normally made when the students begin considering a career in the field of education and are notified of their acceptance or rejection at the end of their sophomore year.

The Commonwealth of Pennsylvania generally requires an overall grade point average of 3.0 upon completion of the program prior to recommendation for certification to teach. Specific requirements leading to a recommendation in each teaching area are available at the education department website. It is the responsibility of the student to examine these programs in consultation with a member of the education department. Although members of the department will advise students concerning course selection, the student is responsible for choosing those courses and experiences that meet certification program requirements.

In addition to completing an approved program and successfully demonstrating the prescribed role competencies, the prospective teacher must be a “person of good moral character” who “possesses those personal qualities and professional knowledge and skills which warrant issuance of the requested certificate.” It is the student’s responsibility to satisfy these criteria. Students should note that prior to placement in student teaching or any other field experience, they will be required to submit results of a child abuse clearance, criminal background check and fingerprinting pursuant to requirements of the Pennsylvania Department of Education. Results must indicate that there are no criminal or child abuse records.

In addition to coursework, students must complete and submit scores from required Praxis or PECT examinations to the department of education at Bucknell. Specific examinations required for each area of certification vary. Although members of the department will advise students concerning examinations, the student is responsible for taking those examinations that meet certification program requirements.

After completing the approved program of courses, the student submits an application for a Pennsylvania teaching certificate through the online Teacher Information Management System (TIMS) not earlier than the first day of the month of graduation. Following a review of the student's program, the student may be recommended for certification by the designated officer at Bucknell. As noted above, the student must pass all the competency tests required by the Commonwealth of Pennsylvania for the desired certificate.

Students who desire certification in states other than Pennsylvania must understand that teacher certification is governed by state law and that each state has different requirements. Obtaining a Pennsylvania teaching certificate, by completing an approved program and meeting all other requirements, does not ensure that students will be certified in another state. Although members of the Bucknell education department will assist students in obtaining information concerning certification in other states, as well as Pennsylvania, it is the student's responsibility to obtain current information and to meet all the certification requirements of any state.

⁶ Exceptions to these requirements will be posted on the education department website: bucknell.edu/education

Student Teaching

The education department is responsible for the professional preparation of future teachers. To ensure that future professionals are competent, the privilege of taking the course in student teaching is restricted to students whose cumulative grade point average through the junior year is 3.0 or better.

Student Teaching Courses

Select one of the following:

4

EDUC 349 & EDUC 449	Student Teaching: Elementary and Professional Seminar in Elementary Education
EDUC 359 & EDUC 459	Student Teaching: Secondary and Professional Seminar in Secondary Education

Additional requirements for all student teachers are good health, character, personality, and acceptable spoken and written English. Placement in student teaching is contingent upon acceptance of the student by a cooperating teacher in an elementary or secondary school that has been approved by the Bucknell education department. Students must complete an application for student teaching **by November 1 of the junior year**. This application is to be made from the education department website. In addition, students are responsible for obtaining transportation to the placement. Also, the education department reserves the right to specify the semester during which a student is permitted to enroll in student teaching.

All students who are interested in student teaching must apply to the Pre-CIP program no later than the first semester of the junior year.

Methods Courses Offered by Other Departments

LING 241	Teaching Foreign Languages	1
MATH 207	The Teaching of Mathematics in Secondary Schools	1
ENLS 297	The Teaching of English	1

Minor in Education

The **minor** in education consists of five courses chosen from among the departmental offerings. The student must take either EDUC 101 Social Foundation of Education or EDUC 201 Educational Psychology and is strongly encouraged to choose four additional courses within a particular area of specialization. Such areas of specialization include autism studies, college student personnel, contemporary landscapes of education, educational research, human diversity, learning and development across the lifespan, and support services for children and adolescents. Recommended clusters of courses for particular areas of specialization are available on the departmental web page.

Education Departmental Goals

Informed by a Liberal Arts perspective, students will:

1. Analyze educational policy and practice. Develop reasoning processes to connect theory and practice.
2. Engage in professional and ethical interactions with others.
3. Apply theory, question and research to promote learning and healthy development for all children and adolescents.
4. Perceive themselves as life-long learners and potential leaders who are informed advocates for children and adolescents in diverse community and educational settings.
5. Use ongoing self-reflection to explore one's personal and professional identity in relation to educational issues.

Majors in Teaching Certification Programs (B.S. Early Childhood Education, Pre-K-4 and Secondary Certification Programs) will be able to:

1. Understand how children learn and develop. (1, 2, 4, 6, 7, 8)
2. Understand the central concepts, tools of inquiry, and structures of the discipline(s) to be taught. (1, 2, 4, 6, 7, 8)

3. Understand how students differ in their approaches to learning. (1, 4)
4. Understand standards for integrity, ethical behavior, and professional behavior. (5)
5. Create learning opportunities and experiences that support students' intellectual, social, and personal development. (1, 2, 4, 7)
6. Use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner. (4)
7. Use individual and group motivational strategies to create learning environments that encourage positive social interaction, active engagement in learning and self-motivation. (1, 2, 4)
8. Create and implement instructional opportunities that are adapted to diverse learners. (1, 2, 3, 4, 6, 7)
9. Behave in a professional manner characterized by collaboration and support for school and classroom policies. (7)
10. Value and cultivate relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being. (3, 4, 5, 7)
11. Value the importance of being reflective practitioners who continually evaluate the effects of their choices and actions on others, including students, parents, and other professionals in the learning community. (5, 8)
12. Avail themselves of opportunities to grow professionally. (8)

Majors in the B.A. Program will be able to:

1. Describe the process and structure of educational organizations. (3, 6)
2. Understand how humans learn and develop. (1, 4, 5)
3. Understand the core concepts and tools of inquiry for evaluating and producing educational research. (2)
4. Become familiar with diverse applications of educational theory. (1, 2, 3, 4, 5, 6, 7)
5. Demonstrate capacity for self-reflection and ethnical reasoning. (7)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

English (ENGL)

Faculty

Professors: Paula Closson Buck, Gregory J. H. Clingham, Michael Drexler, Carmen Gillespie, Elena Machado Sáez, Shara McCallum, Ghislaine G. McDayter, Sandra K. Morris, Harriet R. Pollack, John S. Rickard, Harold Schweizer, Anthony F. Stewart, Virginia Zimmerman

Associate Professors: Christopher Camuto, Glynis Carr, Raphael Dalleo, Eric S. Faden, Jean Peterson, Meenakshi Ponnuswami, Robert A. Rosenberg, Alfred K. Siewers (Chair), G.C. Waldrep III

Assistant Professors: Ken Eisenstein, Mai-Linh Hong, Katarzyna Lecky

Visiting Assistant Professors: Erica Delsandro, Joseph Scapellato

Lecturers: Rebecca Meyers, Daniel A. Nienhuis

- Creative Writing (p. 68)
- Film and Media Studies (p. 69)
- Literary Studies (p. 70)

From Beowulf to Toni Morrison, from eco-poetry to Hitchcock films, the texts and images that we read help us to find wisdom across cultures, communicate what we know, initiate change, and create the images and texts of the future.

To those ends, Bucknell's English Department offers three majors and accompanying minors: Creative Writing, Film/Media Studies, and Literary Studies. Students may also double-major or triple-major across programs in English, and in other fields.

In addition, English partners with the Stadler Center for Poetry, the Campus Theatre, the Griot Institute for Africana Studies, the Film/Media Production Studio, and the Bucknell University Press, to provide a wide range of opportunities for students in its majors and courses.

Majors are well prepared for careers in publishing, film and media, journalism, law, management, and other fields. They are novelists, travel writers, literary agents, filmmakers, public relations professionals, doctors, and educators. They work in business, arts administration, digital humanities, publishing, advertising, human relations, across both profit and nonprofit sectors. They also are well prepared for graduate school, and possess four of the top characteristics needed in successful careers everywhere: critical thinking, skillful communication, empathy, and creativity.

Learning Goals For English:

Majors in English will be able to:

Analyze a variety of texts and respond to their aesthetic and cultural value. (1, 6, 8, 9)

Respond to a wide range of literary and filmic texts and understand their historical and cultural contexts. (1, 3, 9)

Articulate ideas effectively in discussion and in oral presentations. (6, 7)

Write gracefully, coherently, imaginatively, and persuasively, with proper attention to effective organization. (7)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Creative Writing (ENCW)

The Creative Writing Program offers students the opportunity to focus their study on the creation of literary texts through workshops in poetry, fiction, and creative nonfiction. Immersed in the study of the literary tradition, students will practice craft and technique, develop voice and style, and gain exposure to a wide and diverse set of voices in contemporary literature as inspiration for their own work. The Program partners with the Stadler Center for Poetry to provide a diverse reading series and a vibrant slate of writers in residence, as well as internships on campus, thereby enhancing connections with living writers and enabling students to apply their skills beyond the classroom.

All Creative Writing courses involve the study of literary writing with a strong emphasis on contemporary texts. Literary Studies courses deepen the literary context for Creative Writing Majors. Individual conferences and group workshops support the writing process, at the same time teaching techniques of writing in prose and in poetry. Workshops give students frequent practice in articulating their critical ideas in relation to the work of their peers. Seminar courses (in Literary Studies and in Creative Writing) build oral communication skills through discussion leadership and/or formal presentation to the class; many Creative Writing courses require performances in the form of students reading from their own work. Students gain information literacy in Creative Writing courses through required attendance at readings, exhibitions, and performances. They navigate the landscape of the current literary world through the library and online as a way of gathering information on published writers and of submitting their own work for publication. They blog and participate in online discussion boards. They learn to conduct informal writerly research on a wide variety of subjects. In addition, they fine-tune critical research skills in the required seminar course in Literary Studies.

Students electing the Creative Writing major will take a minimum of nine courses, as follows:

One 100-level or 200-level Creative Writing course	1
Three 200-level Creative Writing courses (at least one in poetry and one in prose)	3
Two 300-level Creative Writing courses	2
Three Literary Studies courses at the level of 198 or above, one of which must be a 300-level seminar.	3
An approved Culminating Experience ¹	

At least one of the six Creative Writing courses must be in poetry, and at least one must be in prose. One of the nine courses in the major must be a course designated as satisfying a Racial and Ethnic Diversity requirement. ²

Footnotes

¹ Requires seniors majoring in creative writing to attend six appropriate events during one senior semester selected from a list designated by the Department as acceptable. Students will submit a 250-word response to their advisers after each event. Participation in a Program-designated visiting writer's workshop or master class, when available, is another way to satisfy the requirement. Students may petition the Creative Writing Program Director if they wish to suggest an alternative project (such as a departmental or honors thesis). Advisers will submit a pass/fail grade for the Culminating Experience.

² For a current list of these courses, please see the English Department website.

In all of the Creative Writing courses, students will synthesize conceptual, formal, aesthetic, and technical elements resulting in the creation of works of art.

The Creative Writing Minor will consist of five courses distributed as follows:

Creative Writing Minor

One 100-level or 200-level Creative Writing Course	1
One (additional) 200-level Creative Writing course	1
One 300-level Creative Writing seminar	1
Two Literary Studies courses (at the level of 198 or above)	2

Film and Media Studies (ENFS)

Film and Media have become major cultural forms in the 21st century and their study is now an important part of a modern humanities education. The Film/Media Studies major teaches students to critically engage, understand, and produce moving images. Courses challenge students to think historically, theoretically, and analytically about a wide range of audiovisual media including cinema, radio, television, and new media. The Film/Media Studies major also encourages students to apply their knowledge by producing creative work in media production courses. Film/Media Studies is partnered with Lewisburg's Campus Theatre for classroom screenings and also uses the Marts Film/Media Production Studio for production classes.

Courses in the Film/Media Studies Major provide disciplinary depth through:

1. Skills in writing. Students majoring in Film/Media Studies perform significant written analysis of film and media texts.
2. Skills in formal presentation. Several courses in Film/Media Studies require dynamic and persuasive oral presentations. These courses cultivate presentation skills through practicing presentational strategies and integrating multimedia content to support student ideas and arguments.
3. Information literacy. Film/Media majors learn how to research and evaluate primary and secondary sources through written and visual work plus in-class discussion.

Students taking the major are encouraged to start with ENFS 130 Introduction to Film/Media Studies. Beyond ENFS 130, the major requires a minimum of nine additional courses as described below.

Core classes:

ENFS 130	Introduction to Film/Media Studies	1
ENLS 198 or ENLS 300	Ways of Reading Seminar in Literary Theory and Criticism	1
ENLS 199	Survey: English and American Literature	1
English Elective: any Literary Studies or Creative Writing course offered by the English Department at the 200-level or above		1
ENFS 242	Film and Media History	1
ENFS 337	Seminar in Film Theory	1

Students choose two courses from each group below:

Group 1:

ENFS 234	National Cinemas	1
ENFS 235	Gender and Film	1
ENFS 238	Special Topics in Film Studies	1
ENFS 245	Televisual Culture	1
ENFS 246	Documentary & Avant-Garde Cinema	1
ENFS 247	Film/Media Genres and Auteurs	1
ENFS 338	Special Topics in Film/Media Studies	1

Group 2:

ENCW 205	Screenwriting Workshop	1
ENFS 253	Introduction to Film/Media Production	1
ENFS 254	Film Exhibition and Programming	1
ENFS 256	Writing about Film/Media	1
ENFS 335	Special Topics in Film/Media Production	1
ENFS 339	Film/Video Production	1

An approved Culminating Experience.¹

¹ Seniors majoring in Film/Media Studies have the following options for fulfilling the Culminating Experience requirement:

- Write an Honors Thesis with the approval of their adviser; upon handing in a satisfactory thesis, the student's adviser will submit a pass/fail grade for this Culminating Experience.
- In a single semester (fall preferably) students may attend six events as part of the Tuesday evening Film/Media Series at The Campus Theatre. Students will submit a 250-word report for each event and post it to the designated CE blog within three days of attending. Upon completion, advisers will submit a pass/fail grade for this Culminating Experience. Other related events may be attended with your adviser's permission;
- Or in the spring semester, students may participate in the Film/Media Production Challenge. Students must hand in completed projects to their adviser that fulfill the contest's parameters before the deadline. Their adviser will then submit a pass/fail grade for the Culminating Experience.

Film and Media have become major cultural forms in the 21st century and their study is now an important part of a modern humanities education. The Film/Media Studies minor teaches students to critically engage with, understand, and produce moving images. Courses challenge students to think historically, theoretically, and analytically about a wide range of audiovisual media including cinema, radio, television, and new media. The Film/Media Studies minor also encourages students to apply their knowledge by producing creative work in media production courses. Film/Media Studies is partnered with the Campus Theatre for classroom screenings and also uses the Marts Film/Media Production Studio for production classes.

The minor in Film/Media Studies requires five courses:

ENFS 130	Introduction to Film/Media Studies	1
Three 200-level courses in Film/Media Studies with at least one course from Group 1 and Group 2 below.		3
One 300-level seminar in Film/Media Studies from Group 3 below.		1

Group 1:

ENFS 234	National Cinemas	1
ENFS 235	Gender and Film	1
ENFS 238	Special Topics in Film Studies	1
ENFS 245	Televisual Culture	1
ENFS 246	Documentary & Avant-Garde Cinema	1
ENFS 247	Film/Media Genres and Auteurs	1

Group 2:

ENFS 253	Introduction to Film/Media Production	1
ENCW 205	Screenwriting Workshop	1
ENFS 254	Film Exhibition and Programming	1
ENFS 256	Writing about Film/Media	1

Students may also propose a relevant course from outside the Film/Media Studies Program to fulfill the 200-level course requirement. Students should consult with the minor's coordinator for course approvals.

Group 3:

ENFS 335	Special Topics in Film/Media Production	1
ENFS 337	Seminar in Film Theory	1
ENFS 338	Special Topics in Film/Media Studies	1
ENFS 339	Film/Video Production	1

Literary Studies (ENLS)

Literary Studies offers students courses in global English literatures from medieval poetry to postmodern theory, supporting their growth as critical writers and readers with skills in literary rhetoric and poetics, and with empathy for varied cultures. It fosters a range of student research, honors projects and internships, aimed at developing skills in critical thinking and writing, and rhetorical and narrative analysis, including both experiential and logical understanding of how narratives shape our lives, and how we shape cultural narratives.

The study of a breadth of world literatures in English, across centuries, enables students to develop a deeper understanding of human experience and their own place in larger contexts of life. Literary Studies majors and minors also engage with the Program's affiliated centers – the Bucknell University Press and the Griot Institute for Africana Studies – and with affiliated initiatives such as digital humanities and environmental humanities studies at Bucknell.

The Literary Studies Major offers students, through the disciplinary depth of its coursework: (a) focus on writing as an evidence-based and public rhetorical craft, drawing on models from diverse critical and persuasive traditions; (b) practice and instruction in presenting work through public speaking in class or conference presentations; and (c) instruction and practice in information literacy through the developing field of digital humanities (including blogging, online research, and analysis of digital sources) and in more traditional library skills. Its emphasis on seminar work supports development of these skills, which are highlighted in both the general Major and in its optional Race and Literature Concentration.

Literary Studies Major

The minimum requirement for a major in Literary Studies is nine courses. Foundation Seminars or 100-level courses other than ENLS 199 Survey of English and American Literature will not satisfy major requirements.

The Literary Studies Major and its Concentration in Race and Literature (details of which are further below) share a core of three requirements: the Survey in English and American Literature, a pre-1700 course requirement, and coursework on Race/Ethnicity in Literature. Topics for other courses

are electives in the general Major and more specific in the Concentration. Both require three seminars. The specific requirements for the general Literary Studies Major follow in the table below, with those for the Concentration listed after.

ENLS 199	Survey: English and American Literature ¹	1
	One Race/Ethnic Literature Course at the 200-level or above. ²	1
	One Pre-1700 Literature Course at the 200-level or above. ³	1
	At least four additional courses in Literary Studies at the 200-level or above.	4
	Three of the above courses must be seminars. ⁴	
	Additional electives within the English Department at the 200-level or above to reach nine courses total. ⁵	2
	Culminating Experience. ⁶	
If a student would like to double major in Literary Studies and Film/Media Studies within the English Department, an additional approved course must be substituted for ENLS 199, to be approved by the student's adviser in consultation with the Department Chair.		

- ¹ Literary Studies majors are strongly encouraged to take this course as early in their program of coursework as possible.
- ² For a current listing of these courses, please see the English Department website.
- ³ For a current listing of these courses, please see the English Department website.
- ⁴ ENLS 319 Individual Projects in Literary Studies will not satisfy the seminar requirement.
- ⁵ May include additional seminar courses.
- ⁶ Requires seniors majoring in Literary Studies to attend six appropriate events during one senior semester selected from a list designated by the department as acceptable. Students will submit a 250-word response to their advisers after each event, and advisers will submit a pass/fail grade for this Culminating Experience. Students may petition the Program Director if they wish to suggest an alternative project as their Culminating Experience, such as an Honors, or Department, thesis.

Concentration in Race and Literature

The Literary Studies major includes a concentration in Race and Literature as an option that enables students to focus on African American, Latino/a, Caribbean, Asian American, and Native/American Indian/Indigenous literatures and critical theories of race.

The Race and Literature Concentration is designed to highlight curricular offerings in English that examine the social phenomenon of race as it is expressed, queried, and subverted in literature. Its primary focus will be on minority and ethnic literatures of North America, with particular interest in the centrality of race issues in American culture, but will also extend to global literatures and theoretical models involving issues of race. The goal of the concentration is to enable students to develop a coherent focus in their studies on theoretical models regarding race as applied to literature. Overall, however, it as a concentration will share the existing philosophy and learning goals of the major in Literary Studies, of which it will form a part. Research writing, presentations, and applications of digital humanities (including digital storytelling) will all be important parts of the concentration, which also will draw on resources and programs of the English-affiliated Griot Center for Africana Studies.

ENLS 199	Survey: English and American Literature ¹	1
ENLS 203	Introduction to Literary Race Studies	1
	A pre-1700 course, or an 18th-century course relevant to the concentration's subject matter, at the 200-level or above.	1
	Two 200-level courses in African American; Latino/a; Native American/Indigenous/American Indian; Asian American; Caribbean literatures; and/or comparative studies of multiple racial traditions selected in conversation with adviser.	2
	Three seminars in Literary Studies, of which at least two must have Race and Literature as their primary focus (African American; Latino/a; Native American/Indigenous/American Indian; Asian American; Caribbean literatures; and/or comparative studies of multiple racial traditions). ²	3
	One elective at the 200-level or above in any program within the English Department.	1
	Culminating Experience. ³	

- ¹ Majors are strongly encouraged to take this course as early in their program of coursework as possible.
- ² ENLS 319 Individual Projects in Literary Studies will not satisfy the seminar requirement.
- ³ Requires senior majors to attend six appropriate events during one senior semester selected from a list designated by the department as acceptable. Students submit a 250-word response to their advisers after each event, and advisers will submit a pass/fail grade for this Culminating Experience. Students may petition the Program Director if they wish to suggest an alternative project as their Culminating Experience.

For a current listing of courses meeting the required topics for the concentration, please see the English Department website.

Literary Studies Minor

Literary Studies offers students courses in global English literatures from medieval poetry to postmodern theory, supporting their growth as critical writers with skills in literary rhetoric and poetics, and with empathy for varied cultures. It fosters a range of student research, honors

projects and internships, aimed at developing skills in critical thinking and writing, rhetorical and narrative analysis, as well as experiential and logical understanding of how narratives shape our lives, and how we shape cultural narratives. The study of a breadth of world literatures in English, across centuries, enables students to develop a deeper understanding of human experience and their own place in larger contexts of life. Literary Studies minors also can engage with the Program's affiliated centers, the Bucknell University Press and the Griot Institute for Africana Studies, and affiliated initiatives such as digital humanities and environmental humanities studies at Bucknell.

The English minor in Literary Studies consists of:

Five courses in Literary Studies above the 100-level (with the exception of ENLS 199 Survey: English and American Literature, which can count toward the minor).

One of the five courses must be a seminar at the 300-level (not counting ENLS 319, Individual Projects).

Students planning to minor in Literary Studies are strongly encouraged to meet with a professor in the English Department to construct a coherent minor that focuses on a particular area of study (for example, Race and Ethnic Studies, Dramatic Literature, Literary Theory, Medieval and Renaissance Literature, Women Writers, or Anglophone Literature).

Environmental Studies (ENST)

Faculty

Professor: Ben Marsh

Associate Professors: Matthew E. McTammany, Peter R. Wilshusen, Amanda Wooden (Director)

Assistant Professor: Andrew Stuhl

Visiting Assistant Professors: Nino Antadze, Anita E. Girvan

Coordinating Committee: Maria A. Antonaccio (environmental ethics), Kevin Gilmore (civil and environmental engineering), Duane A. Griffin (geography), Ben Marsh (geography), Molly M. McGuire (chemistry), Matthew E. McTammany (biology), Alfred K. Siewers (ecocriticism), Andrew Stuhl (environmental history), Jeffrey M. Trop (geology), Peter R. Wilshusen (environmental planning and policy), Amanda Wooden (politics and policy)

Environmental Studies is the interdisciplinary examination of how natural sciences, policy studies, social sciences, humanities, and engineering combine to inform the consideration of humanity's effects on the natural world. This program educates the student to appreciate the complexity of environmental issues and solve them by working with citizens and experts in many fields. With a major in Environmental Studies, students have the latitude to create a course theme in an area of specialization while they simultaneously develop a breadth of interdisciplinary and methodological knowledge in the environmental fields.

Specifically, the program has two major tracks: a Bachelor of Arts in Environmental Studies and a Bachelor of Arts in Environmental Science. Each requires the interdisciplinary study of environmental issues and an understanding of the complexity of the relationship between humanity and the environment, while they allow the student to concentrate his/her studies in a field of particular interest to that student. The B.A. in Environmental Studies is designed for those who want to develop core concentrations in the social sciences, policy and law, or the humanities, although a science concentration is also possible with this choice. The B.A. in Environmental Science is designed for students who want a concentrated knowledge of science as the core of their interdisciplinary environment education. **Environmental Science is a coordinate major and can only be declared as a second major by students also majoring in biology, chemistry, or geology.**

Most Environmental Studies majors benefit from studying abroad. Field-based programs – such as School for Field Studies or School for International Training – are especially appropriate for Environmental Studies and Environmental Science students.

Bachelor of Arts in Environmental Studies

An interdisciplinary Bachelor of Arts major in Environmental Studies is offered for the student with an abiding interest in the general environmental problems faced by humans, and with special concern for their humanistic, policy, and social sciences aspects. The B.A. in Environmental Studies is a strong, broad, liberal arts degree. It also is a preparation for one of the growing numbers of environmental careers in planning, business, non-profits, law, administration, or education.

The Bachelor of Arts in Environmental Studies major requires 10 courses distributed as follows:

ENST 201	Environmental Problems-Sustainable Futures	1
ENST 302	Environmental Research Design	1
GEOG 332 or ENST 208	Evolution, Ecology, and Human Impact Principles of Ecology and Evolution	1
or BIOL 208E	Principles of Ecology and Evolution	
GEOL 203	Physical/Environmental Geology ¹	1
Humanities core course (see Humanities list below) ²		1

Human-environmental systems science course (see Human-Environment Systems Science list below) ²	1
Three (3) environmental studies electives (see Electives list below) ²	3
ENST 411 Environmental Community Projects ³	1

¹ GEOL 250 Geology for Engineers may be substituted with permission.

² Clusters of courses with a common theme have been designed from lists A, B, and C that fulfill the above requirements while focusing on an area of Environmental Studies each student finds most interesting. See the Environmental Studies website for a full listing of these themes and their courses. All B.A. majors are expected to select a theme from this list, or consult with their academic adviser to design their own theme, by the fall of the third year.

³ Fulfills the Culminating Experience requirement. In this senior "clinic" course, students apply research methods and the broad perspectives gained in ENST courses in a group setting to a local environmental issue, thus culminating the major experience. Students will receive instruction in the other in-major components of the CCC (writing, speaking, and information literacy) as part of their major coursework.

List A: Humanities Courses

ENCW 210	Special Topic in Creative Writing	1
ENLS 120	Literature and the Environment	1
ENLS 340	Seminar in Early Literature to 1485	1
ENST 205	Green Utopias	1
ENST 206	Environmentalism and Its Discontents	1
ENST 207	American Environmental History	1
ENST 216	Preindustrial Environment	1
ENST 224	Visions of the Susquehanna	1
ENST 225	Susquehanna Country	1
ENST 227	Ecopoetics	1
ENST 236	Environmental Ethics	1
ENST 255	Environmental Injustice	1
PHIL 218	Ecology, Nature, and the Future	1
RELI 229	The Ethics of Consumption	1
RELI 230	End of Nature, Posthuman Future	1

List B: Human-Environment Systems Science Courses

ENST 211	Environmental Pollution and Control	1
ENST/ENGR 262	Introduction to Energy Resources	1
ENST/GEOG 234	Human Ecology	1
ENST/GEOG 345	Food and the Environment	1
GEOG 257	Global Environmental Change	1
GEOG 332	Evolution, Ecology, and Human Impact	1
GEOL 338	Applied Environmental Geomorphology	1
UNIV 200	Integrated Perspectives Course (Climate Change)	1

List C: Elective Courses

Electives include all courses with the ENST course designation as well as all courses on lists A and B. In addition, the courses listed below will also satisfy this requirement.

ANTH 260	Environmental Anthropology	1
CEEG 432	Sustainable Transportation Planning	1
ECON 231	Resources and the Environment	1
GEOL 117	Environmental Geohazards	1
GEOL 305	Introduction to Geochemistry	1
GEOL 316	Geomorphology	1
SOCI 220	Environmental Sociology	1

Bachelor of Arts in Environmental Science

The B.A. in Environmental Science is only available as a second major to students who major in biology, chemistry, or geology and therefore may be thought of as a means of adding an environmental concentration to a B.A. science degree. These three disciplines form the core of Environmental

Science, and consequently the first major ensures that students have sufficient depth of knowledge in a particular area of Environmental Science. Complementing the depth a student receives from the biology, chemistry, or geology major, the B.A. in Environmental Science provides breadth across the interdisciplinary field of Environmental Science. The major is not intended as – nor can it be declared as – a stand-alone course of study. No courses may be counted for both majors.

The B.A. in Environmental Science requires eight courses distributed as follows:

ENST 201	Environmental Problems-Sustainable Futures	1
Select two of the following: ⁴		2
BIOL 208	Principles of Ecology and Evolution	
CHEM 160	Introduction to Environmental Chemistry	
GEOL 203	Physical/Environmental Geology	
Select one of the following:		1
ENST 240	Sustainable Resource Management	
ENST 245	Environmental Policy and Politics	
ENST 254	Environmental Humanities	
RELI 226	Environmental Ethics	
Three science or engineering courses (see Environmental Science list below) ⁵		3
ENST 411	Environmental Community Projects ⁶	1

⁴ from the disciplines within the environmental sciences, but outside the student's primary major

⁵ These may not be from the same department as the student's primary major. Other courses not included in the regular catalog offerings (e.g. special topics courses) may be counted with permission.

⁶ Fulfills the Culminating Experience requirement. In this senior "clinic" course, students apply research methods and the broad perspectives gained in ENST courses in a group setting to a local environmental issue, thus culminating the major experience. Students will receive instruction in the other in-major components of the CCC (writing, speaking, and information literacy) as part of their major coursework.

List D: Environmental Science Courses

BIOL 206	Organismal Biology	1
BIOL 245	Tropical Marine Biology	1
BIOL 266	Animal Behavior	1
BIOL 312	Comparative Vertebrate Anatomy ⁷	1
BIOL 313	Mammalogy ⁷	1
BIOL 318	Principles of Physiology ⁷	1
BIOL 321	Behavioral Ecology	1
BIOL 334	Limnology	1
BIOL 341	Evolution	1
BIOL 353	Ecosystem Ecology	1
BIOL 354	Tropical Ecology	1
BIOL 355	Social Insects	1
BIOL 357	Ornithology ⁷	1
BIOL 358	Invertebrate Zoology ⁷	1
BIOL 359	General Entomology ⁷	1
BIOL 370	Primate Behavior and Ecology	1
CEEG 320	Water Resources Engineering	1
CEEG 340	Environmental Engineering	1
CEEG 421	Hydrology	1
CHEG 455	Atmospheric Chemistry and Physics ⁷	1
CHEM 360	Advanced Environmental Chemistry ⁷	1
ENST 211	Environmental Pollution and Control	1
ENST 221	Hazardous Waste and Society	1
ENST 234	Human Ecology	1
ENST 298	Stream Restoration	1
ENST 299	Watershed Systems Science	1

ENST 349 & ENST 350	Senior Thesis and Senior Thesis	1-2
GEOG 204	Applied G.I.S.	1
GEOG 234	Human Ecology	1
GEOG 257	Global Environmental Change	1
GEOG 332	Evolution, Ecology, and Human Impact	1
GEOL 117	Environmental Geohazards	1
GEOL 230	Environmental GIS	1
GEOL 298	Stream Restoration	1
GEOL 299	Watershed Systems Science	1
GEOL 304	Crystallography-Mineralogy	1
GEOL 305	Introduction to Geochemistry	1
GEOL 316	Geomorphology	1
GEOL 317	Paleontology	1
GEOL 334	Geophysics	1
GEOL 336	Hydrogeology	1
GEOL 338	Applied Environmental Geomorphology	1

⁷ Additional coursework beyond the introductory course may be necessary as a prerequisite

Minor in Environmental Studies

The **minor** in Environmental Studies requires five courses distributed as follows:

ENST 245 or ENST 240	Environmental Policy and Politics Sustainable Resource Management	1
Select one of the following:		1
BIOL 208	Principles of Ecology and Evolution	
ENST 208	Environmental Biology	
ENST/GEOG 234	Human Ecology	
GEOG 113	Human Impact on Environment	
GEOG 332	Evolution, Ecology, and Human Impact	
GEOL 203	Physical/Environmental Geology	

Three electives (see Electives list below) 3

Elective Courses

Electives include all courses with the ENST course designation as well as all courses on lists A and B. In addition, the courses listed below will also satisfy this requirement.

ANTH 260	Environmental Anthropology	1
CEEG 432	Sustainable Transportation Planning	1
ECON 231	Resources and the Environment	1
GEOL 117	Environmental Geohazards	1
GEOL 305	Introduction to Geochemistry	1
GEOL 316	Geomorphology	1
SOCI 220	Environmental Sociology	1

College of Arts & Sciences

Department and Program Learning Objectives

Students completing the Bachelor of Arts degree in Environmental Studies will be able to:

Understand fundamental physical and biological principles that govern natural processes. (4, 6)

Understand fundamental concepts from the social sciences and the humanities underlying environmental thought and governance. (3, 4)

Integrate and apply perspectives from across the natural sciences, social sciences, and the humanities in the context of complex environmental problems. (2, 3, 5)

Communicate integrated perspectives on complex environmental problems in the form of written and oral argument to both professional and lay audiences. (7, 8, 9)

Design and conduct independent research that contributes to environmental thought and/or problem solving. (4, 6)

Students completing the Bachelor of Arts degree in Environmental Science will be able to:

Demonstrate an in-depth understanding of one of the subdisciplines within environmental science (*i.e.* biology, chemistry, or geology). (1, 4, 6)

Collect and interpret scientific data in both field and laboratory settings. (6)

Integrate information from across the scientific disciplines and apply these concepts to complex environmental problems. (2)

Identify the complex relationships between scientific approaches to environmental issues and political, social, economic, and ethical perspectives on the environment. (3, 4, 5)

Communicate scientific information to both professional and lay audiences. (7, 8, 9)

Non-majors in Environmental Studies will be able to:

Demonstrate an understanding of current environmental challenges.

Numbers in parentheses reflect related Educational Goals.

Food Systems Minor

Faculty

Coordinating Committee: Philippe C. Dubois (Languages, Cultures & Linguistics-French), Clare Sammells (Anthropology), Margot Vigeant (Chemical Engineering)

The production, processing, distribution, and politics of food systems represent one of the main challenges of the 21st century. The minor in Food Systems takes an interdisciplinary approach to the study of this essential issue, including courses related to this topic from a variety of departments and programs including: Anthropology, Biology, Chemical Engineering, Civil & Environmental Engineering, Economics, Environmental Studies, French & Francophone Studies, Geography, Management, Philosophy, Psychology, and Religion.

The Food Systems minor allows students to advance their interest in food policies, nutrition, water, waste and the urban environment, ethics of consumption, local and global cuisines, cultural practices, and the aesthetics of food. Cultural, political, economic, environmental, scientific, and geographic approaches to food within local, urban and global contexts will allow students to investigate the myriad ways in which individuals, communities, and societies produce, distribute, and consume food. By exploring these issues with analytic tools developed in a range of academic disciplines, this minor leads to a critical examination of the role of food in historic and contemporary societies. A Food Systems concentration will enrich students' understanding of their respective majors and prove useful to careers in a variety of fields, including: agricultural sciences, policy, development, advocacy, media, and social and cultural analysis.

The Food Systems **minor** consists of five courses. At least two courses must come from the "Global Cultural Approaches" list; at least one must come from the "Applied Approaches" list; the other two may be from either list. No more than three courses may be from the same department. No more than one 100-level course may count toward the minor. Please note that courses in the student's major department may not count toward a minor.

Students or faculty instructors may request that relevant courses be included in the minor by obtaining approval from the coordinators of the minor. Students may count an internship or field work related to food systems in the form of an independent study course. Students may request that study abroad courses be considered for the minor; the Coordinating Committee will consider study abroad courses upon review of the syllabus.

Students are encouraged to discuss their selection of courses for the minor with a member of the Coordinating Committee.

Global Cultural Approaches to Food Systems

ANTH 265	Food, Eating, and Culture	1
ECON 225	Cultivating Change	1
ENST 204	Global Political Ecology of Food	1
ENST 216	Preindustrial Environment	1
ENST 226	Water Politics and Policies	1
ENST 255	Environmental Injustice	1
FREN 280	Translating Food Cultures	1
FREN 282	Patrimoines Gastronomiques	1
FREN 395	Seminar in French Studies	1
GEOG 345	Food and the Environment	1

PHIL 100	Introduction to Philosophy (Gods, Humans, Animals)	1
PHIL 271	Eating Animals: Philosophical Perspectives	1
PSYC 309	Appetite and Eating Behavior	1
RELI 229	The Ethics of Consumption	1
UNIV 200	Integrated Perspectives Course (04: West, Cowboys, Nature, Myth)	1
UNIV 288	Global Cuisines, Local Contexts: Commensality and Conflict	1

Applied Approaches to Food Systems

ANTH 310	Culture, Nature and Place	1
BIOL 150	Plants, People, and the Environment	1
BIOL 330	Plant Systematics	1
BIOL 351	Field Botany	1
CEEG 320	Water Resources Engineering	1
CHEG 452	Bioprocess Engineering	1
CHEG 470	Special Topics in Chemical Engineering (Applied Food Science & Engineering)	1
ECON 235	African Economic Development	1
ECON 273	Latin American Economic Development	1
GLBM 301	Global Supply Chain Management	1

Foundation Seminar (FOUN)

Each first-year student in the College of Arts and Sciences enrolls in a small, writing-intensive seminar of about 16 students in the fall semester. Foundation Seminars (FOUN or RESC) are offered by many different faculty and focus on a wide variety of subjects. Seminars with the RESC designation are linked to a residential college, a living-learning community. For more information, see bucknell.edu/ResColleges.

Whatever the topics, they are designed to cultivate the attitudes, skills, and knowledge necessary for students to benefit maximally from a Bucknell University education and to negotiate the complexities of the modern world. The seminars stress active, independent and engaged learning, and development of skills students need to engage in intellectual endeavors at Bucknell and beyond. All Foundation Seminars are writing-intensive (W1) courses. For more information, see Writing Program (p. 215).

Geography (GEOG)

Faculty

Professors: Ben Marsh, Karen M. Morin (Associate Provost), Paul H. Susman

Associate Professors: Duane A. Griffin, Adrian N. Mulligan (Chair)

Visiting Assistant Professor: Vanessa Massaro

Geographers are devoted to thinking spatially about people, environments, and relations among them. Physical geography, a natural science, focuses on the natural processes that interact to create the biophysical environments we depend upon. Human geography, a social science, seeks to understand the cultural, economic, and political processes that create and reproduce the built environments and social worlds in which we live. Environmental Geography lies at the intersection of the physical and human worlds, studying topics such as resources, hazards, and human impacts on the environment. What links these disparate foci is an overriding concern with *space* and the various ways in which it matters.

Geography courses promote a fuller understanding of the world that we live in, emphasizing critical thinking, problem solving, writing, mapping, public speaking, information literacy and teamwork, using methods that range from ethnography and archival research to field and laboratory work, and tools such as GIS (advanced computer mapping).

As both a social *and* a natural science, the geography major provides a strong background in the discipline and a substantial foundation for a liberal arts education. Geography's inherently interdisciplinary nature complements and integrates material from related fields such as international relations, economics, environmental studies, political science, geology, anthropology, sociology, climatology, women's and gender studies, philosophy, and biology, making it an ideal choice for dual majors or as a minor. The geography major (or minor) provides strong preparation for careers or graduate study in the environmental and resource fields, international affairs, urban and regional planning, government, business and marketing, journalism, law, health care, public service, teaching, and a host of other fields.

Geography Major

The **major** in geography consists of a minimum of EIGHT courses which must include:

Two 200-level Human Geography courses (social science credit)	2
Two Physical Geography courses (natural science credit) ¹	2
GEOG 204 Applied G.I.S.	1
Culminating Experience ²	1
Two Geography electives ³	2

¹ Some courses in other departments are accepted toward the major with geography department approval, for example Geology, International Relations, and Environmental Studies.

² Taken senior year (or second semester junior year with adviser's and departmental approval). Courses fulfilling this requirement include 300-level or higher (non-methods/skills) Geography courses or an independent study course designed for this purpose. In these courses, paper and/or project topics for the geography majors will be designed to ensure that the students draw upon their broader geographic education, thus providing them a more coherent appreciation of the discipline.

³ May be any 200-level or higher geography courses, but may include up to two 100-level geography courses taken before declaring the major.

Geography Minor

The geography **minor** consists of five geography courses, at least one of which is a geography science course, and no more than one of which may be at the 100-level.

College of Arts & Sciences
Department and Program Learning Objectives

Majors in Geography will be able to:

Understand human-environment relations and spatial relations as a dynamic involving the interplay of social change and environmental change. (1, 3, 4, 6, 7)

Apprehend their role, both individually and collectively, in changing human-environmental relations and spatial dimensions of society. (1, 3, 4, 5)

Use space and spatial relations to understand society at different scales. (1, 3, 4)

Understand academic geographical study as providing a systematic framework for examining environmental and social problems. (1, 3, 4)

Engage in high-order, independent thinking, integrating spatial and human-environment relations into their analysis of problems at scales ranging from the global to the local. (1, 3, 4, 6, 7)

Synthesize insights in human and physical geography with those from cognate disciplines in social and/or natural sciences. (1, 2, 3)

Numbers in parentheses reflect related Educational Goals.

Geology and Environmental Geosciences (GEOL)

Faculty

Professors: Christopher G. Daniel (Chair), Mary Beth Gray, Carl S. Kirby, R. Craig Kochel, Jeffrey M. Trop

Associate Professors: Ellen K. Herman, Robert Jacob

Visiting Assistant Professor: Laura D. Bilenker

Laboratory Director: Brad C. Jordan

Geology is the natural science that involves the nature and history of Earth, including scientific analysis of environmental problems. The Bucknell geology curriculum engages students with concepts and issues related to Earth and its environments through coursework, field studies, and scientific research. A geology degree equips students with analytical skills, problem-solving skills, communication skills, experience in teamwork, and solid grounding in field-based science. Geology includes diverse subdisciplines, including geologic hazards, geochemistry, geophysics, hydrogeology, tectonics, and engineering geology. At an introductory level, geology coursework provides students with basic knowledge of Earth and its systems and how that knowledge can provide an understanding of potential solutions to environmental problems. Knowledge of Earth, its processes, hazards, history, resources, and limitations can be an important component of a liberal arts education and also can provide a foundation for advanced work in the discipline.

An undergraduate degree provides the foundation needed for employment or graduate degree specialization. In addition to gaining acceptance to some of the most prestigious graduate programs in the country, recent graduates have secured employment in environmental or engineering consulting firms, governmental agencies, oil and gas companies, and educational institutions. Students also have used our courses toward certification as teachers in Earth and space sciences.

At Bucknell University, students can major in either environmental geoscience or geology, and each of these is available in both Bachelor of Arts and Bachelor of Science degree programs. These four tracks are united in having a common core of six geology courses:

GEOL 203	Physical/Environmental Geology	1
GEOL 204	Evolution of the Earth	1
GEOL 304	Crystallography-Mineralogy	1
GEOL 309	Sedimentology and Stratigraphy	1
GEOL 314	Structural Geology	1
GEOL 316	Geomorphology	1

A Bachelor of Science track is appropriate for students who have decided to begin a career in geoscience or pursue a graduate degree in a geologic/environmental profession. Students who elect a Bachelor of Arts track have greater curricular flexibility, allowing for a second major. Recent Bachelor of Arts graduates have attended graduate school or secured employment in geoscience, environmental science, environmental law or policy, education, business, medicine, and science writing.

Bachelor of Arts Major in Geology

Requires eight geology courses and two additional courses.

Program Requirements		
GEOL 203	Physical/Environmental Geology	1
GEOL 204	Evolution of the Earth	1
GEOL 304	Crystallography-Mineralogy	1
GEOL 309	Sedimentology and Stratigraphy	1
GEOL 314	Structural Geology	1
GEOL 316	Geomorphology	1
Two courses at the 300-level or above with the exception of GEOL 319 and GEOL 320		2
Additional requirements for the major include:		
MATH 201	Calculus I	1
or MATH 216	Statistics I	
PHYS 211	Classical and Modern Physics I	1
or CHEM 201	General Chemistry I	

Students are encouraged to take a summer field course in geology, to elect additional courses in science and mathematics, and to participate in independent study research opportunities through GEOL 319 Undergraduate Research and/or GEOL 320 Undergraduate Research.

Bachelor of Science Major in Geology

Requires 10 geology courses and five to six additional science/math courses:

Program Requirements		
GEOL 203	Physical/Environmental Geology	1
GEOL 204	Evolution of the Earth	1
GEOL 304	Crystallography-Mineralogy	1
GEOL 309	Sedimentology and Stratigraphy	1
GEOL 314	Structural Geology	1
GEOL 316	Geomorphology	1
GEOL 340	Igneous and Metamorphic Petrology	1
Select three of the following:		3
GEOL 317	Paleontology	
GEOL 321	Special Topics in Geology	
or GEOL 322	Special Topics in Geology	
GEOL 305	Introduction to Geochemistry	
GEOL 334	Geophysics	
GEOL 336	Hydrogeology	
GEOL 338	Applied Environmental Geomorphology	

A supervised research experience approved by the department.

Additional requirements for the major include:

MATH 201 & MATH 202	Calculus I and Calculus II	
MATH 211 or MATH 216	Calculus III Statistics I	
PHYS 211	Classical and Modern Physics I	
Chemistry requirement ¹		1-2

A summer course in field geology is recommended.

¹ CHEM 201 General Chemistry I and CHEM 202 General Chemistry II or CHEM 211 Organic Chemistry I and CHEM 212 Organic Chemistry II or CHEM 221 Inorganic Chemistry I

Below is the recommended sequence for the Bachelor of Science major.

First Year

First Semester	Credits	Second Semester	Credits
MATH 201		1 MATH 202	1
GEOL 203 or 204 ²		1 GEOL 204 or 203 ²	1
		2	2

Sophomore

First Semester	Credits	Second Semester	Credits
CHEM 201, 202, or 221		1 MATH 211 or 216	1
GEOL 304		1 GEOL 340	1
GEOL 316		1	
		3	2

Junior

First Semester	Credits	Second Semester	Credits
PHYS 211		1 GEOL 309	1
Elective in geology ³			
GEOL 314		1	
		2	1

Senior

First Semester	Credits	Second Semester	Credits
Elective in geology ³		Elective in geology ³	
		0	0

Total Credits: 12

² GEOL 250 Geology for Engineers may be substituted for GEOL 203 Physical/Environmental Geology by consultation with the department.

³ Three courses chosen from GEOL 305 Introduction to Geochemistry, GEOL 317 Paleontology, GEOL 334 Geophysics, GEOL 321 Special Topics in Geology or GEOL 322 Special Topics in Geology and GEOL 336 Hydrogeology.

Bachelor of Arts Major in Environmental Geosciences

Requires eight geology courses and two additional courses:

Program Requirements

GEOL 203	Physical/Environmental Geology	1
GEOL 204	Evolution of the Earth	1
GEOL 304	Crystallography-Mineralogy	1
GEOL 309	Sedimentology and Stratigraphy	1
GEOL 314	Structural Geology	1
GEOL 316	Geomorphology	1
GEOL 305	Introduction to Geochemistry	1
Select one of the following:		1
GEOL 334	Geophysics	

GEOL 336	Hydrogeology	
GEOL 338	Applied Environmental Geomorphology	
Additional requirements for the major include:		
MATH 201	Calculus I	1
or MATH 216	Statistics I	
PHYS 211	Classical and Modern Physics I	1
or CHEM 201	General Chemistry I	

Students are encouraged to take a summer field geology course and to participate in independent study research opportunities through GEOL 319 Undergraduate Research and GEOL 320 Undergraduate Research.

Electives are recommended in science and mathematics, as well as from other departments offering environmental sciences and engineering courses.

Bachelor of Science Major in Environmental Geosciences

Requires 10 geology courses and five to six additional science/math courses:

Program Requirements

GEOL 203	Physical/Environmental Geology	1
GEOL 204	Evolution of the Earth	1
GEOL 304	Crystallography-Mineralogy	1
GEOL 309	Sedimentology and Stratigraphy	1
GEOL 314	Structural Geology	1
GEOL 316	Geomorphology	1
GEOL 305	Introduction to Geochemistry	1
GEOL 334	Geophysics	1
GEOL 336	Hydrogeology	1
One approved 300-level or above geology course from the list published by the department		1
A supervised research experience approved by the department		
Additional requirements for the major include:		
MATH 201	Calculus I	2
& MATH 202	and Calculus II	
MATH 211	Calculus III	1
or MATH 216	Statistics I	
PHYS 211	Classical and Modern Physics I	1
Two courses from approved list of courses from either biology, chemistry, or civil engineering: ⁴		2
OPTION 1: Select two courses in biology:		2
BIOL 208	Principles of Ecology and Evolution	1
BIOL 334	Limnology	1
BIOL 341	Evolution	1
BIOL 351	Field Botany	1
BIOL 353	Ecosystem Ecology	1
BIOL 358	Invertebrate Zoology	1
BIOL 359	General Entomology	1
OPTION 2: Select two courses in chemistry (or one if selecting CHEM 221):		3-4
CHEM 201	General Chemistry I	
& CHEM 202	and General Chemistry II	
CHEM 211	Organic Chemistry I	
& CHEM 212	and Organic Chemistry II	
CHEM 221	Inorganic Chemistry I (with approval of the adviser)	
OPTION 3: Select two courses in engineering:		2
CEEG 320	Water Resources Engineering	1
CEEG 340	Environmental Engineering	1
CEEG 350	Geotechnical Engineering I	1
CEEG 421	Hydrology	1

CEEG 425	Groundwater	1
CEEG 444	Hazardous Waste Management	1
CEEG 451	Environmental Geotechnology	1
ENGR 222	Civil Engineering Fluid Mechanics	1
ENGR 229	Solid Mechanics I	

Additional recommended courses:

Environmental policy course (e.g. ENST 211, ENST 221, ENST 245, ENST 260)

A summer course in field geology is strongly recommended

Additional courses in statistics and advanced mathematics

⁴ Additional courses from biology, chemistry, or civil engineering may be substituted with the approval of the department.

The recommended sequence for the Bachelor of Science major in environmental geology is as follows. (The sequence may be altered in consultation with adviser.)

First Year

First Semester	Credits	Second Semester	Credits
MATH 201		1 MATH 202	1
GEOL 203 or 204 ⁵		1 GEOL 204 or 203 ⁵	1
		2	2

Sophomore

First Semester	Credits	Second Semester	Credits
GEOL 314		1 GEOL 305	1
GEOL 316		1 GEOL 309	1
MATH 211 or 216		1	
		3	2

Junior

First Semester	Credits	Second Semester	Credits
PHYS 211		1 Science/engineering elective (see Electives table below)	
GEOL 304		1 GEOL 336	1
Science/engineering elective (see Electives table below)			
		2	1

Senior

First Semester	Credits	Second Semester	Credits
GEOL 334		1 Elective in geology ⁶	
Elective in geology ⁶			
		1	0

Total Credits: 13

⁵ GEOL 250 Geology for Engineers may be substituted for GEOL 203 Physical/Environmental Geology by consultation with the department

⁶ Three courses chosen from GEOL 305 Introduction to Geochemistry, GEOL 317 Paleontology, GEOL 321 Special Topics in Geology or GEOL 322 Special Topics in Geology.

Electives**Science Electives**

BIOL 208	Principles of Ecology and Evolution	1
BIOL 334	Limnology	1
BIOL 341	Evolution	1
BIOL 351	Field Botany	1
BIOL 353	Ecosystem Ecology	1
BIOL 358	Invertebrate Zoology	1
BIOL 359	General Entomology	1

Engineering Electives

CEEG 320	Water Resources Engineering	1
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CEEG 340	Environmental Engineering	1
CEEG 350	Geotechnical Engineering I	1
CEEG 421	Hydrology	1
CEEG 425	Groundwater	1
CEEG 444	Hazardous Waste Management	1
CEEG 451	Environmental Geotechnology	1
ENGR 222	Civil Engineering Fluid Mechanics	1
ENGR 229	Solid Mechanics I	1
CHEM 211 & CHEM 212	Organic Chemistry I and Organic Chemistry II	2

Independent supervised research experiences are strongly encouraged by the department and research opportunities are available through GEOL 319 Undergraduate Research or GEOL 320 Undergraduate Research.

The department encourages majors who are completing independent research experiences and who meet requirements to become candidates for Honors in geology.

The department attempts to make it possible for students to enroll in study abroad programs. At times this involves changing sequences of recommended courses. Consultation with major adviser is essential.

Speaking Within the Major

Within the discipline of geology, we seek to develop formal presentation skills oriented toward presenting scientific data and interpretations at an appropriate level for a college graduate seeking professional employment or advanced learning at graduate school.

This requirement is met by all BS and BA geology majors through the successful completion of the following required coursework:

GEOL 304	Crystallography-Mineralogy	1
GEOL 309	Sedimentology and Stratigraphy	1
GEOL 316	Geomorphology	1

BS students will also meet this requirement through the successful completion of the required research experience.

Non-required courses that also meet this outcome:

GEOL 321	Special Topics in Geology	1
GEOL 322	Special Topics in Geology	.5-1
GEOL 334	Geophysics	1
GEOL 336	Hydrogeology	1
GEOL 338	Applied Environmental Geomorphology	1

Information Literacy Within the Major

Information literacy within the discipline of geology will introduce all majors to appropriate databases and resources in order to locate appropriate scientific references including journals, serials, books, theses, geological maps, state and government publications, and conference proceedings and other relevant information sources. Students will critically evaluate these works and learn to interpret basic figures and plots within the larger context of the geology curriculum. Students will integrate and summarize information from multiple resources for assignments that incorporate either written work, oral presentation or GIS-based exercises.

This requirement is met by all BS and BA geology majors through the successful completion of the following required coursework:

GEOL 314	Structural Geology	1
GEOL 317	Paleontology	1

BS students will also meet this requirement through the successful completion of the required research experience.

Non-required courses that meet this requirement for BA students include:

GEOL 321	Special Topics in Geology	1
GEOL 322	Special Topics in Geology	.5-1

Writing Within the Major

Writing within the context of the geology curriculum emphasizes background reading, organization, content and mechanics of writing, with a goal of integrating and summarizing information from multiple resources and conveying scientific data and interpretations using figures and text.

This requirement is met by all BS and BA geology majors through the successful completion of the following required coursework:

GEOL 309	Sedimentology and Stratigraphy	1
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BS students will also meet this requirement through the successful completion of the required Supervised Research Experience (described below).

Non-required courses that meet this requirement for the BA include:

GEOL 321	Special Topics in Geology	1
GEOL 322	Special Topics in Geology	.5-1
GEOL 338	Applied Environmental Geomorphology	1

Culminating Experience Within the Major

BS students satisfy the Culminating Experience within the major by completing the Supervised Research Experience (described below).

The Culminating Experience for BA students is designed to provide more flexibility to allow for students on a non-professional track to better tailor this experience to their broad interests. All BA geology majors will meet the Culminating Experience through one of three options:

- Successful completion of the Supervised Research Experience.
- Successful completion of a summer field course, subject to approval by the department.
- Successful completion of an internship, subject to approval by the department.

By the first day of classes during their junior year, students submit a written proposal to the department summarizing a work plan for satisfying the Culminating Experience. The faculty vet proposals and set criteria for successful completion. A grade of C- or above is typically expected for successful completion of summer field camp. A positive support letter from the primary supervisor is typically expected for successful completion of an internship.

Supervised Research Experience

To satisfy the Supervised Research Experience, students plan and execute a research project supervised by a faculty member during their junior or senior year. All BS majors must complete this requirement for their Culminating Experience. BA majors may elect to complete this requirement for their Culminating Experience. Students consult with a faculty research adviser to develop a written proposal summarizing the research objective, work plan and significance. The proposal is then vetted by the department faculty. Research projects are one-semester minimum duration during the academic year or eight weeks minimum duration during the summer. Research may be conducted off-campus under the supervision of an off-campus co-adviser. If the research takes place during the academic year, students must successfully complete GEOL 319 Undergraduate Research and/or GEOL 320 Undergraduate Research (0.5 credit course for supervised independent research). Results are presented orally to the department and archived in a written thesis, manuscript, or scientific report following guidelines approved by the department.

Students may choose from three **minors** in the area of geology:

Geology Minor

Requires four or five courses.

GEOL 203	Physical/Environmental Geology	1
or GEOL 250	Geology for Engineers	
GEOL 204	Evolution of the Earth	1
Select two 300-level geology courses except: GEOL 319, GEOL 320		2

Engineering Geology Minor

Requires four courses.

GEOL 250	Geology for Engineers	1
GEOL 314	Structural Geology	1
Select two 300-level geology courses except: GEOL 319, GEOL 320		2

Environmental Geology Minor

Requires four courses.

Select one of the following: 1

GEOL 203	Physical/Environmental Geology	1
GEOL 250	Geology for Engineers	1
Select three of the following:		3
GEOL 305	Introduction to Geochemistry	1
GEOL 316	Geomorphology	1
GEOL 334	Geophysics	1
GEOL 336	Hydrogeology	1
GEOL 338	Applied Environmental Geomorphology	1

Majors in Geology will be able to:

Meet all of the expectations of students in introductory courses, plus:

Understand core areas of geology and environmental geology, and interpret a wide range of earth processes on different temporal and spatial scales.

Demonstrate competence in collecting scientific data, including field observation and field and analytical measurements.

Demonstrate the skills of interpretive analysis and critical thinking with respect to geological problems involving temporal and spatial relationships.

Make informed decisions on issues of local and global environmental significance based on an understanding of:

The interconnectedness of the natural sciences;

The linkages of processes and systems that characterize Earth systems;

The interrelationships between humans and natural Earth systems.

Conduct effective independent and collaborative investigations.

Execute a formal research project, including the use of primary literature, development of a scientific proposal, collection of new primary data, interpretation of new data, and dissemination of results, both orally and in a written thesis (B.S. majors only).

All students who have taken an introductory geology course will have a basic understanding of the following: how science works (the scientific method); human interaction with the environment; deep geologic time, including relative and absolute dating approaches; tectonics, the rock cycle, basic Earth structure and how we understand it; and topographic and geologic map reading.

Greek (GREK)

Faculty

Chair: George R. Exner

Professor: Janet D. Jones

Associate Professors: Kevin F. Daly, Stephanie Larson

Assistant Professors: Ashli Baker, Kristine Trego

Visiting Assistant Professors: Thomas H. Beasley, Melissa Haynes, Mitchell H. Parks

See Classics and Ancient Mediterranean Studies (p. 48).

History (HIST)

Faculty

Professor: B. Ann Tlusty

Associate Professors: Claire Campbell, David W. Del Testa, John P. Enyeart (Chair), Cymone Fourshey, James A. Goodale, Leslie C. Patrick

Assistant Professors: Mehmet Dosemeci, Jennifer F. Kosmin, William Michael Schmidli, Jennifer Thomson

Courses in history are designed to encourage reflection on the nature, advantages, and struggles of human societies in different times and places, and to invite cross-cultural comparisons. Moreover, they are intended to stimulate the historical imagination and to promote critical and technical skills in the comprehension and production of historical narratives. The academic conventions of writing, speaking, researching, and learning to analyze various sources (i.e. information literacy) are integral to the discipline of history and figure strongly in all of the department's courses.

Students of history may take many different roads to historical understanding; department members have diverse interests, and they actively encourage students' independent investigations of history. Majors, in particular, are invited to collaborate closely with their department mentors in

their historical inquiries, while at the same time shaping their own methodologies, foci, questions, and answers. Students majoring in history are encouraged to plan their program of study with their departmental adviser by the end of the sophomore year.

Independent Study and Honors Program

The department encourages students to develop independent study programs with faculty members. In addition, interested and qualified students, in consultation with the chair, are encouraged to apply to the Honors Council for admission to the University honors program. The application normally would be submitted at the beginning of the fall semester of the senior year. Students who do honors work in history submit a substantial honors thesis, the equivalent of two courses of work in their senior year. Credit may be taken either in one semester of the senior year or in both.

HIST 316	Independent Study	.5-1
HIST 350	Honors Thesis	1
HIST 355	Undergraduate Research	.5-2

Introductory Courses

Introductory (100-level) history courses are intended for first- and second-year students. Third- and fourth-year students will be admitted to these courses only at the discretion of the instructor.

All 100-level history courses are designed to address a set of issues fundamental to historical understanding: the examination and evaluation of sources, the construction of historical accounts, and questions of point of view. While every 100-level course introduces students to some of the basic methods and practices of history, each course has its own particular topic, time span, and thematic emphasis.

Course Areas

General

HIST 100	Thinking about History	1
HIST 200	The Historians' Craft	1
HIST 201	Introduction to Historical GIS	1

American History

HIST 111	Introduction to U.S. History I	1
HIST 112	Introduction to U.S. History II	1
HIST 113	Introduction to U.S. History III	1
HIST 114	Canada from 1860	1
HIST 121	Introduction to African-American History I	1
HIST 122	Introduction to African-American History II	1
HIST 211	Frontiers and Borderlands	1
HIST 213	North American Environmental History	1
HIST 214	Topics in American History	1
HIST 217	American Colonial History	1
HIST 218	African-Americans and the American Revolution	1
HIST 219	Antebellum America	1
HIST 220	American Civil War and Reconstruction	1
HIST 221	U.S. History: 1880s to 1930s	1
HIST 222	U.S. History from the 1940s to the Present	1
HIST 223	Twentieth-century African-American History: Eyes on the Prize	1
HIST 224	Eighteenth-century North America	1
HIST 225	Topics in American Political and Economic History	1
HIST 227	American Intellectual History I	1
HIST 228	American Intellectual History II	1
HIST 229	Topics in American Intellectual History	1

European History

HIST 131	Pre-modern Europe	1
HIST 132	Modern Europe	1
HIST 231	Social History of Early Modern Europe	1
HIST 233	European State Systems (1660-1815)	1

HIST 236	Nineteenth-century Europe	1
HIST 237	The Renaissance	1
HIST 238	Witchcraft and Magic in Europe	1
HIST 239	Contemporary Europe, 1890-1995	1
HIST 240	Greek History	1
HIST 241	Roman History	1
HIST 242	Topics in French History	1
HIST 245	Topics in German History	1
HIST 246	Medieval Heresies and Heretics	1
HIST 247	Topics in European History	1
HIST 248	Topics in Russian History	1
HIST 250	Medieval and Early Modern Russia	1
HIST 251	Imperial Russia	1
HIST 252	Soviet Russia	1

Non-western History

HIST 185	Introduction to Modern Southeast Asian History and Culture	1
HIST 190	World History	1
HIST 194	History of Modern Middle East	1
HIST 282	Modern Latin America	1
HIST 283	Southeast Asia since 1800	1
HIST 286	Contemporary Japanese History	1
HIST 287	Perspectives: The Vietnam War	1
HIST 288	The History of Vietnam	1
HIST 289	Chinese Diaspora	1
HIST 290	Europe Imperialism and Colonialism	1
HIST 291	Africa: Ancient to Early Modern Times 4000BCE-1400CE	1
HIST 292	Making Contemporary Africa: 'Early Modern' to the 'Post-Modern' World - 1400 to the Present	1
HIST 293	China from Ancient Times to the 18th Century	1
HIST 294	China since 1800	1
HIST 295	From Shinto to Shogun: Pre-modern Japan	1
HIST 296	Modern Japanese History	1
HIST 297	The People's Republic of China	1
HIST 299	Topics in Non-western History	1

Intellectual History

HIST 261	Twentieth-century Afro-Caribbean and African-American Thought	1
HIST 262	History and Film	1
HIST 266	Topics in Intellectual History	1
HIST 267	European Intellectual History I	1
HIST 268	Power, Ideology, Existence: The History of Post-Enlightenment European Thought	1

History of Science and Medicine

HIST 170	Introduction to the History of Science and Technology	1
HIST 171	Introduction to the History of Medicine and Public Health	1
HIST 270	Science and Technology in US	1
HIST 271	Medicine in the US	1
HIST 272	History of Science I	1
HIST 273	History of Science II	1
HIST 279	Topics in the History of Science and Medicine	1

Women's and Gender History

HIST 258	Topics in Women's and Gender History	1
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Seminars

Admission to seminars is by permission of the instructor only.

HIST 310	U.S. History to 1865	1
HIST 311	U.S. History since 1865	1
HIST 312	American Social History	1
HIST 313	The American West	1
HIST 319	African-American History	1
HIST 320	American Labor History	1
HIST 321	American Immigrants	1
HIST 322	American Industrialization and Political Development	1
HIST 330	European History	1
HIST 360	Intellectual History	1
HIST 370	History of Science and Medicine	1
HIST 399	Non-western History	1

History Major

The **major** consists of a minimum of eight courses selected as follows:

- Four courses from any one cluster (the primary cluster).
- Two courses chosen from another cluster (the secondary cluster).
- Two elective courses chosen from any cluster.

Regardless of which primary cluster they choose, students must not take more than six courses in any one geographical area (defined as Europe, America, or non-western). Clusters are, however, not necessarily geographically specific. No more than two 100-level courses may count toward the major.

The eight-course minimum must include at least one 300-level seminar. In addition, majors will fulfill their Culminating Experience (CE) requirement in the fall, or in exceptional circumstances in the spring semester of their senior year. The CE consists of students writing a reflective essay on their experiences in the history program, and discussing it with the other majors in a special session attended by the students and members of the department. This non-credit-bearing module will be evaluated on a pass-fail basis. Each student's adviser will grade his or her essay.

When the subject matter and focus of topics and seminar courses varies from year to year, individual courses will be assigned to the appropriate clusters on a yearly basis (see course list). The following courses normally count in any cluster:

HIST 100	Thinking About History	1
HIST 200	The Historians' Craft	1
HIST 201	Introduction to Historical GIS	1

Clusters

There are seven clusters. They group courses together by area of inquiry. Clusters 4 to 7 are not geographically specific.

1 - American History (33 courses)

This cluster includes all courses dealing with American history. Within it, students may follow a sequence of period courses from the colonial period to the modern era, or they may focus on particular aspects or interpretations.

HIST 111	Introduction to U.S. History I	1
HIST 112	Introduction to U.S. History II	1
HIST 113	Introduction to U.S. History III	1
HIST 114	Canada from 1860	1
HIST 121	Introduction to African-American History I	1
HIST 122	Introduction to African-American History II	1
HIST 211	Frontiers and Borderlands	1
HIST 213	North American Environmental History	1
HIST 214	Topics in American History	1
HIST 217	American Colonial History	1
HIST 218	African-Americans and the American Revolution	1
HIST 219	Antebellum America	1

HIST 220	American Civil War and Reconstruction	1
HIST 221	U.S. History: 1880s to 1930s	1
HIST 222	U.S. History from the 1940s to the Present	1
HIST 223	Twentieth-century African-American History: Eyes on the Prize	1
HIST 224	Eighteenth-century North America	1
HIST 225	Topics in American Political and Economic History	1
HIST 227	American Intellectual History I	1
HIST 228	American Intellectual History II	1
HIST 229	Topics in American Intellectual History	1
HIST 262	History and Film	1
HIST 270	Science and Technology in US	1
HIST 271	Medicine in the US	1
HIST 273	History of Science II	1
HIST 279	Topics in the History of Science and Medicine	1
HIST 310	U.S. History to 1865	1
HIST 311	U.S. History since 1865	1
HIST 312	American Social History	1
HIST 313	The American West	1
HIST 319	African-American History	1
HIST 321	American Immigrants	1
HIST 322	American Industrialization and Political Development	1

2 - European History (30 courses)

This cluster includes all courses dealing with European history, including both broad surveys and more specialist courses on Britain, France, Germany, and Russia. Within it, students may opt for the sequence of surveys, focus on the history of one or more countries or pursue particular aspects and interpretations.

HIST 131	Pre-modern Europe	1
HIST 132	Modern Europe	1
HIST 170	Introduction to the History of Science and Technology	1
HIST 171	Introduction to the History of Medicine and Public Health	1
HIST 190	World History	1
HIST 231	Social History of Early Modern Europe	1
HIST 233	European State Systems (1660-1815)	1
HIST 236	Nineteenth-century Europe	1
HIST 237	The Renaissance	1
HIST 238	Witchcraft and Magic in Europe	1
HIST 239	Contemporary Europe, 1890-1995	1
HIST 240	Greek History	1
HIST 241	Roman History	1
HIST 242	Topics in French History	1
HIST 245	Topics in German History	1
HIST 246	Medieval Heresies and Heretics	1
HIST 247	Topics in European History	1
HIST 248	Topics in Russian History	1
HIST 250	Medieval and Early Modern Russia	1
HIST 251	Imperial Russia	1
HIST 252	Soviet Russia	1
HIST 258	Topics in Women's and Gender History	1
HIST 262	History and Film	1
HIST 267	European Intellectual History I	1
HIST 268	European Intellectual History II	1
HIST 272	History of Science I	1

HIST 273	History of Science II	1
HIST 279	Topics in the History of Science and Medicine	1
HIST 290	Europe Imperialism and Colonialism	1
HIST 330	European History	1

3 - Non-western History (19 courses)

This cluster groups courses in the history of other areas of the world, specifically Africa, Southeast Asia, China, and Japan, together with courses dealing with the impact of western imperialism.

HIST 185	Introduction to Modern Southeast Asian History and Culture	1
HIST 190	World History	1
HIST 194	History of Modern Middle East	1
HIST 282	Modern Latin America	1
HIST 283	Southeast Asia since 1800	1
HIST 286	Contemporary Japanese History	1
HIST 287	Perspectives: The Vietnam War	1
HIST 288	The History of Vietnam	1
HIST 289	Chinese Diaspora	1
HIST 290	Europe Imperialism and Colonialism	1
HIST 291	African History I	1
HIST 292	African History II	1
HIST 293	China from Ancient Times to the 18th Century	1
HIST 294	China since 1800	1
HIST 295	From Shinto to Shogun: Pre-modern Japan	1
HIST 296	Modern Japanese History	1
HIST 297	The People's Republic of China	1
HIST 299	Topics in Non-western History	1
HIST 399	Non-western History	1

4 - Intellectual History (20 courses)

This cluster introduces students to the study of ideas and intellectual movements, both western and non-western.

HIST 170	Introduction to the History of Science and Technology	1
HIST 214	Topics in American History	1
HIST 227	American Intellectual History I	1
HIST 228	American Intellectual History II	1
HIST 229	Topics in American Intellectual History	1
HIST 237	The Renaissance	1
HIST 238	Witchcraft and Magic in Europe	1
HIST 246	Medieval Heresies and Heretics	1
HIST 247	Topics in European History	1
HIST 261	Twentieth-century Afro-Caribbean and African-American Thought	1
HIST 262	History and Film	1
HIST 266	Topics in Intellectual History	1
HIST 267	European Intellectual History I	1
HIST 268	European Intellectual History II	1
HIST 272	History of Science I	1
HIST 273	History of Science II	1
HIST 310	U.S. History to 1865	1
HIST 311	U.S. History since 1865	1
HIST 319	African-American History	1
HIST 360	Intellectual History	1

5 - Political, Economic, and Labor History (42 courses)

This cluster covers both Europe and America and includes courses dealing with law, diplomacy and warfare, as well as more familiar topics in economic and political history.

HIST 111	Introduction to U.S. History I	1
HIST 112	Introduction to U.S. History II	1
HIST 113	Introduction to U.S. History III	1
HIST 114	Canada from 1860	1
HIST 131	Pre-modern Europe	1
HIST 185	Introduction to Modern Southeast Asian History and Culture	1
HIST 194	History of Modern Middle East	1
HIST 213	North American Environmental History	1
HIST 214	Topics in American History	1
HIST 217	American Colonial History	1
HIST 218	African-Americans and the American Revolution	1
HIST 219	Antebellum America	1
HIST 220	American Civil War and Reconstruction	1
HIST 221	U.S. History: 1880s to 1930s	1
HIST 222	U.S. History from the 1940s to the Present	1
HIST 223	Twentieth-century African-American History: Eyes on the Prize	1
HIST 224	Eighteenth-century North America	1
HIST 225	Topics in American Political and Economic History	1
HIST 233	European State Systems (1660-1815)	1
HIST 236	Nineteenth-century Europe	1
HIST 239	Contemporary Europe, 1890-1995	1
HIST 242	Topics in French History	1
HIST 247	Topics in European History	1
HIST 248	Topics in Russian History	1
HIST 250	Medieval and Early Modern Russia	1
HIST 251	Imperial Russia	1
HIST 252	Soviet Russia	1
HIST 270	Science and Technology in US	1
HIST 282	Modern Latin America	1
HIST 283	Southeast Asia since 1800	1
HIST 287	Perspectives: The Vietnam War	1
HIST 288	The History of Vietnam	1
HIST 289	Chinese Diaspora	1
HIST 290	Europe Imperialism and Colonialism	1
HIST 296	Modern Japanese History	1
HIST 297	The People's Republic of China	1
HIST 310	U.S. History to 1865	1
HIST 311	U.S. History since 1865	1
HIST 313	The American West	1
HIST 320	American Labor History	1
HIST 321	American Immigrants	1
HIST 322	American Industrialization and Political Development	1

6 - Social History (48 courses)

This cluster groups courses dealing with race, class, and gender, as well as courses dealing more broadly with social history.

HIST 111	Introduction to U.S. History I	1
HIST 112	Introduction to U.S. History II	1
HIST 113	Introduction to U.S. History III	1

HIST 114	Canada from 1860	1
HIST 121	Introduction to African-American History I	1
HIST 122	Introduction to African-American History II	1
HIST 131	Pre-modern Europe	1
HIST 171	Introduction to the History of Medicine and Public Health	1
HIST 194	History of Modern Middle East	1
HIST 211	Frontiers and Borderlands	1
HIST 213	North American Environmental History	1
HIST 214	Topics in American History	1
HIST 217	American Colonial History	1
HIST 218	African-Americans and the American Revolution	1
HIST 219	Antebellum America	1
HIST 220	American Civil War and Reconstruction	1
HIST 221	U.S. History: 1880s to 1930s	1
HIST 222	U.S. History from the 1940s to the Present	1
HIST 223	Twentieth-century African-American History: Eyes on the Prize	1
HIST 225	Topics in American Political and Economic History	1
HIST 229	Topics in American Intellectual History	1
HIST 231	Social History of Early Modern Europe	1
HIST 238	Witchcraft and Magic in Europe	1
HIST 245	Topics in German History	1
HIST 247	Topics in European History	1
HIST 248	Topics in Russian History	1
HIST 250	Medieval and Early Modern Russia	1
HIST 251	Imperial Russia	1
HIST 252	Soviet Russia	1
HIST 258	Topics in Women's and Gender History	1
HIST 271	Medicine in the US	1
HIST 279	Topics in the History of Science and Medicine	1
HIST 282	Modern Latin America	1
HIST 283	Southeast Asia since 1800	1
HIST 286	Contemporary Japanese History	1
HIST 289	Chinese Diaspora	1
HIST 291	African History I	1
HIST 292	African History II	1
HIST 299	Topics in Non-western History	1
HIST 310	U.S. History to 1865	1
HIST 311	U.S. History since 1865	1
HIST 312	American Social History	1
HIST 313	The American West	1
HIST 319	African-American History	1
HIST 320	American Labor History	1
HIST 321	American Immigrants	1
HIST 330	European History	1
HIST 370	History of Science and Medicine	1

7 - History of Science and Medicine (9 courses)

This cluster introduces students to the specific field of science and medicine within the broader range of history. It includes courses in both American and European history.

HIST 170	Introduction to the History of Science and Technology	1
HIST 171	Introduction to the History of Medicine and Public Health	1
HIST 213	North American Environmental History	1

HIST 270	Science and Technology in US	1
HIST 271	Medicine in the US	1
HIST 272	History of Science I	1
HIST 273	History of Science II	1
HIST 279	Topics in the History of Science and Medicine	1
HIST 370	History of Science and Medicine	1

Students are encouraged, with the help of their advisers, to pick courses which reflect their particular interests within and between clusters. They may, if they wish and with the support of their adviser and another member of the department, construct their own primary cluster to reflect these interests.

History majors are encouraged to become proficient in languages appropriate to their studies, and to seek out courses in other departments that complement their historical interests.

Minor in History

A **minor** in history consists of a minimum of five courses, of which not more than two may be at the 100-level. At least one must be a seminar or designated topics course.

History Learning Objectives

Majors in History will be able to:

- Demonstrate a base of knowledge about important periods, events, and ideas in different cultures. (1, 2, 3, 4, 5, 8, 9)
- Understand the historical context of ideas and events and evaluate differing scholarly interpretations of the past. (1, 2, 3, 4, 5, 8, 9)
- Critically evaluate and analyze historical evidence, when appropriate, in the form of primary documents. (1, 2, 3, 4, 5, 8, 9)
- Write articulately and persuasively on historical themes and issues based on critical understanding and logical, rigorous, and creative thinking. (1, 2, 3, 6, 7, 8, 9)
- Speak articulately and persuasively on historical themes and issues, based on critical understanding and logical, rigorous, and creative thinking. (1, 2, 3, 6, 7, 8, 9)
- Demonstrate basic research skills and understanding of historical methods, including an ability to use the library and read intelligently and with purpose. (1, 2, 6, 8, 9)
- Demonstrate a synthesis of all of the above in an encompassing historical literacy. (1, 2, 6, 7, 8, 9)

Numbers in parentheses reflect related Educational Goals.

Interdepartmental (IDPT)

The Individual Interdepartmental Major

Students in the Bachelor of Arts curriculum who wish to investigate subjects, issues, or interests that cannot be served practically by the offerings of an established major may do so by proposing an interdepartmental major. This major shall consist of not fewer than eight or more than 12 courses chosen from among the offerings of two or more departments. The major also requires the successful completion of a senior project, for academic credit, to serve as a means of unifying the experience of the interdepartmental major. All proposals for individual interdepartmental majors are evaluated and approved by the appropriate associate dean of the College. Any additional requirements or special adjustments in this program will be proposed by the student and the principal adviser and approved by the associate dean.

For an interdepartmental major, students should follow this procedure:

1. Review the application process for the interdepartmental major by either searching for the most current version of the application on the Bucknell website or obtaining a hard copy of the application form in the College's Dean's office.
2. Identify and request a faculty member in one of the appropriate academic departments to serve as principal academic adviser.
3. Identify and request two additional faculty members in one or more of the appropriate academic departments to serve as secondary academic advisers.
4. In consultation with the primary adviser and professors in the departments offering courses clearly related to their special interests, define the limits and the central purpose of a major program of interdepartmental study.
5. With the assistance of the advisers, prepare a formal proposal including:
 - a. a statement of the reasons to pursue an interdepartmental major,
 - b. a list of the courses that will constitute the program of study, and
 - c. a preliminary description of the senior project and the ways in which it will serve to unify and integrate the various courses of study. (A complete and detailed description must be submitted before registration in the spring of the student's junior year.) This formal application is normally due before spring break of the sophomore year.

6. Having satisfied the above obligations, obtain signature endorsements of their proposals on the application form from their primary and secondary faculty academic advisers with whom they have conferred, as well as from the heads of the departments in which they plan to take courses to complete their major.
7. Submit the completed, signed form to the appropriate associate dean of the College for final approval.

Interdisciplinary Studies in Economics and Mathematics (ECMA)

Faculty

Director: KB Boomer (Mathematics)

Coordinating Committee: Marcellus Andrews (Economics), KB Boomer (Mathematics), Michael R. Frey (Mathematics), Joaquin Gomez-Minambres (Economics), Thomas C. Kinnaman (Economics, spring 2017), Paul J. McGuire (Mathematics), Nancy E. White (Economics, fall 2016)

Mathematics has traditionally served as the language of the natural sciences, and more recently it has become a useful tool in the social sciences, particularly in economics.

The Bachelor of Science in Interdisciplinary Studies in Economics and Mathematics at Bucknell University was developed jointly by the Department of Mathematics and the Department of Economics. It is a coordinated curriculum that incorporates economics, mathematics, and statistics to provide the strong foundations that offer students both the intellectual and the quantitative skills to grapple with questions at the interface of these two disciplines.

Students interested in economics and mathematics could also consider a double major in economics and mathematics within the B.A. degree program, or combine a B.A. in one of these disciplines with an academic minor in the other. Students who plan to attend graduate school in economics might consider the Interdisciplinary Studies in Economics and Mathematics major, focusing on the theoretical track, and add MATH 304 Statistical Inference Theory. Students undecided among these options are encouraged to contact a member of the coordinating committee.

Interdisciplinary Studies Major

The B.S. **major** in Interdisciplinary Studies in Economics and Mathematics requires a total of 18 credits, eight from economics and 10 from mathematics.

Required Economics Courses

ECON 103	Economic Principles and Problems	1
ECON 257	Intermediate Macroeconomic ¹	1
ECON 258	Intermediate Political Economy ¹	1
ECON 259	Intermediate Mathematical Microeconomics ¹	1
ECON 341	Econometrics	1
Two economics courses ²		2
Senior Seminar		
ECON 441	Advanced Econometrics	1
Total Credits		8

¹ The senior seminar ECON 441 Advanced Econometrics will serve as the Culminating Experience for the ECMA major, and will also address the speaking goal of the College Core Curriculum (CCC). ECON 257 Intermediate Macroeconomic and ECON 259 Intermediate Mathematical Microeconomics address the information literacy goals of the CCC and ECON 258 Intermediate Political Economy addresses the writing goals of the CCC.

² Selected in consultation with the student's academic adviser. One must be at the 300-level.

Students preparing for graduate studies in economics are strongly encouraged to complete a one-credit senior thesis in economics.

Required Mathematics Courses

MATH 201	Calculus I	1
MATH 202	Calculus II	1
MATH 211	Calculus III	1
MATH 216	Statistics I	1
MATH 217	Statistics II	1
MATH 245	Linear Algebra	1
MATH 303	Probability	1
Select one of the following tracks: ³		3

Theoretical track

MATH 280	Logic, Sets, and Proofs
MATH 308	Real Analysis I
MATH 345	Advanced Linear Algebra

Computational track

CSCI 203	Introduction to Computer Science I
MATH 343	Numerical Analysis
MATH 358	Topics in Operations Research

Statistical track

MATH 304	Statistical Inference Theory
MATH 358	Topics in Operations Research
MATH 405	Statistical Modeling

Total Credits 10

³ The track is selected in consultation with the academic adviser.

The recommended sequence of courses for students is as follows:

First Year

First Semester	Credits	Second Semester	Credits
ECON 103		1 ECON 259	1
MATH 201		1 MATH 202	1
		MATH 216	1
		2	3

Sophomore

First Semester	Credits	Second Semester	Credits
ECON 257		1 MATH 245	1
MATH 211		1 MATH 303	1
MATH 217		1	
		3	2

Junior

First Semester	Credits	Second Semester	Credits
ECON 258 ⁴		1 Economics elective	1
ECON 341 ⁴		1 Mathematics track course 2	1
Mathematics track course 1		1	
		3	2

Senior

First Semester	Credits	Second Semester	Credits
Second economics elective ⁴		1 Economics senior seminar ⁴	1
Mathematics track course 3 ⁴		1	
		2	1

Total Credits: 18

⁴ Either first semester or second semester.

Please see the Economics section and the Mathematics section of this catalog for a list of courses with course descriptions.

The goal of Bachelor of Science major in Interdisciplinary Studies in Economics and Mathematics is to combine the quantitative methods and the theoretical foundations of mathematics with the study of economics to address economic problems.

International Relations (IREL)

Faculty

Professor: Emek M. Uçarer

Associate Professors: Cymone Fourshey, David Mitchell (Chair), Zhiqun Zhu

Assistant Professors: Ilona Moore, Ron J. Smith

Visiting Assistant Professor: Emma G. Mullaney

International Relations is a field of study concerned with the cultural, economic, environmental, historic, military, and political interactions among the major units of the world, such as states, international organizations, transnational corporations, nongovernmental organizations, groups, and individuals. Courses from a number of departments and programs are drawn upon to offer a multidisciplinary major in international relations for the Bachelor of Arts degree.

The purposes of the major are to increase general knowledge about the history, institutions, interactions, and events of the international system; to develop insight into the objectives, decisions, and policies of state and nonstate actors; to provide a conceptual vocabulary and diverse theoretical perspectives to help explain and interpret international behavior; to build skills in critical analysis and evaluation of global issues; to develop an appreciation of commensurability and difference and acceptance of "others"; and to encourage evaluation and the solving of global problems. International Relations majors will develop skills in writing, speaking, and information literacy throughout their studies, but particularly in IREL 250 Theories of International Relations and their senior seminar Culminating Experiences.

The International Relations major provides a general education for students seeking greater knowledge about world affairs. It also provides a sound preparation for students interested in pursuing an M.A. or Ph.D. in international relations and related social sciences or a J.D. in law, and for careers in the Foreign Service, the federal government, international law, international business, banking and finance, international organizations, and nongovernmental organizations. International relations alumni have been accepted to the top graduate programs and law schools in the country, and are well represented in all of the listed international careers.

Major Requirements

The International Relations **major** consists of at least 11 courses to count exclusively toward the major.

ECON 227 or ECON 327	International Economics (completed by end of junior year) ¹ International Economic Theory	1
POLS 170	International Politics (completed by end of sophomore year)	1
IREL 250	Theories of International Relations ²	1
IREL 350	Globalization ³	1
Two area concentration courses (see list below) ⁴		2
Area concentration History course ⁵		1
Thematic core course (see list below) ⁶		1
Two thematic courses ⁶		2
One Culminating Experience seminar ⁷		1
Total Credits		11

¹ Students who are double majoring in international relations and economics should take ECON 327 International Economic Theory instead of ECON 227 International Economics. In those instances, ECON 327 International Economic Theory may count toward the economics major. Students counting ECON 327 International Economic Theory toward their economics major will need to take an additional IREL course to compensate. The additional course should be taken from the student's Area Concentration or Thematic Track.

² IREL 250 Theories of International Relations should be taken in the second semester of the sophomore year or in the first semester of the junior year. Students planning on spending a full year abroad should make sure that they complete IREL 250 before they go abroad. Students will ordinarily take POLS 170 International Politics before enrolling in IREL 250 Theories of International Relations, which is a W2 and will develop skills in writing, speaking, and information literacy.

³ IREL 350 Globalization should ordinarily be taken during the fall of the junior year. If a student is spending the entire junior year abroad, it may be taken during the senior year. Students will ordinarily take ECON 227 International Economics before enrolling in IREL 350 Globalization.

⁴ No more than two of these courses may be in the same department. A course that is counted toward the area concentration may not simultaneously count toward a thematic track.

⁵ One course must satisfy the history requirement for this area. The acceptable history courses for each area concentration are indicated by an ⁸ on the area concentration course lists. History courses taken abroad that are to be counted toward the area concentration must focus on the region or country of study. Histories of individual cities will not be accepted as satisfying the history requirement for the area concentration.

⁶ It is recommended that students take the core course first. A course that is counted toward a thematic track may not simultaneously count toward an area concentration.

⁷ Students must enroll in a seminar either semester of the senior year. This seminar, taught by international relations faculty and enrolled in by international relations students, will serve as the College Core Curriculum's Culminating Experience requirement. These courses will be taught as W2s and will develop skills in writing, speaking, and information literacy. IR seminars that are Culminating Experiences are designated by IREL 4XX course number.

Area Concentrations

The area concentrations offered are:

Africa

ECON 224	African Political Economy	1
ECON 235	African Economic Development	1
FREN 336	Francophone Africa	1
GEOG 236	Third World Development	1
HIST 290	Europe Imperialism and Colonialism ⁸	1
HIST 291	African History I ⁸	1
HIST 292	African History II ⁸	1
HIST 299	Topics in Non-western History (when relevant) ⁸	1
IREL/ANTH 235	Modern Africa <small>See also UNIV 200 Integrative Perspectives Course (Modern Africa)</small>	1
POLS 211	Third World Politics	1
SOCI 213	Race in Historical and Comparative Perspectives	1
SOCI 310	The Sociology of Developing Societies	1
UNIV 200	Integrated Perspectives Course <small>See also IREL 235/ANTH 235 (Modern Africa)</small>	1

Language Competency:

ARBC 201
& ARBC 202 Intermediate Arabic Conversation I
and Intermediate Arabic Conversation II

A 1-credit, 200-level French course taught in French

Asia

ANTH/WMST 232	Gender and Sexuality in South Asia	1
ANTH 243	Introduction to Southeast Asia Studies	1
EAST 274	The Greater Chinese Economy	1
EAST 278	Asian Economic Development	1
EAST 340	Comparative Pacific Basin Economics	1
EAST 234/HIST 294	China Since 1800 ⁸	1
EAST 339	China and the World Economy	1
EAST 255/HIST 296	Modern Japanese History ⁸	1
EAST 267/HIST 297	The People's Republic of China ⁸	1
IREL/POLS 225/EAST 269	Chinese Politics	1
IREL/POLS/EAST 226	East Asian Politics	1
IREL/POLS 283/EAST 248	East Asian International Relations	1
RELI 200/EAST 251	Buddhism	1
RELI 202	Hinduism	1
RELI 243	Religions of South Asia	1
RELI 245/EAST 252	Marketing Chinese Religions	1
RELI 246/EAST 253	Religions of Japan	1

Language Competency:

CHIN 201 or JAPN 201	Chinese III (or equivalent taken elsewhere) Japanese III	1
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Europe, Eurasia and Russia

ECON 277	The French Economy: Structures and Policies (open only to Bucknell en France students)	1
ECON 324	European Economic History ⁸	1
ECON 405	Comparative Economic Systems	1
FREN 270	La France actuelle	1
FREN 370	Topics in Civilization	1

GEOG 214	Europe in Age of Globalization	1
GRMN 270	The Bourgeois Era: 19th-century Germany	1
GRMN 272	Modern German Culture 1945-1990 (when relevant)	1
GRMN 295	Topics in German Studies (when relevant)	1
GRMN 393	Advanced Seminar in Selected Cultural Topics (when relevant)	1
HIST 233	European State Systems (1660-1815) ⁸	1
HIST 236	Nineteenth-century Europe ⁸	1
HIST 239	Contemporary Europe, 1890-1995 ⁸	1
HIST 247	Topics in European History (when relevant and must be taken on campus)	1
HIST 252	Soviet Russia	1
HIST 290	Europe Imperialism and Colonialism ⁸	1
HIST 330	European History (when relevant) ⁸	1
IREL 218/POLS 284	International Relations of Europe	1
ITAL 295	Topics in Italian Studies (when relevant)	1
POLS 210	Political Theory ⁸	1
POLS 222	Russian Politics ⁸	1
POLS 223	European Politics	1
POLS 288	French Foreign Policy Since 1945 (open only to Bucknell en France students)	1
RUSS 302	Twentieth-century Russian Culture and Civilization	1
SPAN 270	Spanish Cultural Tradition	1
SPAN 295	Topics in Spanish (when relevant)	1

Language Competency:

Select one of the following: (or equivalent taken elsewhere) 1

A 1-credit, 200-level French course taught in French

GRMN 204	German Conversation and Composition	
ITAL 205	Discovering Italy	
RUSS 201	Advanced Russian I	
SPAN 207	Toward Advanced Spanish	

Latin America and Caribbean

ANTH 352	Ritual, Resistance, and Rebellion in South America	1
ECON 266	Political Economy of Caribbean	1
GEOG 236	Third World Development	1
GEOG 237	Grassroots Development: Nicaragua	1
GEOG/IREL/LAMS 292	Service-Learning in Nicaragua	1
GEOG 309	Topics in Advanced Economic Geography	1
HIST 282/LAMS 295	Modern Latin America ⁸	1
HIST 311	U.S. History since 1865 ⁸	1
IREL/POLS 285	The International Relations of Latin America in the 21st Century	1
IREL 400	Seminar: Topics in International Relations	1
LAMS 150	Latin America: An Introduction ⁸	1
LAMS/IREL 201	Modernization and Social Revolution in Latin America	1
LAMS 202/ENST 209	Rainforests and Ecopolitics in Latin America	1
LAMS 224	Becoming Latinos	1
LAMS 250	Latin America: Challenges for the 21st Century	1
LAMS 297	Colonial Latin America ⁸	1
LAMS 370	Seminar on Latin America in the Global System	1
POLS 211	Third World Politics	1
POLS 219	Latin American Politics	1
POLS 350	Seminar in Comparative Politics (when relevant)	1
SOCI 213	Race in Historical and Comparative Perspectives	1
SOCI 245	Remaking America: Latin American Immigration	1
SOCI 290	Caribbean Society Music and Ritual	1

SOCI 310	The Sociology of Developing Societies	1
SOCI 354	Development, Dictators and Diaspora	1
Language Competency:		
SPAN 207	Toward Advanced Spanish (or equivalent taken elsewhere)	1
SPAN 280	Latin American Cultural Traditions	1

Middle East

ARBC 203	Unveiling the Hijab's Culture	1
HIST 194	History of Modern Middle East	1
HIST 290	Europe Imperialism and Colonialism ⁸	1
HIST 299	Topics in Non-western History (when relevant)	1
IREL 229	Middle East Conflict and Revolution	1
POLS 224	Government and Politics of the Middle East ⁸	1
POLS 287	U.S. Foreign Policy and the Middle East ⁸	1
POLS 289	The Arab-Israeli Conflict	1
POLS 381	Arab-Israeli Conflict, Peace Process	1
RELI 201	Islam	1
RELI 209	Israel: Land, People, and Tradition ⁸	1
RELI 210	Judaism	1
Language competency:		
ARBC 201 & ARBC 202	Intermediate Arabic Conversation I and Intermediate Arabic Conversation II (or equivalent taken elsewhere)	1

⁸ This course satisfies the history requirement for the area.

Thematic Tracks

Each track is anchored by a required core course.

Development and Sustainability

IREL 252	Political Economy of Global Resources (Core Course)	1
ANTH/IREL 235	Modern Africa	1
See also UNIV 200 Integrative Perspectives course (Modern Africa)		
ANTH 251	Women and Development	1
ECON 235	African Economic Development	1
ECON 357	Economic Development	1
ECON 439	China and the World Economy	1
ENST 215	Environmental Planning	1
ENST 226	Water Politics and Policies	1
ENST 245/POLS 291	Environmental Policy and Politics	1
ENST 255	Environmental Injustice	1
ENST/GEOG 325	Nature, Wealth and Power	1
ENST 356	Nationalism, Identity and Nature	1
ENST/POLS 393	International Environmental Aid	1
GEOG 209	Economic Geography	1
GEOG 236	Third World Development	1
GEOG 237	Grassroots Development: Nicaragua	1
GEOG 257	Global Environmental Change	1
GEOG/IREL/LAMS 292	Service-Learning in Nicaragua	1
GEOG 312	Geographies of Health	1
GEOG 345	Food and the Environment	1
IREL 210	The Politics of International Aid and Development	1
IREL 234	Environment & Development	1
IREL 240	Human Security	1
IREL 270	Global Governance of Climate Change	1

LAMS 202/ENST 209	Rainforests and Ecopolitics in Latin America	1
POLS/IREL 277	International Political Economy	1
UNIV 200	Integrated Perspectives Course (Modern Africa)	1
See also IREL 235/ANTH 235 (Modern Africa)		
WMST/ECON 253	Gender and Migration	1

Foreign Policy and Diplomacy

IREL 276	Comparative Foreign Policy (Core Course)	1
EAST 248	International Relations in East Asia	1
ECON 418	American Economic History	1
ECON 439	China and the World Economy	1
GEOG 211	Political Geography	1
HIST 214	Topics in American History (when relevant)	1
HIST 233	European State Systems (1660-1815)	1
HIST 247	Topics in European History (when relevant)	1
HIST 287	Perspectives: The Vietnam War	1
HIST 290	Europe Imperialism and Colonialism	1
HIST 299	Topics in Non-western History (when relevant)	1
HIST 311	U.S. History since 1865 (when relevant)	1
HIST 399	Non-western History (when relevant)	1
IREL/GEOG 216	Borders and Politics of Mobility	1
IREL 218/POLS 284	International Relations of Europe	1
IREL 231	Peace Studies: Conflict Resolution	1
IREL 240	Human Security	1
IREL 260	Humanitarianism	1
IREL/POLS 275	Global Governance	1
IREL 390	American Global Strategy	1
POLS 271	American Foreign Policy	1
POLS 272	U.S. National Security Policy	1
POLS 273	The Atlantic Alliance	1
POLS 280	War	1
POLS 287	U.S. Foreign Policy and the Middle East	1
POLS 288	French Foreign Policy Since 1945	1
POLS 289	The Arab-Israeli Conflict	1
POLS 380	Seminar in International Politics (when relevant)	1
POLS/IREL 381	Arab-Israeli Conflict, Peace Process	1

Global Governance and Conflict Resolution

IREL/POLS 275	Global Governance (Core Course)	1
HIST 311	U.S. History since 1865 (when relevant)	1
HIST 399	Non-western History (when relevant)	1
IREL 200	International Relations: Topics/Issues	1
IREL/GEOG 216	Borders and Politics of Mobility	1
IREL 218/POLS 284	International Relations of Europe	1
IREL 229	Middle East Conflict and Revolution	1
IREL 231	Peace Studies: Conflict Resolution	1
IREL 240	Human Security	1
IREL 255/POLS 278	International Law	1
IREL 260	Humanitarianism	1
IREL 270	Global Governance of Climate Change	1
IREL/POLS 277	International Political Economy	1
IREL/POLS 286	Nonstate Actors in International Relations	1
IREL 390	American Global Strategy	1

PHIL 233	The Philosophy of Peace and Nonviolence	1
POLS 273	The Atlantic Alliance	1
POLS 280	War	1
POLS 281	Peace Studies: Conflict Resolution	1
POLS 289	The Arab-Israeli Conflict	1
POLS 381	Arab-Israeli Conflict, Peace Process	1
SOCI 235	Nongovernmental Organizations	1
SOCI 309	How Holocausts Happen	1

Additional Requirements

There are three additional requirements and rules for the International Relations major as stipulated below:

- Of the 11 courses recorded for the major, no more than six courses may be taken from one department.
- No more than two off-campus courses will count toward the major per semester of study abroad. Students studying abroad for one semester may count two courses toward the major. Students studying abroad for a full year may count four courses toward the major.
- Competence must be demonstrated in a foreign language compatible with the area concentration, normally by successfully completing a one-credit fifth-semester equivalent course on the culture or society of a country or region. The language(s) appropriate to each area concentration, and the Bucknell equivalent levels that are required to satisfy the major's language requirement, are noted in the area concentration course list. International students whose native language is not English are exempted, in consultation with the department chair, from the language requirement if they select an area concentration suitable for the native language.

One semester of study abroad is strongly recommended in a country within the area concentration and where the language being used for the language requirement is spoken, or in a study abroad program compatible with the selected thematic track. In order to receive credit for study abroad, it is expected that the country visited will fit with the area of concentration. With prior approval, students may transfer credit from study abroad that is outside of their area of concentration if the study abroad is intended to complement a thematic track. Off-campus study in Washington, D.C., including the Washington Semester or Washington Center, also is recommended, but not as highly as overseas study. Students should contact the Office of International Education for information about off-campus study.

The department encourages students to pursue summer internships in positions related to international relations. Students have interned in embassies abroad, as well as in government agencies in Washington, D.C. Students who are interested in pursuing a subject in greater depth are encouraged, in consultation with the academic adviser, to consider independent study or honors thesis. Students planning to pursue graduate study in international relations should consider taking a course in social science methods, computer science, and microeconomics and macroeconomics.

For additional information, students are encouraged to visit the Department of International Relations website at bucknell.edu/InternationalRelations, where students can find, among other things, recommended sequences for students pursuing a major in international relations.

International Relations Minor

The international relations **minor** consists of a minimum of five courses.

POLS 170	International Politics	1
IREL/POLS 277 or ECON 227	International Political Economy International Economics	1

Select one of the following: 3

Three courses from one area concentration (see lists on the major's page)

Three courses from one thematic track (see lists on the major's page)

Students who choose to complete their international relations minor through an area concentration are encouraged to take one of the designated history courses, which are noted with ⁸ in the lists on the major's page. Students who choose to complete their international relations minor through a thematic track are encouraged to take the appropriate core course. Students minoring in international relations are strongly encouraged, but not required, to develop competence in a suitable language.

1. Understand the major concepts of international relations, including: power, the international system, balance of power, hegemony, conflict, cooperation, integration, globalization, interdependence, dependence, regimes, globalization, equality, justice, sustainability, and international political economy.
2. Understand and critically evaluate the theories and approaches to international relations, including realism, liberalism, classical and neo-Marxism, Neo-Gramscian, critical, post-modernist, post-colonial, sexuality and feminist.
3. Identify the key actors in international relations—including states, intergovernmental organizations, non-governmental organizations, transnational corporations, global civil society, and individuals—and understand how these actors interact to give substance to international relations.
4. Demonstrate a knowledge of the key dimensions, events and processes of international relations within their historic context, such as: the formation of the modern state system, the Treaty of Westphalia, the evolution of global capitalism, the origins of the Cold War, the shift to the post-

Cold War system, the role of race, gender and class in the structure of the modern world system, major conflicts, such as the world wars, U. S. intervention in various places in the world, ascendant conflicts, the features and effects of globalizing market capitalism, growing environmental problems, and human rights.

5. Demonstrate knowledge of the multi-disciplinary nature of international relations by establishing connections with the disciplines that have shaped and continue to influence international relations: politics, economics, society, culture, history, language, race, ethnicity, gender and sexuality.
6. Demonstrate skills of critical analysis and written and oral communication, including the ability to:
 - a. Read and reflect on disciplinary materials and literature carefully, critically, and insightfully;
 - b. Write well-organized, informed, logically argued, clear, persuasive, and stylistically correct essays and papers;
 - c. Participate actively in class discussions, verbally expressing ideas clearly, logically and persuasively.
7. Work effectively in teams and project groups.

Japanese Language (JAPN)

Faculty

Associate Professors: Erik R. Lofgren, James J. Orr (Chair)

Assistant Professors: Song Chen, Xi Tian

Visiting Assistant Professor: Fredric Ye Tian

Adjunct Associate Professor: Elizabeth L. Armstrong

See East Asian Studies (p. 58).

Jewish Studies Minor

Faculty

Coordinator: James E. Lavine

The interdisciplinary **minor in Jewish Studies** consists of five courses from the lists below, comprising primarily "Core" courses or "Topics" courses in Jewish Studies with no more than one "Secondary" Course.

Core Courses

(The primary focus of which is Judaism.)

HEBR 101	Beginning Modern Hebrew	1
HEBR 102	Beginning Modern Hebrew II	1
HEBR 103	Intermediate Hebrew I	1
HEBR 104	Intermediate Hebrew II	1
HEBR/UNIV 236	Israel: Literature, Film, Culture	1
HEBR 250	Jews and the City: Literature and Film	1
PHIL 270	Jewish Philosophy	1
ENLS 268	Jewish-American Literature and Film	1
RELI 205	Hebrew	1
RELI 207	Holocaust: Event and Reception	1
RELI 209	Israel: Land, People, and Tradition	1
RELI 210	Judaism	1
RELI/WMST 211	Women In Judaism	1
RELI 222	Images of Jerusalem	1
RELI 237	Judaism in Film	1
RELI 276	Judaism and Masculinity	1
RELI 279	Judaism and Law	1
RELI 305	The Male Body in Judaism	1
RELI 306	Messianism and Madness	1
RELI 307	Post-biblical Literature	1
RELI 318	Jewish Thought	1
RELI 321	Introduction to Jewish Law	1

SOCI 410	Remember the Holocaust	1
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Secondary Courses

(The focus of which includes Judaism.)

PHIL 206	Medieval Philosophy	1
CLAS 218	Roman History	1
ARTH 221	Visual Cultures of the Mediterranean 1 - 1000 CE	1

Topics Courses

(When the focus of the course includes Judaism and the course has the approval of the Board of the Interdisciplinary Minor in Jewish Studies.)

HEBR/HUMN 215	Hebrew Bible and Modern Literature	1
HIST 245	Topics in German History	1
HIST 247	Topics in European History	1
PHIL 309	Seminar in Historical Studies: Individual Philosophers	1
RELI 223	History Western Religious Thought	1
RELI 228	Religions in the Modern World	1
RELI 315	Topics in American Religion	1
RELI 325	Major Religious Thinkers	1
RELI 326	Major Religious Movements	1
UNIV 200	Integrated Perspectives Course	1

Languages, Cultures and Linguistics

Faculty

Professors: Barbara K. Altmann (Provost), Philippe C. Dubois (FREN Director), Katherine M. Faull, Angèle M. Kingué, James E. Lavine (LING Director), Peter Morris-Keitel (GRMN Director)

Associate Professors: Logan J. Connors, Nathalie Dupont, Renée K. Gosson, Elaine Hopkins, Bernhard Kuhn (ITAL Director), Ludmila S. Lavine (RUSS Director), Helen G. Morris-Keitel (Chair), John Westbrook

Assistant Professors: Bastian Heinsohn, Martin Isleem (ARBC Director), Heidi Lorimor, Anna Paparcone

Visiting Assistant Professors: Anneliese Renck, Or Rogovin

Adjunct Assistant Professor: Lisa A. Perrone

Lecturers: Lisa Biddinger, Sarah S. Moore

Teaching Assistant: Dena Isleem

- American Sign Language (p. 104)
- Arabic Studies (p. 105)
- French and Francophone Studies (p. 106)
- German Studies (p. 108)
- Hebrew (p. 110)
- Italian Studies (p. 110)
- Linguistics (p. 112)
- Russian Studies (p. 113)

Learning a foreign language contributes to a liberal education by providing performative exercises in cultural practices and linguistic concepts that open up new perspectives on what it means to be human. Furthermore, foreign language courses allow access to world views expressed in the target language on their own linguistic and cultural terms, thus also making possible a more profound reflection on one's own source language and culture. The Department of Languages, Cultures and Linguistics' offerings at all levels investigate and analyze important interconnections between the histories, societies, cultures, and languages of the people who speak Arabic, French, German, Hebrew, Italian, and Russian, as well as offering students an introduction to American Sign Language and Deaf Culture. The curricula within the Department of Languages, Cultures and Linguistics asserts the importance of attaining fluency not only in the target language but also in the nuances of interpreting the target language's literatures and other modes of cultural production.

The goal of the Department of Languages, Cultures and Linguistics is to allow students to achieve competency and literacy in the target language in order to employ that target language in a range of intellectual and professional contexts. The department's mission is firmly supported by the study of current thinking in linguistics where language is analyzed as a phenomenon in itself. Courses in linguistics link the study of human language to the cognitive underpinning of language acquisition and production in both the source and target cultures.

The department offers courses in six modern languages, in American Sign Language, and in linguistics. Language courses are regularly offered in Arabic, French, German, Hebrew, Italian, Russian, and on occasion in other Slavic languages.

Coursework in all the programs is designed to promote a level of language proficiency and cultural understanding that will enable students to be active participants in a shrinking multicultural world. Each program's curriculum features a sequence of courses focusing on the development of language skills, at the lower level, followed by a transition to upper-level courses that focus on the appreciation and critical analysis of a wide variety of literary and cultural works. As the Goals 2000 document of the National Standards in Foreign Language Education states: "Knowing another language system, another culture, and communication strategies, enables students to access new information and knowledge, develop insight into their own language and culture, and participate in multilingual communities and a global society."

Students are strongly encouraged to continue or begin the study of the language(s)/culture(s) of their choice as early in their undergraduate career as possible. Doing so will ensure the possibility of completing a major or minor in the language and will open the door to many stimulating study abroad programs. Many students find that the study of other languages and cultures provides a good background for work in other disciplines. In addition, by working to an advanced level of language proficiency and cultural awareness, students may improve their chances for a Fulbright or other international fellowship after graduation.

Placement: French, German, Italian, and Russian

First-year students with prior instruction or background in French, German, Italian, and/or Russian should take the online placement examination before arriving at Bucknell regardless of whether they have taken the AP exam or the SAT II. Information on accessing this exam is included in the first-year student registration materials. Any questions regarding placement should be directed to the program directors.

Placement: Arabic

First-year students with prior instruction or background in Arabic should contact the program director (Arabic) to consult about the appropriate placement level.

World Literature and Culture (in English)

ARBC 203	Unveiling the Hijab's Culture	1
EAST 211	Premodern Japanese Literature in Translation	1
EAST 212	Modern Japanese Literature in Translation	1
EAST 213	Chinese Literature in Translation	1
ITAL 240	Love and Politics (in English)	1
GRMN 261	Nazi Culture	1
HEBR 215	Hebrew Bible and Modern Literature	1
HEBR 236	Israel: Literature, Film, Culture	1
RUSS 250	Crimes and Punishments: 19th-century Russian Literature	1
RUSS 255	Politics of Writing: 20th-century Russian Literature	1
RUSS 325	Dostoevsky and Tolstoy: Literary Philosophy	1
RUSS 330	Nabokov and His Worlds	1

For descriptions, see the respective programs of the Department of Languages, Cultures and Linguistics, and the Department of East Asian Studies.

American Sign Language (SIGN)

Faculty

Lecturers: Lisa Biddinger, Sarah S. Moore

American Sign Language (ASL), SIGN (as it's called at Bucknell) is taught to students with little or no knowledge of ASL and Deaf Culture. SIGN provides students with the skills needed to communicate comfortably in a wide variety of situations. Discussions include basic fingerspelling techniques, ASL grammatical structures, non-manual markers, and vocabulary. Emphasis is placed on developing proper expressive and receptive skills.

Necessary grammatical structuring is emphasized more heavily in level two, although it's a key component in level one so students understand how to produce grammatically correct ASL. Cultural information is taught throughout the class so students learn to feel comfortable interacting with the Deaf community in a way that is respectful and aware. Linguistic and social behaviors are vital for expressing oneself accurately in ASL. SIGN also explores current events and/or historical events about deafness or Deaf culture and students are encouraged to research these issues and reflect upon them.

ASL is among the leading minority languages in the United States and this course explores the diverse ways students can apply their new knowledge of ASL in any career field.

Arabic Studies (ARBC)

Faculty

Assistant Professor: Martin Isleem (Director)

Teaching Assistant: Dena Isleem

From a global perspective, the study of the Arabic language has become increasingly important and Arabic speakers are in great demand in certain careers. Approximately 300 million people speak Arabic, making it one of the world's most widely spoken languages. It is the official language of 25 countries, as well as one of the official languages of the United Nations. Moreover, being the sacred language of the Qur'an, Arabic honors its richness and ancient heritage that is culturally vibrant today.

Since 2006, the Arabic Studies program at Bucknell University has been targeting the acquisition of the Arabic language and promoting familiarity with the world's Arab cultures, literatures, and histories. Language courses offered at Bucknell consist of beginning and intermediate Arabic courses in Modern Standard Arabic (MSA) and Spoken Arabic, particularly the Levantine dialect. The growth of the Arabic Studies program prompted the College of Arts and Sciences and the Department of Languages, Cultures and Linguistics to approve a minor in Arabic Studies in 2013.

The Arabic Studies minor consists of six courses.

Four Core courses:

ARBC 101	Beginning Arabic I	1
ARBC 102	Beginning Arabic II	1
ARBC 103	Intermediate Arabic I	1
ARBC 104	Intermediate Arabic II	1

Two Elective courses¹:

ARBC 201	Intermediate Arabic Conversation I	.5
ARBC 202	Intermediate Arabic Conversation II	.5
ARBC 203	Unveiling the Hijab's Culture	1
ARBC 204	Naming violence: Language, space and power in the Israeli Palestinian conflict	1
ARBC 250	Topics in Arabic Studies	1
ARBC 301	Advanced Topics in Arabic	.5-1
ARTH 221	Visual Cultures of the Mediterranean 1 - 1000 CE	1
ARTH 275	Art and Architecture of the Islamic World	1
CLAS 228	Ancient Near Eastern History	1
HIST 100	Thinking about History (The Question of Palestine)	1
HIST 194	History of Modern Middle East	1
HIST 229	Topics in American Intellectual History (Iran-Turkey: Islam/The Secular)	1
HIST 290	Europe Imperialism and Colonialism	1
HIST 399	Non-western History (U.S. in the Middle East since 1945)	1
IREL 229	Middle East Conflict and Revolution	1
IREL 381	Arab-Israeli Conflict, Peace Process	1
RELI 201	Islam	1
PHIL 267	Islamic Philosophy	1
POLS 287	U.S. Foreign Policy and the Middle East	1
POLS 289	The Arab-Israeli Conflict	1
POLS 224	Government and Politics of the Middle East	1
POLS 266	Nationalism East and West	1

¹ Two half-credit courses are considered as one course toward fulfilling the minor requirements.

Arabic minors are strongly encouraged to participate in approved study abroad programs in any Arabic-speaking country. No more than two of the study abroad courses can count toward fulfilling the Arabic minor requirements. Arabic minors who opt to apply for an Arabic study abroad program must receive course approval from the director of the Arabic Studies Program prior to starting the program.

Students interested in the minor should consult Professor Martin Isleem for the appropriate sequencing of courses.

The goal of the Arabic minor is to equip Bucknell students with definable linguistic proficiency in four skills: speaking, writing, listening and reading, which are in line with the American Council on the Teaching of Foreign Language's (ACTFL) Standards for the Arabic language. The minor also aims to familiarize Bucknell students with the various cultural aspects of Arabic-speaking countries in the Middle East and North Africa. Students with an Arabic minor will attain at least the intermediate level of proficiency in Arabic, which will furnish them with a solid foundation in their pursuit of academic and professional careers for which this is a prerequisite. Students minoring in Arabic Studies will be able to:

1. Achieve at least intermediate-mid level of proficiency according to ACTFL standards and guidelines (2,4,7,8,9)
2. Demonstrate proficiency in both Standard and Spoken Arabic by their ability to engage with native speakers of Arabic. An Oral Proficiency Interview (OPI) test will be conducted at the end of each academic year (1,3,6,7)
3. Understand customs, perspectives and gestures commonly found in various Middle Eastern cultures and compare them to their own (3,4,5,6,7,8,9)
4. Implement their linguistic skills as well as their knowledge of the Arab culture outside the classroom setting (2,3,9)
5. Apply knowledge of other disciplines in the course of their Arabic Studies minor, promoting exchanges of knowledge that enhance interdisciplinary education. (1,2,3,4,6,7,8,9)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

French and Francophone Studies (FREN)

Faculty

Professors: Barbara K. Altmann (Provost), Philippe C. Dubois (Director), Angèle M. Kingué

Associate Professors: Logan J. Connors, Nathalie Dupont, Renée K. Gosson, Elaine Hopkins, John Westbrook

Visiting Assistant Professor: Anneliese Renck

The French major is a rigorous and interdisciplinary major consisting of nine courses. The major is best seen as a progression of linguistic-cultural study organized in four stages. The 100-level courses focus on language proficiency in cultural context. The 200-level courses consolidate language skills while beginning a more interdisciplinary study of French and Francophone literatures and cultures. A year or semester in France provides direct experience in the French culture. The 300-level courses focus on specific critical approaches to topics in literature, civilization, and cultural studies.

The **major** consists of nine courses. These nine courses must include at least one course in pre-revolutionary French literature or civilization, one course in post-revolutionary French literature or civilization, and one course in Francophone literature or civilization. During their time at Bucknell, majors will take at least two 300-level courses. One course outside the French and Francophone Studies Program may count toward the major upon approval of that course by the Program Director. French courses starting with FREN 101 may count toward the major.

All French and Francophone Studies majors have the opportunity to satisfy College Core Curriculum requirements by taking required courses for the major. In addition, French and Francophone Studies majors will have the opportunity to take W2 courses in the 200- and 300-level literature and civilization courses required for the major. Through thoughtfully articulated writing assignments, presentations, in-class discussions, and user education workshops in the library, French and Francophone Studies majors will hone their research and analytical skills. They will gain familiarity with discipline-specific journals and databases, and learn to evaluate information sources. As they engage in the critical interdisciplinary thinking necessary for successful completion of the major, students will lay the foundation for independent lifelong learning.

Courses Offered at Bucknell

All students who have had French in high school should take the online placement test prior to enrolling for the first time in a course at the 100-level. Instructions can be found at bucknell.edu/x939.xml or via *myBucknell*.

French and Francophone Studies Major

The **major** in French and Francophone Studies consists of a minimum of nine courses at the FREN 101 Discovering French level or above, excluding:

FREN 201	Intermediate French Conversation I	.5
FREN 202	Intermediate French Conversation II	.5
FREN 262	Intercultural Communication	1
FREN 301	Advanced French Conversation I	.5
FREN 302	Advanced French Conversation II	.5

These must include:

Select at least 1 Pre-Revolution France literature and/or civilization course in French at the 200- or 300-level

FREN 230	French Literature I	1
or FREN 322	Medieval and Renaissance Studies	
or FREN 324	Seventeenth-Century Studies	
or FREN 325	Eighteenth-Century Studies	
or FREN 330	Topics in Literature	

Select at least 1 Post-Revolution France literature and/or civilization course in French at the 200- or 300-level

FREN 231	French Literature II	1
or FREN 255	Introduction to French Cinema	
or FREN 270	La France actuelle	
or FREN 271	La France artistique	
or FREN 280	Translating Food Cultures	
or FREN 326	Nineteenth-Century Studies	
or FREN 327	Twentieth-Century Studies	
or FREN 370	Topics in Civilization	
or FREN 371	Topics in the Arts	

Select at least 1 Francophone literature and/or civilization course in French at the 200- or 300-level

FREN 236	Topics in Francophone Literature and Culture	1
or FREN 336	Francophone Africa	

At least two courses at the 300-level 2

Students may elect to take one course outside of the French & Francophone Studies program (e.g. in History, English, Anthropology, etc.) on a French/Francophone subject. See list of pre-approved courses on the French & Francophone Studies webpage. Students must obtain approval to "count" a course not on the list from the French & Francophone Studies Program Director.

All majors will complete a **Culminating Experience**: During the senior year (or second semester of the junior year with permission of their adviser and the program director), majors in French and Francophone Studies will designate as their Culminating Experience one 300-level seminar on a French or Francophone topic taught by a faculty member in the French and Francophone Studies program. As part of the learning activities in that seminar, majors will undertake a paper or research project related to French or Francophone literature or culture. At the end of the semester, they will present the result, both in its final written form and as an oral presentation in French based on their research, preferably at a symposium organized by the French and Francophone Studies program on campus. These two components of the Culminating Experience (paper and presentation) must provide evidence of: 1) competency in written and oral communication through structured arguments using appropriate forms of textual, cultural and visual analysis and evidence and 2) familiarity with critical approaches, academic research and methodology in the field of French and Francophone Studies. A committee of French and Francophone Studies faculty will evaluate these Culminating Experiences to determine whether or not they meet both of these two learning objectives and thus satisfy the requirement. With the permission of the French and Francophone Studies adviser, students who are taking an independent study or pursuing honors in French and Francophone Studies may satisfy the Culminating Experience requirement through the successful completion of an Independent Study project or an Honors Thesis. However, in such cases, these students will still be required to do an oral presentation in French based on their research project or thesis in order to provide evidence for the two learning outcomes under examination, as stated above.

French and Francophone Studies Minor

The **minor** in French and Francophone Studies consists of five courses *taught in French* at the FREN 101 Discovering French level and beyond, excluding:

FREN 201	Intermediate French Conversation I	.5
FREN 202	Intermediate French Conversation II	.5
FREN 262	Intercultural Communication	1
FREN 301	Advanced French Conversation I	.5
FREN 302	Advanced French Conversation II	.5

Residence abroad is the best way to gain proficiency in the language and knowledge of the culture. Bucknell's own study abroad program, Bucknell *en France*, located in Tours, can accommodate students at all proficiency levels. Internships can be arranged for advanced students. It is strongly recommended that minors participate in the Bucknell *en France* program in Tours.

Majors in our program will be able to:

1. Speak, read, write, and understand French at an “Advanced-Low” level as defined by the proficiency criteria of the American Council on the Teaching of Foreign Languages. (2, 3, 7, 9)
2. Demonstrate familiarity with the major Francophone writers from the Middle Ages through the Twenty-First Century, and with major trends in Francophone literatures and cultures. (1, 2, 3, 6, 7, 9)
3. Demonstrate cultural competency in French-Francophone civilizations, including familiarity with attitudes, lifestyles, conceptions of society, social and political structures from historical, anthropological, and symbolic perspectives. (1, 2, 3, 4, 5, 6, 7, 9)
4. Demonstrate competency in written and oral communication through the production of persuasive texts and presentations supported by structured arguments using appropriate forms of textual, cultural and visual analysis and evidence. Such texts and oral presentations will respect disciplinary norms for evidence and citation. (1, 2, 6, 7, 8, 9)
5. Demonstrate research competency in French-Francophone literature and culture, including familiarity with major journals, critical approaches, academic research and methodology, current news from the target countries, bibliographical and other sources related to coursework, contemporary cultural sources, and interactive communicative sites. (1, 2, 6, 7, 8, 9)
6. Demonstrate the ability to synthesize learning from within and outside French and Francophone studies in order to develop a global view of the discipline and how the knowledge and skills it promotes can be applied beyond Bucknell. (1, 2, 3, 4, 5, 6, 7, 8, 9)

Minors in our program will be able to:

1. Speak, read, write, and understand French at an “Intermediate-High” level as defined by the proficiency criteria of the American Council on the Teaching of Foreign Languages. (2, 3, 7, 9)

Numbers in parentheses reflect related Education Goals (<http://www.bucknell.edu/x50032.xml>).

German Studies (GRMN)

Faculty

Professors: Katherine M. Faull, Peter Morris-Keitel (Director)

Associate Professor: Helen G. Morris-Keitel

Assistant Professor: Bastian Heinsohn

German Studies provides an integrated and interdisciplinary approach to the study of German language, the analysis of artifacts of German culture – literature, art, music, film, etc. – and the use of German for special purposes, for example, in a business setting.

Coursework in the discipline combines the achievement of greater language proficiency in the areas of reading, writing, speaking, and listening with a basic knowledge of German culture and methods of critical interpretation. There have been major thinkers in almost every field from physics to philosophy, economics, or psychology who were German-speakers, and today, Germany contributes significantly to political, cultural, and economic developments in Europe. German Studies also furthers critical thinking skills while fostering cross-cultural understanding.

The German Studies program has as its goal that all majors achieve an intermediate-high to advanced-low proficiency in the areas of linguistic and cultural knowledge. This means that German majors can communicate not only about daily needs but that they also can understand and articulate positions on social, literary, or cultural topics with a reasonable amount of linguistic accuracy. This is to say that as students progress through the major they learn various theoretical approaches to the interpretation of cultural artifacts and must, therefore, keep working on their German language skills in order to acquire the vocabulary and syntax necessary to express more complicated ideas and concepts. In general, students’ comprehension skills, reading and listening, are further developed than their production skills, speaking and writing, when finishing the major. Additional aspects inherent to this goal include increasing students’ understanding of the way in which cultural artifacts, literature, film, theater, music, art, advertising, etc., are embedded in a historical context that determines gender, class, and race relations within the target culture(s). Simultaneously, comparisons and contrasts are made in regard to the learners’ own cultural background(s) in order to foster cross-cultural understanding.

All German Studies majors will work on developing their skills in writing by taking at least two writing-intensive courses (W2) in the major: GRMN 204 German Conversation and Composition and GRMN 230 Genre and History: Introduction to German Studies. In addition, every course in the major will include a variety of writing assignments, reaction papers, arguments in regard to a specific question, and/or research papers. In every course a student takes at Bucknell that counts toward the major, students will give at least one oral presentation (either individually or in a group). All of the courses that count toward the major are discussion-oriented so that students get plenty of opportunities to develop their abilities to articulate their interpretation of the material at hand, to ask questions of others, and to respond to questions. The oral and written work will require students to consult online German resources, scholarly journals, and other print materials. In GRMN 230 Genre and History: Introduction to German Studies, students will receive discipline-specific instruction on how to locate, to evaluate, and to use scholarly information in the field of German Studies. These skills will be reviewed and refined in other 200- and 300-level courses.

A major in German may provide the basis for graduate work within the field. Moreover, German is considered a useful second language in many disciplines in the humanities, such as philosophy or art history. In combination with other majors, such as economics, international relations or management, a German major can prepare one for a career in international business or law or in the foreign service.

Major in German

The **major** in German consists of the equivalent of seven full-credit courses plus one .25-credit Culminating Experience course at the GRMN 204 German Conversation and Composition level and above. Four of these courses must meet specific requirements:

Conversation and Composition

GRMN 204	German Conversation and Composition (or its equivalent)	1
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German Cultural Issues

Select one of the following:		1
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GRMN 270	The Bourgeois Era: 19th-century Germany (or its equivalent)
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GRMN 272	Modern German Culture 1945-1990 (or its equivalent)
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GRMN 273	The Berlin Republic since 1990 (or its equivalent)
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Methods of German Studies

GRMN 230	Genre and History: Introduction to German Studies (or its equivalent)	1
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At least two 300-level courses at Bucknell (only one may be an independent study)		2
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Culminating Experience		.25
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Courses not applicable to the major:

GRMN 201	Strategies in Speaking German	.5
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GRMN 202	Strategies in Speaking German	.5
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GRMN 310	German for Reading Knowledge	1
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The Culminating Experience in German Studies can be fulfilled in one of three ways:

- an Honors thesis in German Studies,
- a .25 course that results in a presentation at the annual German Studies mini-conference, or
- an approved course in the Department of Languages, Cultures and Linguistics that brings together students from the various majors in the department.

In most instances, students will enroll in the Culminating Experience course in the spring of their senior year.

German majors are strongly urged to participate in a study abroad program approved by Bucknell's German Studies program. The benefits of such a total immersion experience in attaining linguistic and cultural proficiency cannot be overemphasized. Many abroad programs also offer internship experiences. Students interested in study abroad should consult the faculty of the German Studies program at the earliest possible date.

All majors who meet the requirements set by the Honors Council and who wish to earn honors in German are encouraged to do so. Students interested in writing an Honors Thesis should contact a German faculty member early in the second semester of their junior year to discuss the process and to define a topic.

German majors and minors should supplement their study of German with work in other languages, European history, art history, music, philosophy, or work in European political science and economics.

Students planning to teach German at the secondary level should consult with the German Studies program and Bucknell's department of education as soon as possible.

Minors in German

German Minor

The **minor** in German consists of the equivalent of five full-credit courses at the GRMN 101 Exploring Your World - elementary level I level or above. There are no other specific course requirements for the minor. Students interested in minoring in German should consult a German Studies program faculty member for the appropriate sequencing of courses.

Courses that may count toward the minor in addition to any of the other GRMN courses:

GRMN 201	Strategies in Speaking German	.5
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GRMN 202	Strategies in Speaking German	.5
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GRMN 310	German for Reading Knowledge	1
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German minors also are strongly encouraged to participate in an approved study abroad program.

German Minor for Engineers

The College of Engineering has approved a German minor that consists of the equivalent of five full-credit courses at the GRMN 103 Building Proficiency in German level or above. A required course for this minor is GRMN 225 German for Engineers and Natural Scientists. Students interested in this minor should consult Professor Helen Morris-Keitel for the appropriate sequencing of courses. In addition to any of the GRMN courses, the following courses can count toward this minor:

GRMN 201	Strategies in Speaking German	.5
GRMN 202	Strategies in Speaking German	.5
GRMN 310	German for Reading Knowledge	1

Majors in German Studies will be able to:

1. Speak, read, write, and understand German at an "Advanced-Low" level as defined by the proficiency criteria of the American Council on the Teaching of Foreign Languages ("ACTFL guidelines"). [University Educational Goals: 3, 7, 9]
2. Demonstrate familiarity with cultural artifacts produced in German-speaking countries from the 19th to the 21st century. [University Educational Goals: 3, 4, 5, 9]
3. Demonstrate the ability to adapt to a living/learning/work situation in a German-speaking country. [University Educational Goals: 2, 3, 4, 5, 9]
4. Demonstrate competency in written and oral communication through the production of analytical texts and presentations supported by structured arguments that demonstrate knowledge of the historical context and use appropriate forms of textual, cultural and visual analysis and evidence. Such texts and oral presentations will respect disciplinary norms for evidence and citation. [University Educational Goals: 1, 2, 3, 6, 7, 8, 9]
5. Demonstrate the ability to synthesize learning from within and outside German Studies in order to develop a global view of the discipline and how the knowledge and skills it promotes can be applied beyond Bucknell. [University Educational Goals: 2, 3, 6, 9]

Minors in German Studies who begin in German 101 will be able to:

1. Speak, read, write, and understand German at an intermediate-mid level according to ACTFL guidelines. [University Educational Goals: 3, 7, 9]

Minors in German Studies who begin in German 103 will be able to:

1. Speak, read and write, and understand German at an intermediate-high level according to ACTFL guidelines. [University Educational Goals: 3, 7, 9]

Hebrew (HEBR)

Faculty

Visiting Assistant Professor: Or Rogovin

Modern Hebrew is the language of the State of Israel and a key to understanding modern Jewish culture and the Middle East. Hebrew language courses at Bucknell begin with HEBR 101, which assumes no previous knowledge of the language and is conducted partially in English. As we progress toward HEBR 104, students immerse themselves in the language and develop the four language skills – reading, speaking, listening, and writing. By the end of HEBR 104, students are able to communicate in solid basic Hebrew. These courses also aspire to introduce students to basic concepts and facts of Israeli culture, which are integrated into the study of the language from the very outset through music, videos, games, and readings. Hebrew language courses are complemented by courses given in English on Israeli literature, history, and culture. Hebrew language and Israeli culture courses satisfy some of the requirements for the Jewish Studies minor. Students with Hebrew proficiency often continue to graduate school in Jewish or Near Eastern Studies, and often develop careers in business and government service where knowledge of Hebrew is an asset.

Italian Studies (ITAL)

Faculty

Associate Professor: Bernhard Kuhn (Director)

Assistant Professor: Anna Paparcone

Adjunct Assistant Professor: Lisa A. Perrone

The Italian Studies program offers a major and a minor in Italian Studies. In addition to focusing on developing students' fluency in Italian, students gain a broad understanding of Italy's culture and its intellectual and artistic past. It is our goal to teach our students the linguistic skills and cultural knowledge necessary to successfully function in an Italian environment. Our students will also become familiar with Italy's history, its artifacts, and intellectual contributions of the past and present in order to understand Italy's unique culture.

Residence abroad is the best way to gain proficiency in the language and knowledge of the culture. A semester or year abroad in Italy is strongly recommended and a variety of opportunities is available. Students wishing to study in Italy are encouraged to contact the director of the Italian Studies program as early as possible in order to discuss the various options.

Italian Studies Major

The Italian Studies major targets the acquisition of the linguistic and cultural skills necessary to communicate at an advanced-low level in Italian. The major is intended to offer students access to the Italian culture, which has been vital to the development of our global society, and to assist them in developing a new perspective on our rapidly changing world. Italian Studies majors will also develop skills in writing, speaking, and information literacy throughout their studies.

The **major** in Italian Studies requires seven courses (equivalent to seven full-credit courses) starting with ITAL 104 Intermediate Italian II: Italian Civilization or above. It combines language proficiency, cultural knowledge, and a Culminating Experience. The specific requirements for each of these components are listed below.

Language Proficiency

Students majoring in Italian Studies will gain at least an advanced-low level of language proficiency in Italian (according to the ACTFL guidelines). The major in Italian Studies requires the completion of ITAL 205 Discovering Italy. This course concentrates on the development of skills in writing, speaking, and information literacy.

Cultural Knowledge

Students majoring in Italian Studies will gain familiarity with significant cultural aspects and artifacts of Italy. The major requires at least four courses related to Italy taught in Italian or English. It is strongly recommended that at least one of these content courses be taught in Italian. These courses are offered either by the Italian Studies program, by other programs or departments at Bucknell, or by an accepted study abroad program in Italy.

Culture courses at the 200 and 300-level offered by the Italian Studies program (in addition to ITAL 205 Discovering Italy) include:

ITAL 201	Intermediate Italian Conversation I ¹	.5
ITAL 202	Intermediate Italian Conversation II ¹	.5
ITAL 206	Exploring Italian Studies	1
ITAL 210	Italian Pop Culture (in English)	1
ITAL 240	Love and Politics (in English) (taught in English)	1
ITAL 250	Introduction to Italian Cinema (in English) (taught either in Italian or English)	1
ITAL 295	Topics in Italian Studies (taught either in Italian or English)	1
ITAL 380	IL Mezzogiorno: Culture of Southern Italy	1
ITAL 385	Corsets and Curses	1
ITAL 395	Advanced Topics in Italian Studies	1
ITAL 390	Independent Study ²	.5-1

¹ May each be counted only once toward the major.

Courses related to Italy offered by other programs or departments at Bucknell include:

ARTH 271	Leonardo da Vinci and Renaissance Art	1
ARTH 370	Italian Renaissance Paintings (Kress)	1
CLAS 132	Roman Civilization	1
CLAS 236	The Age of Augustus	1
CLAS 243	Archaeology of Rome	1
HIST 246	Medieval Heresies and Heretics	1
HUMN 310	Dante and Milton	1
LATN 101	Introductory Latin ²	1
LATN 102	Introductory Latin ²	1
LATN 151	Intermediate Latin ²	1
LATN 221	Studies in Latin Literature ²	1

² Only one course in LATN may be counted.

Culminating Experience

The major in Italian Studies includes a Culminating Experience. The Culminating Experience draws together the skills, knowledge, and experiences a student gained during his/her studies of Italian language and culture. This Culminating Experience component of the major may be fulfilled during the student's senior year in two ways:

- Any 300-level course offered by the Italian Studies program (that has not been counted toward the cultural knowledge component). All writing requirements of the course must be completed in Italian.
- An Independent Study resulting in a thesis or comparable product.

Study Abroad

Study abroad at a full immersion program is the best way of gaining proficiency in the language and knowledge of the culture. Students may count up to three credits toward the major (up to four if the student chooses to study abroad for a year) from a full immersion study abroad program approved by Bucknell's Italian Studies program. Students studying at a non-immersion study abroad program in Italy can count up to two of the courses taken there toward their major after consultation with and approval of the Italian Studies program. The courses taken abroad may be counted toward the language proficiency requirement as well as toward the cultural knowledge component of the major. ITAL 205 Discovering Italy must be taken at Bucknell.

Italian Studies Minor

The **minor** in Italian Studies consists of a minimum of five course credits. Courses offered by the Italian Studies program that count toward the minor include all courses at the ITAL 102 Elementary Italian II level or above. One credit toward the minor will be granted for ITAL 101A Intensive Elementary Italian. ITAL 205 Discovering Italy or ITAL 206 Exploring Italian Studies Exploring Italian Studies is required for the minor. All additional courses counting toward the major may be counted toward the minor as well.

- Those students studying a semester or year in Italy may count up to two of the courses taken there toward their minor, after consultation with and approval of the Italian Studies program.

ITALIAN STUDIES: Learning Outcomes

These numbers represent the university learning goals to which the Italian Studies Program learning outcomes are connected.

- I **Communication learning outcome:** speak, read, write, understand, and *communicate* in Italian at an advanced-low level according to ACTFL guidelines (3, 7, 9)
- II **Culture learning outcome:** show level-appropriate *cultural* competency in Italian civilization, and perform accurate research in Italian literature and culture. (1, 3, 8)
- III **Comparison learning outcome:** use concepts and tools of inquiry to *compare* Italian language, social experiences, and cultural products with those of one's own culture. (1, 3)
- IV **Connections learning outcome:** relate knowledge of another discipline to the course of the Italian Studies Major, fostering a *connection* between areas of study. (2)
- V **Community learning outcome:** use linguistic and cultural knowledge of Italy within and beyond the classroom setting, enabling an engagement in professional and *communal* life. (5, 9)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Linguistics (LING)

Faculty

Professor: James E. Lavine (Director)

Assistant Professor: Heidi Lorimor

Affiliated Faculty: Hiram L. Smith (Spanish), Ruth Tincoff (Psychology)

Linguistics is the study of the human language faculty. It requires the investigation of a highly structured system of knowledge within the mind of the speaker (a mental grammar), which is examined empirically and modeled formally. Linguists seek to establish the general principles governing the organization, emergence, and use of language, including a model of how languages vary across space and time. Language is treated as a natural object, like other cognitive faculties, serving as a natural point of entry into scientific discovery and the tools of scientific reasoning, such as pattern recognition, experimental design, and hypothesis construction and testing. Linguistics serves as a "bridge" discipline between the sciences and the humanities because language is at the center of humanistic inquiry, from philosophy and history to literary theory and language and cultural studies.

Linguistics Major

The **major** in linguistics includes a two-semester introductory sequence, intermediate work in theoretical grammar, intermediate work in the cognitive mechanisms of language, an advanced seminar, and two electives, as outlined below. Research opportunities are available within the major in the areas of language production and comprehension, language acquisition, and theoretical grammar.

The requirements for the major are as follows:

May be taken in any order.

LING 105	Linguistic Analysis: Sounds and Words	1
LING 110	Linguistic Analysis: Sentences and Dialects	1
Three 200-level courses, one of each pair:		
LING 205	Phonetics and Phonology	1
or LING 206	Morphology	
LING 215	Syntax	1
or LING 216	Semantics	
LING 225	Language and the Brain	1
or LING 230	Psycholinguistics	
Select at least one of the following seminars (may count toward the Culminating Experience):		
LING 315	Advanced Syntax	
LING 330	Advanced Topics in Psycholinguistics	
LING 340	Typology and Universals	
Select two of the following:		
Any linguistics course offered in addition to:		
PSYC 288	Applied Research Methods Seminar in Language	
PSYC 315	Language Development	
SPAN 339	Topics in Hispanic Linguistics	
Select one of the following:		
LING 315	Advanced Syntax ¹	1
LING 330	Advanced Topics in Psycholinguistics ¹	
LING 340	Typology and Universals ¹	

¹ Fulfills the Culminating Experience

The Culminating Experience draws together and integrates the knowledge and analytical methods mastered by majors in the course of their study. It is satisfied by taking one seminar normally in the spring of the senior year. These 300-level seminars are designed to investigate one area in depth, while highlighting interactions between this area and other sub-disciplines studied in the course of the major.

Linguistics Minor

The linguistics **minor** consists of five courses.

LING 105	Linguistic Analysis: Sounds and Words	1
LING 110	Linguistic Analysis: Sentences and Dialects	1
Three 200 or 300-level linguistics courses		3

Majors in Linguistics will be able to:

1. Show proficiency in linguistic analysis for the major grammatical modules: phonetics, phonology, morphology, syntax, and semantics. (1, 2, 6, 7, 9)
2. Demonstrate a basic knowledge of the allied fields of language change (historical linguistics), linguistic diversity (sociolinguistics), the physical basis of language (neurolinguistics), and the acquisition, processing, and production of language (psycholinguistics). (1, 2, 6, 7, 9)
3. Apply principles of linguistic analysis to coursework across the curriculum. (2, 6)
4. Identify those formal characteristics that unify all human languages, so-called “linguistic universals” – those features that are believed to be part of our human genetic endowment. (1, 3)
5. Develop the knowledge and skills for admission to and success in graduate study in Linguistics or a related field. (1, 2, 6, 7, 8)
6. Apply their specialized knowledge to a range of societal issues, including language prejudice, language death, Deaf Culture and sign, and language pathology. (3, 4, 5)
7. Develop the ability to write and present orally according to the norms of the discipline through the offering of W2 courses, and written and oral presentation assignments in 200 and 300-level courses. (6, 7, 8)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Russian Studies (RUSS)

Faculty

Associate Professor: Ludmila S. Lavine (Director)

Studying Russian, the fifth most widely spoken language in the world, becomes especially important at the present time when Russia is becoming an essential partner in global politics, economy, and issues of the environment. By developing students' language skills and expanding their knowledge of Russian culture and society, the Russian Studies program strives to make students active participants in the multicultural, global community. Because Russian is one of the less-frequently taught languages, a major in Russian can become a unique and decisive factor in students' future careers in law, business, journalism, international affairs, academia, and public and government services. The faculty of the Russian Studies program believes that even with a mastery of Russian grammar, real communication is still impossible unless students become familiar with Russian culture and society and the life experiences of Russians. For that reason the Russian Studies program offers courses in literature, culture, film, and Russian society (both in Russian and English).

All Russian language courses beyond RUSS 104 Intermediate Russian II include assignments that are designed to develop students' writing and speaking skills. The "content" Russian language courses at the 200 and 300-level and courses on Russian culture and literature taught in English also help students to enhance their critical thinking and information literacy.

Major in Russian Studies

The **major** in Russian Studies consists of eight courses:

Four language courses beyond RUSS 103	4
300-level seminar in Russian	1
Three Russian literature/culture courses taught in English	3

RUSS 204 Russian Conversation is encouraged as a complement to upper-level language courses, but neither RUSS 204 Russian Conversation nor RUSS 209 Russian Complementary Reading count toward the major requirement of five language courses beyond RUSS 103 Intermediate Russian I. A 300-level Russian language seminar completed during the senior year will fulfill the College Core Curriculum Culminating Experience requirement. This requirement also can be fulfilled by an Honors Thesis in Russian.

The Russian Studies program offers four levels of Russian language study, striving to bring students to the intermediate high/advanced low level according to the ACTFL scale. This means that after graduation students are able to function effectively in Russian. Students majoring in Russian are strongly urged to deepen their knowledge of the language and country by studying in an approved summer or semester program in Russia.

Russian Studies Minor

A minor in Russian Studies requires five credits in the program. At least one of the five credits, taught in either Russian or English, must have a strong literature/culture component.

1. Demonstrate the four language skills (reading, writing, speaking and comprehension) at an intermediate-high/advanced-low level. (1, 2, 6, 7, 9)
2. Demonstrate proficiency in the discussion and analysis of cultural, political, historical, and literary issues within the Russian-speaking world. (2, 3, 4, 5)
3. Display an appreciation of foreign languages in general, sensitivity to cultural differences, and a deeper understanding of their own culture. (1, 2, 3, 4, 5, 6, 7, 9)
4. Develop the knowledge and skills for effective functioning in either a post-graduate academic environment or a professional career. (2, 3, 4, 5, 6, 8)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Latin (LATN)

Faculty

Chair: George R. Exner

Professor: Janet D. Jones

Associate Professors: Kevin F. Daly, Stephanie Larson

Assistant Professors: Ashli Baker, Kristine Trego

Visiting Assistant Professors: Thomas H. Beasley, Melissa Haynes, Mitchell H. Parks

See Classics and Ancient Mediterranean Studies (p. 48).

Latin American Studies (LAMS)

Faculty

Interim Director: Elizabeth Durden

Assistant Professor: David M. Rojas

Coordinating Committee: Elizabeth Durden (Sociology), R. Douglas Hecock (Political Science), Linden F. Lewis (Sociology), Clare Sammells (Anthropology), William Michael Schmidli (History), Paul H. Susman (Geography), Peter R. Wilshusen (Environmental Studies)

Latin American Studies was established at Bucknell University in 1975, as an interdisciplinary program of area studies in the humanities and social sciences. The program comprises 17 faculty from 10 departments and programs, whose research and teaching focuses on the 43 nations and territories in the Western hemisphere south of the continental United States, as well as Latin Americans within the United States, our nation's largest minority.

Latin American Studies provides a framework of study in the humanities and social sciences that fosters an integrated approach to understanding Latin American cultures and peoples as well as the important role of Latin America in our 21st-century global system.

Within this framework, students examine the rich chronicle of traditions and historical experience and are encouraged to pose questions on a wide range of essential issues from topics related to race, ethnicity, class, culture, religion, and gender to economic and social struggles, human rights, literature and art, environment, resource management, globalization, regional integration, militarization, democracy, social movements, and theories and approaches to development and sustainability. Courses in Latin American Studies challenge students to formulate international and cross-cultural ethical and moral standards and to structure comparative and alternative perspectives to the study of Latin American nations and societies as well as to their own cultures and countries.

These various topics and objectives, combined with expanded understanding of international issues, increased appreciation for inter-American and global relations, and extensive study of the Spanish language, bring depth and sophistication to the Latin American Studies major and minor.

- Both a major and a minor are offered in Latin American Studies.
- Majors and minors are expected to become proficient in the Spanish language.
- Majors in Latin American Studies are strongly encouraged to plan a semester, a year, or a summer of study in Latin America. Minors in Latin American Studies are encouraged to spend a semester or a summer of study in Latin America.
- Students in the Latin American Studies program are encouraged to participate in one or more service-learning experiences in Latin America or involving Latin Americans in the United States.

Intellectual Competencies of Writing, Formal Speaking and Presentation, and Information Literacy

All students enrolled in courses with the LAMS prefix are required to complete various instructor-directed individual and collaborative formal speaking, presentation, and writing projects that will be evaluated as part of the final course grade. Additionally, as part of the course grade, students enrolled in courses with the LAMS prefix are required to develop skills in information literacy relative to the field of Latin American Studies, including varied approaches to critical reading, analysis, and evaluation of information sources as well as competency in the application of comparative methodologies. Latin American Studies majors are required to take two courses with the LAMS prefix.

Study Abroad in Latin America

Students majoring in Latin American Studies are strongly encouraged to plan a semester, a year, or a summer of study in Latin America. Latin American Studies minors are encouraged to spend a semester or a summer of study in Latin America. When students elect the Latin American Studies major, they should consult with their adviser, with the director of Latin American Studies, and with The Office of Global and Off-campus Education (OGOE), regarding suitable foreign study opportunities. Exceptions to the Bucknell-approved study abroad programs must be approved by the director of Latin American Studies and The Office of Global and Off-campus Education (OGOE).

Substitution of Courses taken during study in Latin America

Students who major in Latin American Studies may substitute certain courses taken during study abroad in Latin America for up to four of the course requirements listed in Lists A, B, C, and D (see Major tab), pending approval of their Latin American Studies adviser and the director of Latin American Studies. Minors in Latin American Studies may substitute certain courses taken during study abroad in Latin America for up to three of the course requirements listed for the LAMS minor, pending approval of their Latin American Studies adviser and the director of Latin American Studies.

Service-learning Experience

Majors and minors *are encouraged* to participate in one or more service-learning experiences in Latin America or involving Latin Americans in the United States.

Student-faculty Research

Majors and minors are encouraged to approach individual members of the LAMS faculty to seek opportunities to participate in faculty-initiated research in Latin America or involving Latin Americans in the United States.

Interdisciplinary Independent Study on Latin America

Interdisciplinary independent study for the major or for the minor may be taken by enrolling in LAMS 319 Interdisciplinary Independent Study on Latin America, with permission of any faculty member in Latin American Studies. No more than one interdisciplinary independent study course shall be included in the minor.

Non-traditional Study on Latin America

Interdisciplinary non-traditional study for the major or for the minor may be taken by enrolling in LAMS 320 Interdisciplinary Non-Traditional Study on Latin America, with permission of the faculty member in Latin American Studies who will direct the non-traditional study. Non-traditional study refers to meaningful educational endeavors outside of a scheduled course or a conventional independent study. Such study may be related to work experiences, internships, special projects, and service learning, whether on or off campus. No more than one interdisciplinary non-traditional study course shall be included in the minor.

Interdisciplinary Honors in Latin American Studies

The Latin American Studies program strongly encourages qualified majors to consider working for interdisciplinary honors in Latin American Studies. During their junior year, such students should consult with one or more members of the Latin American Studies faculty to begin defining a research topic and writing a proposal to be submitted to the Honors Council by mid-October of the senior year. Normally, a student for honors in Latin American Studies will enroll for:

Select one of the following:

LAMS 319	Interdisciplinary Independent Study on Latin America ¹	1
LAMS 499	Interdisciplinary Honors in Latin American Studies ²	
LAMS 499	Interdisciplinary Honors in Latin American Studies (both semesters) ^{1,2}	

¹ LAMS 319 Interdisciplinary Independent Study on Latin America taken first semester.

² LAMS 499 Interdisciplinary Honors in Latin American Studies taken second semester.

Further information about the honors program can be obtained from the academic adviser, from the director of Latin American Studies, or from the Honors Council.

Major Requirements

A minimum of **eight** courses selected according to the core requirements listed below, including a Latin American Studies Culminating Experience and exhibited proficiency in the Spanish language, as described below.

List A

Two Latin American Studies courses selected from the following list:

LAMS 150	Latin America: An Introduction	1
LAMS 250	Latin America: Challenges for the 21st Century	1
LAMS 252	Ritual, Resistance, Rebellion in South America	1
LAMS 254	Topics on Indigenous Latin America	1
LAMS 285	Interdisciplinary Perspectives on Latin America	1
LAMS 295	Modern Latin America	1
LAMS 297	Colonial Latin America	1
LAMS 319	Interdisciplinary Independent Study on Latin America	1
LAMS 320	Interdisciplinary Non-Traditional Study on Latin America	1
LAMS 370	Seminar on Latin America in the Global System	1
LAMS 450	Integrative Seminar in Latin American Studies	1
LAMS 499	Interdisciplinary Honors in Latin American Studies	1

List B

Two Social Science courses on Latin American topics from different departments or programs selected from the following list:

ANTH 352	Ritual, Resistance, and Rebellion in South America	1
ECON 253	Gender and Migration	1
ECON 319	Economic History of Women in the United States ¹	1
ENST 325	Nature, Wealth and Power	1
GEOG 236	Third World Development	1
GEOG 237	Grassroots Development: Nicaragua	1
HIST 282	Modern Latin America	1
IREL 200	International Relations: Topics/Issues ¹	1
IREL 250	Theories of International Relations	1
IREL 252	Political Economy of Global Resources	1

IREL 270	Global Governance of Climate Change	1
IREL 275	Global Governance	1
IREL 285	The International Relations of Latin America in the 21st Century	1
IREL 350	Globalization	1
IREL 400	Seminar: Topics in International Relations (Global Restructuring)	1
IREL 400	Seminar: Topics in International Relations (Making Globalization Work)	1
IREL 400	Seminar: Topics in International Relations (Economic Transition)	1
IREL 410	BRICS on the Global Stage	1
POLS 211	Third World Politics	1
POLS 219	Latin American Politics	1
POLS 352	Politics of Economic Development	1
SOCI 213	Race in Historical and Comparative Perspectives ¹	1
SOCI 245	Remaking America: Latin American Immigration	1
SOCI 280	Twentieth-century Afro-Caribbean and African-American Thought	1
SOCI 290	Caribbean Society Music and Ritual	1
SOCI 310	The Sociology of Developing Societies	1
SOCI 312	Globalization and Conflict	1
SOCI 354	Development, Dictators and Diaspora	1

List C

Two Humanities courses on Latin American topics from different departments or programs selected from the following list. One course will be a course on Latin American history from the history department, and the other will be a course from the Spanish department, taught in the Spanish language, at the SPAN 222 Introduction to Latin American Literature level or above.

HIST 282	Modern Latin America	1
HIST 311	U.S. History since 1865 ¹	1
HIST 311	U.S. History since 1865 ¹	1
SPAN 222	Introduction to Latin American Literature	1
SPAN 264	Hispanic Topics ¹	1
SPAN 280	Latin American Cultural Traditions	1
SPAN 285	Latino Literature in the U.S.	1
SPAN 295	Topics in Spanish ¹	1
SPAN 323	Latin American Short Story	1
SPAN 346	Utopia/Dystopia in Urban Latin America	1
SPAN 348	Gender in 20th-century Latin American Literature	1
SPAN 360	Literature and Film of the Hispanic World ¹	1
SPAN 361	Topics in Hispanic Literature ¹	1
SPAN 362	Topics in Hispanic Literature ¹	1
SPAN 365	Topics in Latin American Civilization	1
SPAN 366	Mexican Revolution: Literature and Art	1

List D

Two electives selected from the following list of courses on Latin American topics, chosen with approval of the student's adviser in Latin American Studies:

ANTH 352	Ritual, Resistance, and Rebellion in South America	1
ECON 253	Gender and Migration	1
ECON 319	Economic History of Women in the United States ¹	1
ENST 325	Nature, Wealth and Power	1
GEOG 236	Third World Development	1
GEOG 237	Grassroots Development: Nicaragua	1
HIST 282	Modern Latin America	1
HIST 311	U.S. History since 1865 (Latin America: 1945-1989) ¹	1
HIST 311	U.S. History since 1865 (Human Rights in U.S. Foreign Policy: 1940s to Present) ¹	1

IREL 200	International Relations: Topics/Issues ¹	1
IREL 250	Theories of International Relations	1
IREL 252	Political Economy of Global Resources	1
IREL 270	Global Governance of Climate Change	1
IREL 275	Global Governance	1
IREL 285	The International Relations of Latin America in the 21st Century	1
IREL 350	Globalization	1
IREL 400	Seminar: Topics in International Relations (Global Restructuring)	1
IREL 400	Seminar: Topics in International Relations (Making Globalization Work)	1
IREL 400	Seminar: Topics in International Relations (Economic Transition)	1
IREL 410	BRICS on the Global Stage	1
LAMS 150	Latin America: An Introduction	1
LAMS 250	Latin America: Challenges for the 21st Century	1
LAMS 252	Ritual, Resistance, Rebellion in South America	1
LAMS 254	Topics on Indigenous Latin America	1
LAMS 285	Interdisciplinary Perspectives on Latin America	1
LAMS 295	Modern Latin America	1
LAMS 297	Colonial Latin America	1
LAMS 319	Interdisciplinary Independent Study on Latin America	1
LAMS 320	Interdisciplinary Non-Traditional Study on Latin America	1
LAMS 370	Seminar on Latin America in the Global System	1
LAMS 450	Integrative Seminar in Latin American Studies	1
LAMS 499	Interdisciplinary Honors in Latin American Studies	1
POLS 211	Third World Politics	1
POLS 219	Latin American Politics	1
POLS 352	Politics of Economic Development	1
SOCI 213	Race in Historical and Comparative Perspectives ¹	1
SOCI 245	Remaking America: Latin American Immigration	1
SOCI 280	Twentieth-century Afro-Caribbean and African-American Thought	1
SOCI 290	Caribbean Society Music and Ritual	1
SOCI 310	The Sociology of Developing Societies	1
SOCI 312	Globalization and Conflict	1
SOCI 354	Development, Dictators and Diaspora	1
SPAN 222	Introduction to Latin American Literature	1
SPAN 264	Hispanic Topics ¹	1
SPAN 280	Latin American Cultural Traditions	1
SPAN 285	Latino Literature in the U.S.	1
SPAN 295	Topics in Spanish ¹	1
SPAN 323	Latin American Short Story	1
SPAN 346	Utopia/Dystopia in Urban Latin America	1
SPAN 348	Gender in 20th-century Latin American Literature	1
SPAN 360	Literature and Film of the Hispanic World ¹	1
SPAN 361	Topics in Hispanic Literature ¹	1
SPAN 362	Topics in Hispanic Literature ¹	1
SPAN 365	Topics in Latin American Civilization	1
SPAN 366	Mexican Revolution: Literature and Art	1

¹ These courses will count toward a Latin American Studies major or minor when the content places significant emphasis on a Latin American topic.

Additional Courses

Additional courses with substantial Latin American content that do not appear in one of the lists above may be elected from the approved courses offered each semester under Latin American Studies (LAMS) in the current *Class Schedule*.

Proficiency and Competency in the Spanish Language

Latin American Studies majors are required to demonstrate proficiency in the Spanish language by successfully completing, at least, one course taught in the Spanish language at the SPAN 222 Introduction to Latin American Literature level or above.

Prerequisites Courses

Of the courses in Lists A, B, C, and D, the following courses have prerequisites and require permission of the instructor:

Prerequisite: ANTH 109		1
ANTH 352	Ritual, Resistance, and Rebellion in South America	
LAMS 252	Ritual, Resistance, Rebellion in South America	
Prerequisite: ECON 103		1
ECON 253	Gender and Migration	
Prerequisites: ECON 256 or ECON 257 or ECON 258		1
ECON 319	Economic History of Women in the United States	
Prerequisite: POLS 170 and second-semester sophomore status		1
IREL 250	Theories of International Relations	
Prerequisite: ECON 103		1
IREL 252	Political Economy of Global Resources	
IREL 275	Global Governance (not open to first-year students)	
Prerequisite: IREL majors; students should preferably have both ECON 227 and IREL 250		1
IREL 350	Globalization	
Prerequisite: second-semester junior or senior status		
IREL 400	Seminar: Topics in International Relations	
Prerequisite: any sociology or anthropology course		1
SOCI 310	The Sociology of Developing Societies	
SPAN 222 through SPAN 399 require Spanish language proficiency equivalent to SPAN 208.		1
LAMS 319 through LAMS 499		
IREL 400	Seminar: Topics in International Relations	1
SOCI 213	Race in Historical and Comparative Perspectives	1
SOCI 310	The Sociology of Developing Societies	1
HIST 311	U.S. History since 1865	1

Culminating Experience

During the senior year (or second semester of the junior year with the approval of the student's Latin American Studies adviser), majors in Latin American Studies are required to complete one Culminating Experience course. Courses fulfilling this requirement include 300-level or higher courses with a LAMS designation or 300-level or higher courses on a Latin American topic taught by any faculty member affiliated with Latin American Studies. Within the Culminating Experience course, Latin American Studies majors will undertake a paper or a project that focuses on a Latin American topic and provides evidence of:

1. application of interdisciplinary perspectives from the social sciences and humanities,
2. grounding in specific theories and approaches in the field of Latin American Studies, and
3. knowledge of primary informational and data base resources in the study of Latin America, thereby ensuring that majors complete coherent integrative work in the discipline of Latin American Studies. With the permission of the Latin American Studies adviser, a student who is taking an independent study or pursuing honors in Latin American Studies and who is enrolled in LAMS 319 Interdisciplinary Independent Study on Latin America or LAMS 499 Interdisciplinary Honors in Latin American Studies may satisfy the Culminating Experience requirement through the successful completion of an Independent Study project or an Honors Thesis.

Minor in Latin American Studies

Core Requirements

Students complete the interdisciplinary **minor** in Latin American Studies when they successfully complete a minimum of five courses selected according to the following criteria and have demonstrated competency in the Spanish language at the SPAN 207 Toward Advanced Spanish level or above:

One Latin American Studies course selected from the following list:

LAMS 150	Latin America: An Introduction	1
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LAMS 250	Latin America: Challenges for the 21st Century	1
LAMS 252	Ritual, Resistance, Rebellion in South America	1
LAMS 254	Topics on Indigenous Latin America	1
LAMS 285	Interdisciplinary Perspectives on Latin America	1
LAMS 295	Modern Latin America	1
LAMS 297	Colonial Latin America	1
LAMS 319	Interdisciplinary Independent Study on Latin America	1
LAMS 320	Interdisciplinary Non-Traditional Study on Latin America	1
LAMS 370	Seminar on Latin America in the Global System	1
LAMS 450	Integrative Seminar in Latin American Studies	1
LAMS 499	Interdisciplinary Honors in Latin American Studies	1

List B

One Social Science course on Latin American topics from different departments or programs selected from the following list:

ANTH 352	Ritual, Resistance, and Rebellion in South America	1
ECON 253	Gender and Migration	1
ECON 319	Economic History of Women in the United States ¹	1
ENST 325	Nature, Wealth and Power	1
GEOG 236	Third World Development	1
GEOG 237	Grassroots Development: Nicaragua	1
IREL 200	International Relations: Topics/Issues ¹	1
IREL 250	Theories of International Relations	1
IREL 252	Political Economy of Global Resources	1
IREL 270	Global Governance of Climate Change	1
IREL 275	Global Governance	1
IREL 285	The International Relations of Latin America in the 21st Century	1
IREL 350	Globalization	1
IREL 400	Seminar: Topics in International Relations (Global Restructuring)	1
IREL 400	Seminar: Topics in International Relations (Making Globalization Work)	1
IREL 400	Seminar: Topics in International Relations (Economic Transition)	1
IREL 410	BRICS on the Global Stage	1
POLS 211	Third World Politics	1
POLS 219	Latin American Politics	1
POLS 352	Politics of Economic Development	1
SOCI 213	Race in Historical and Comparative Perspectives ¹	1
SOCI 245	Remaking America: Latin American Immigration	1
SOCI 280	Twentieth-century Afro-Caribbean and African-American Thought	1
SOCI 290	Caribbean Society Music and Ritual	1
SOCI 310	The Sociology of Developing Societies	1
SOCI 312	Globalization and Conflict	1
SOCI 354	Development, Dictators and Diaspora	1

List C

One Humanities course on Latin American topics from different departments or programs selected from the following list. One course will be a course on Latin American history from the history department, and the other will be a course from the Spanish department, taught in the Spanish language, at the SPAN 222 Introduction to Latin American Literature level or above.

HIST 282	Modern Latin America	1
HIST 311	U.S. History since 1865 (Latin America: 1945-1989) ¹	1
HIST 311	U.S. History since 1865 (Human Rights in U.S. Foreign Policy: 1940s to Present) ¹	1
SPAN 222	Introduction to Latin American Literature	1
SPAN 264	Hispanic Topics ¹	1
SPAN 280	Latin American Cultural Traditions	1

SPAN 285	Latino Literature in the U.S.	1
SPAN 295	Topics in Spanish ¹	1
SPAN 323	Latin American Short Story	1
SPAN 346	Utopia/Dystopia in Urban Latin America	1
SPAN 348	Gender in 20th-century Latin American Literature	1
SPAN 360	Literature and Film of the Hispanic World ¹	1
SPAN 361	Topics in Hispanic Literature ¹	1
SPAN 362	Topics in Hispanic Literature ¹	1
SPAN 365	Topics in Latin American Civilization	1
SPAN 366	Mexican Revolution: Literature and Art	1

List D

Two electives selected from the following list of courses on Latin American topics, chosen with approval of the student's adviser in Latin American Studies:

ANTH 352	Ritual, Resistance, and Rebellion in South America	1
ECON 253	Gender and Migration	1
ECON 319	Economic History of Women in the United States ¹	1
ENST 325	Nature, Wealth and Power	1
GEOG 236	Third World Development	1
GEOG 237	Grassroots Development: Nicaragua	1
HIST 282	Modern Latin America	1
HIST 311	U.S. History since 1865 (Latin America: 1945-1989) ¹	1
HIST 311	U.S. History since 1865 (Human Rights in U.S. Foreign Policy: 1940s to Present) ¹	1
IREL 200	International Relations: Topics/Issues ¹	1
IREL 250	Theories of International Relations	1
IREL 252	Political Economy of Global Resources	1
IREL 270	Global Governance of Climate Change	1
IREL 275	Global Governance	1
IREL 285	The International Relations of Latin America in the 21st Century	1
IREL 350	Globalization	1
IREL 400	Seminar: Topics in International Relations (Global Restructuring)	1
IREL 400	Seminar: Topics in International Relations (Making Globalization Work)	1
IREL 400	Seminar: Topics in International Relations (Economic Transition)	1
IREL 410	BRICS on the Global Stage	1
LAMS 150	Latin America: An Introduction	1
LAMS 250	Latin America: Challenges for the 21st Century	1
LAMS 252	Ritual, Resistance, Rebellion in South America	1
LAMS 254	Topics on Indigenous Latin America	1
LAMS 285	Interdisciplinary Perspectives on Latin America	1
LAMS 295	Modern Latin America	1
LAMS 297	Colonial Latin America	1
LAMS 319	Interdisciplinary Independent Study on Latin America	1
LAMS 320	Interdisciplinary Non-Traditional Study on Latin America	1
LAMS 370	Seminar on Latin America in the Global System	1
LAMS 450	Integrative Seminar in Latin American Studies	1
LAMS 499	Interdisciplinary Honors in Latin American Studies	1
POLS 211	Third World Politics	1
POLS 219	Latin American Politics	1
POLS 352	Politics of Economic Development	1
SOCI 213	Race in Historical and Comparative Perspectives ¹	1
SOCI 245	Remaking America: Latin American Immigration	1
SOCI 280	Twentieth-century Afro-Caribbean and African-American Thought	1

SOCI 290	Caribbean Society Music and Ritual	1
SOCI 310	The Sociology of Developing Societies	1
SOCI 312	Globalization and Conflict	1
SOCI 354	Development, Dictators and Diaspora	1
SPAN 222	Introduction to Latin American Literature	1
SPAN 264	Hispanic Topics ¹	1
SPAN 280	Latin American Cultural Traditions	1
SPAN 285	Latino Literature in the U.S.	1
SPAN 295	Topics in Spanish ¹	1
SPAN 323	Latin American Short Story	1
SPAN 346	Utopia/Dystopia in Urban Latin America	1
SPAN 348	Gender in 20th-century Latin American Literature	1
SPAN 360	Literature and Film of the Hispanic World ¹	1
SPAN 361	Topics in Hispanic Literature ¹	1
SPAN 362	Topics in Hispanic Literature ¹	1
SPAN 365	Topics in Latin American Civilization	1
SPAN 366	Mexican Revolution: Literature and Art	1

¹ These courses will count toward a Latin American Studies major when the content places significant emphasis on a Latin American topic.

Additional Courses

Additional courses with substantial Latin American content that do not appear in one of the lists above may be elected from the approved courses offered each semester under Latin American Studies (LAMS) in the current *Class Schedule*.

Proficiency and Competency in the Spanish Language

Competency in the fundamental skills of the Spanish language equivalent to the completion of SPAN 207 Toward Advanced Spanish is expected of Latin American Studies minors.

Prerequisites Courses

Of the courses in Lists A, B, C, and D, the following courses have prerequisites and require permission of the instructor:

Prerequisite ANTH 109		1
ANTH 352	Ritual, Resistance, and Rebellion in South America	1
LAMS 252	Ritual, Resistance, Rebellion in South America	
Prerequisite ECON 103		1
ECON 253	Gender and Migration	
Prerequisites: ECON 256 or ECON 257 or ECON 258		1
ECON 319	Economic History of Women in the United States	
Prerequisite: POLS 170 and second-semester sophomore status		1
IREL 250	Theories of International Relations	
Prerequisite ECON 103		1
IREL 252	Political Economy of Global Resources	
IREL 275	Global Governance (not open to first-year students)	
Prerequisite: IREL majors; students should preferably have both ECON 227 and IREL 250		1
IREL 350	Globalization	
Prerequisite: second semester junior or senior status		
IREL 400	Seminar: Topics in International Relations	
Prerequisite: any sociology or anthropology course		1
SOCI 310	The Sociology of Developing Societies	
SPAN 222 through SPAN 465 require Spanish language proficiency equivalent to SPAN 208.		1
LAMS 319 through LAMS 499		
IREL 400	Seminar: Topics in International Relations	1
SOCI 213	Race in Historical and Comparative Perspectives	1
SOCI 310	The Sociology of Developing Societies	1

HIST 311	U.S. History since 1865	1
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Program Goals

- To offer a broad, interdisciplinary Bachelor of Arts (BA) major in Latin American Studies comprising courses from the Social Sciences and the Humanities.
- To design a BA program steeped in cross-disciplinary learning in the liberal arts tradition that provides students with critical perspectives relevant to a range of globally oriented career paths including law, policy, education, social work, and administration, among others.
- To provide international living and learning opportunities for students in Latin America via study abroad, non-traditional service-learning programs, internships, and language programs, among others.
- To contribute to the level of engagement with the region of Latin America among students not associated with the Latin American Studies program (i.e. non-majors and non-minors).

Legal Studies Minor

Faculty

Coordinator: Amy R. McCready

The Legal Studies minor requires at least five courses, one course from each of the five categories listed below. No more than three of these courses may be in a single department. Courses applied to the Legal Studies minor may not also be applied to the student's major. One course credit earned off campus may be used to meet a requirement for this minor.

1. Case Law

ENST 260	Environmental Law	1
IREL 255/POLS 278	International Law	1
ACFM 220	Business Law I	1
POLS 241	Constitutional Law: Civil Rights	1
POLS 242	Constitutional Law: Civil Liberties	1
RELI 279	Judaism and Law	1
RELI 280	Religion and Constitutional Law	1
RELI 321	Introduction to Jewish Law	1

2. Law and Social Science

POLS 240	The American Congress	1
POLS 244	American Judicial Politics	1
POLS 375	Analyzing Legislatures	1
SOCI 123	Law and Society	1
SOCI 234	Criminology	1
SOCI 239	Deviance and Identity	1
SOCI 251	Violence and Society	1
SOCI 341	Seminar in Law and Society	1
WMST/SOCI 332	Women and the Penal System	1

3. Legal Theory

ENLS 213	Special Topics in American Literature	1
ENLS 361	Law and Literature (Only sections titled "Race, Law, and American Literature")	1
PHIL 100	Introduction to Philosophy (Only sections titled "Law, Morality, and Society")	1
PHIL 246	Philosophy of Law	1
POLS 260	Topics in Legal Thought	1
POLS 261	Twentieth-century American Legal Thought	1
POLS 263	Race and Ethnicity in American Legal Thought	1
POLS 362	American Constitutional Theory	1

4. Ethics

ENST 255	Environmental Injustice	1
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PHIL 213	Ethics	1
PHIL 214	Social and Political Philosophy	1
PHIL 228	Contemporary Ethical Theory	1
POLS 210	Political Theory	1
POLS 256	Topics in Social and Political Ethics	1
RELI 100	Introduction to Religion	1
RELI 220	Comparative Ethics	1
RELI 226/ENST 236	Environmental Ethics	1
RELI 227	Bioethics: Issues in Ethics, Medicine, and the Life Sciences	1
RELI 229	The Ethics of Consumption	1
UNIV 228	Legal and Ethical Issues of the Press	1

5. Philosophical Foundations of Law

PHIL 246	Philosophy of Law	1
POLS 261	Twentieth-century American Legal Thought	1

Highly motivated students may also satisfy this requirement with an appropriate independent study with any member of the faculty who teaches courses in categories 1-4. The student must submit a written proposal along with the sponsoring faculty member's endorsement to the legal studies coordinator. Registration for an independent study in Legal Studies uses the following course abbreviation.

IDPT 320 Interdepartmental Independent Studies

Mathematics (MATH)

Faculty

Professors: Gregory T. Adams, M. Lynn Breyfogle (Associate Dean of Arts and Sciences), Peter Brooksbank, Thomas Cassidy (Chair), Ulrich Daepf, George R. Exner, Michael R. Frey, Pamela B. Gorkin, Paul J. McGuire

Associate Professors: KB Boomer, Emily Dryden, Sharon A. Garthwaite, James E. Hutton, Peter McNamara, Adam Piggott, Nathan C. Ryan, Linda B. Smolka, Karl Voss (Associate Dean of Natural Sciences and Mathematics)

Assistant Professors: Kelly A. Bickel, Van T. Cyr, Lara Dick, Gabrielle Flynt, Jeffrey Langford, Mark J. Meyer

Visiting Instructor: Amy Donner

Lecturer: Joseph Klobusicky

Mathematics has long been the basic language of the natural sciences, and has been studied for its own sake since ancient times. An understanding of the basics of calculus, statistics, and linear algebra has become a requirement for proficiency in many of the social sciences. The study of mathematics has its own rewards because accomplishment in the subject, even at a relatively elementary level, requires and promotes clarity of both thought and expression. For many, the study of mathematics offers entrance into an exciting world of challenges where beauty and utility coexist in balanced harmony.

A major in mathematics may be seen as the first step toward obtaining a graduate degree in one of the mathematical sciences, or it may constitute preparation for a professional degree program in a field such as education, medicine, law, or business. It also opens the door to a whole range of employment opportunities, as the analytical skills that a student develops in pursuing a major in mathematics are greatly valued by potential employers. There are, for example, excellent career prospects in actuarial work and in the rapidly growing areas of biomathematics and biostatistics (interpreting results of clinical trials), modeling (in industry, government, and finance) and cryptology (in banking, television, the Internet, and elsewhere).

Secondary Teacher Certification

Prospective secondary school teachers (grades 7 – 12) must complete one of the three majors within the department. This certification requires specific mathematics and education courses. Students seeking teacher certification should confer as early as possible with the mathematics and education departments to devise a program of study, which normally will include all requirements for certification in the Commonwealth of Pennsylvania.

Mathematics Majors

The Mathematics Department offers three majors. Students may earn a Bachelor of Arts in Mathematics, a Bachelor of Science in Mathematics, or a Bachelor of Science in Applied Mathematical Sciences. Students in each major complete an introductory year of calculus either by taking MATH 201

Calculus I or MATH 202 Calculus II during their first year, or by achieving a high score on the Advanced Placement Test of the College Entrance Examination Board.

The College Core Curriculum disciplinary depth requirements for Bachelor of Science and Bachelor of Arts majors are satisfied as follows:

- *writing within the major* in MATH 280 Logic, Sets, and Proofs, MATH 308 Real Analysis I, and MATH 320 Abstract Algebra I (all W2 courses);
- *formal presentation* in MATH 280 Logic, Sets, and Proofs and
- *information literacy* in MATH 308 Real Analysis I and MATH 320 Abstract Algebra I.

The requirement for a *Culminating Experience* within the major may be satisfied in any of the following ways: (1) taking a full credit 400-level mathematics course; or (2) completing an honors thesis, senior thesis, or other research project in the senior year that involves mathematics or statistics; or (3) completing student teaching for secondary certification. The Culminating Experience cannot double-count as one of the mathematics electives required in the major, with the one exception that students earning a Bachelor of Arts in Mathematics may count a 400-level mathematics course both as their mathematics-related course and as the Culminating Experience.

The choice of degree program depends largely upon the student's mathematical objectives and interests in fields other than mathematics. Students with strong interests outside mathematics have options including a Bachelor of Science in Applied Mathematical Sciences, a Bachelor of Arts in Mathematics, or a Bachelor of Science in the Interdisciplinary Studies in Economics and Mathematics (p. 94) program. Students with a strong interest in a career in mathematics or science – and in particular, students planning to continue on to Ph.D. programs in the mathematical sciences – are strongly advised to take courses beyond the minimum requirements for the major. Since the number of courses to be taken in any one department is restricted to 12 for a Bachelor of Arts degree, such students are advised to choose one of the Bachelor of Science majors.

Bachelor of Arts in Mathematics

The **Bachelor of Arts in Mathematics** major consists of eight mathematics courses beyond the introductory year of calculus, plus one additional course in a related field and a Culminating Experience.

Of the eight mathematics courses beyond the introductory year of calculus, five are specified:

Program Requirements

MATH 211	Calculus III	1
MATH 245	Linear Algebra	1
MATH 280	Logic, Sets, and Proofs	1
MATH 308	Real Analysis I	1
MATH 320	Abstract Algebra I	1

Electives

Three electives at the 300 or 400-level	3
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Related Field Course

Select one of the following:	1	
Fourth Mathematics course at the 300 or 400-level		
MATH 207	The Teaching of Mathematics in Secondary Schools	
MATH 212	Differential Equations	
MATH 216	Statistics I	
MATH 219	Topics in Applied Mathematics	
An additional full-credit course in which college-level mathematics or statistics plays a major role. ¹		

¹ Examples include any computer science or science course (beyond those required for all liberal arts students), including nearly all courses in computer science or physics at or above the 200-level, or an appropriate course from the humanities, social sciences, or engineering in which mathematics plays a significant role at a reasonable level of sophistication.

The mathematics department chair shall make the determination of whether or not a particular course outside the mathematics department may count as the course in a related field.

A single 400-level course may be used to satisfy both the Culminating Experience requirement and the related course requirement.

Students with a special interest in pure mathematics or statistics may earn formal concentration in these areas by completing an appropriate suite of 300 and 400-level courses, as described below.

Pure Mathematics Concentration

MATH 345	Advanced Linear Algebra	1
MATH 409	Real Analysis II	1

MATH 446	Abstract Algebra II	1
Select two of the following:		2
MATH 311	Theory of Numbers	
MATH 333	Topology	
MATH 362	Complex Analysis	

Statistics Concentration

MATH 303	Probability	1
MATH 345	Advanced Linear Algebra	1
or MATH 409	Real Analysis II	
MATH 304	Statistical Inference Theory	1
MATH 405	Statistical Modeling	1
MATH 407	Statistical Design of Scientific Studies	1

Students majoring in mathematics with a special interest in computer science are encouraged to consider a minor in computer science or a double major with computer science.

Bachelor of Science in Mathematics

The **Bachelor of Science in Mathematics** major requires 10 mathematics courses beyond the introductory year of calculus and a Culminating Experience.

Six of the 10 mathematics courses are specified:

Program Requirements

MATH 211	Calculus III	1
MATH 212	Differential Equations	1
MATH 245	Linear Algebra	1
MATH 280	Logic, Sets, and Proofs	1
MATH 308	Real Analysis I	1
MATH 320	Abstract Algebra I	1

Electives

Four mathematics electives at the 300 or 400-level		4
PHYS 211	Classical and Modern Physics I	1
Select one of the following:		1
PHYS 212 or PHYS 212E	Classical and Modern Physics II Classical and Modern Physics II	
CSCI 203	Introduction to Computer Science I	1
One additional laboratory science course ³		1

³ The additional laboratory science courses may be chosen from any discipline in the natural sciences or from computer science. Any course in physics beyond PHYS 212 Classical and Modern Physics II, and any laboratory course in computer science at the level of CSCI 203 Introduction to Computer Science I or beyond, may be chosen.

Students with a special interest in pure mathematics or statistics may earn formal concentration in these areas by completing an appropriate suite of 300 and 400-level courses, as described below. In particular, those intending to pursue graduate study in mathematics or statistics should plan to complete the relevant concentration.

Pure Mathematics Concentration

MATH 345	Advanced Linear Algebra	1
MATH 409	Real Analysis II	1
MATH 446	Abstract Algebra II	1
Select two of the following:		2
MATH 311	Theory of Numbers	
MATH 333	Topology	
MATH 362	Complex Analysis	

Statistics Concentration

MATH 303	Probability	1
MATH 304	Statistical Inference Theory	1
MATH 345	Advanced Linear Algebra	1
or MATH 409	Real Analysis II	
MATH 405	Statistical Modeling	1
MATH 407	Statistical Design of Scientific Studies	1

The recommended sequence for the Bachelor of Science in Mathematics major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
MATH 201	1	MATH 202	1
PHYS 211	1	PHYS 212	1
	2		2

Sophomore

First Semester	Credits	Second Semester	Credits
MATH 211	1	MATH 212	1
MATH 245	1	MATH 280	1
CSCI 203	1	Laboratory science	1
	3		3

Junior

First Semester	Credits	Second Semester	Credits
MATH 308 or 320	1	MATH 308 or 320	1
Elective in mathematics	1	Elective in mathematics	1
	2		2

Senior

First Semester	Credits	Second Semester	Credits
Elective in mathematics	1	Elective in mathematics	1
		Culminating Experience	1
	1		2

Total Credits: 17

Students majoring in mathematics with a special interest in computer science are encouraged to consider a minor in computer science or a double major with computer science.

Bachelor of Science in Applied Mathematical Sciences

The **Bachelor of Science in Applied Mathematical Sciences** major (with a concentration in statistics or applied mathematics) requires 10 mathematics courses beyond the introductory year of calculus, a computing course, at least five approved courses in an approved program, and a Culminating Experience. More specifically, there are six required core mathematics courses consisting of:

Program Requirements

MATH 211	Calculus III	1
MATH 216	Statistics I	1
MATH 245	Linear Algebra	1
MATH 280	Logic, Sets, and Proofs	1
MATH 303	Probability	1
MATH 308	Real Analysis I	1

Courses in Area of Concentration

Four concentration related courses in statistics or applied mathematics	4
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Further, the major requires a computing course and significant coursework in an approved outside department or program as described below. While the Culminating Experience may be met in any of the ways specified above, students earning a Bachelor of Science in Applied Mathematical Sciences are strongly encouraged to consider the option of a thesis or research experience integrating the outside coursework.

Statistics Concentration

MATH 217	Statistics II	1
MATH 304	Statistical Inference Theory	1
Select two of the following: ⁵		2
MATH 345	Advanced Linear Algebra	
MATH 358	Topics in Operations Research	
MATH 405	Statistical Modeling	
MATH 407	Statistical Design of Scientific Studies	
MATH 409	Real Analysis II	

⁵ At least one course must be selected from MATH 405 and MATH 407.

Alternative 300 or 400-level mathematics courses could count toward the concentration if deemed appropriate by the academic adviser in consultation with the mathematics department chair.

Applied Mathematics Concentration

MATH 212	Differential Equations	1
Select three of the following:		3
MATH 343	Numerical Analysis	
MATH 345	Advanced Linear Algebra	
MATH 350	Methods in Applied Mathematics	
MATH 358	Topics in Operations Research	
MATH 362	Complex Analysis	
MATH 409	Real Analysis II	

Alternative 300 or 400-level mathematics courses could count toward the concentration if deemed appropriate by the academic adviser in consultation with the mathematics department chair.

The **computing course** can be a computer science course at or above the 200-level or a computing course appropriate to the program of study as determined through consultation with the academic adviser and the mathematics department chair.

Outside Coursework

For the purpose of completing a coherent sequence of courses that provide a solid introduction to the discipline, all students must partner with an approved department or program in a discipline that applies statistics or mathematics. In this regard, a minimum of five approved courses chosen in consultation with the Mathematics Department adviser and the outside department or program is required. A partner department/program will usually be chosen from the College of Engineering, the School of Management, the Division of Social Sciences, or the Division of Natural Sciences. Entering students can declare the intended major in the summer after acceptance to Bucknell, but must consult with the Mathematics Department and formally declare the outside coursework by the end of their third semester. All other students must consult with the Mathematics Department at the point of declaring the major and specify the outside coursework. In either case, the Mathematics Department will consult with the partner department or program to ensure that the coursework is appropriate and can be completed.

A sample sequence for the Bachelor of Science in Applied Mathematical Sciences major is provided below. It should be noted that each student's sequence will be unique, depending on when the program is started, how many AP or transfer credits are applied, and when the desired courses are offered.

First Year

First Semester	Credits	Second Semester	Credits
MATH 201	1	MATH 202	1
		MATH 216	1
		1	2

Sophomore

First Semester	Credits	Second Semester	Credits
MATH 211	1	MATH 245	1
Computing course	1	MATH 303	1
MATH 217 (if following the statistics concentration)	1	Outside course	1

Junior		
First Semester	Credits Second Semester	Credits
MATH 280	1 MATH 308	1
Outside course	1 Concentration course	1
MATH 212 (If following the applied concentration)	1 Outside course	1
	3-2	3

Senior		
First Semester	Credits Second Semester	Credits
Concentration course	1 Concentration course	1
Outside course	1 Outside course	1
	Culminating Experience	1
	2	3

Total Credits: 20-18

Departmental Honors

Students who complete departmental honors normally have a grade point average of 3.5 both in their mathematics courses and overall. Students in the Bachelor of Arts in Mathematics major or Bachelor of Science in Mathematics major have usually completed MATH 308 Real Analysis I and MATH 320 Abstract Algebra I by the end of their junior year. Students in the Bachelor of Science in Applied Mathematical Sciences major have usually completed MATH 308 Real Analysis I by the end of their junior year. To be accepted into the Honors Program, a student must submit an honors proposal for approval by the adviser, the department chairperson, and the Honors Council. The student must then complete an honors thesis under the adviser's direction, must have completed a total of at least three mathematics courses at the 300- or 400-level by the end of their junior year, and satisfy all other requirements as put forth by the University Honors Council. Such students usually complete at least two half-credit semesters of independent study in mathematics (MATH 491 Reading and Research).

Mathematics Minor

A **minor** in mathematics consists of either:

MATH courses MATH 211 or above (at least one of them at the 300 or 400-level)	4
Total Credits	4

or

MATH courses MATH 211 or above (at least two of them at the 300 or 400-level)	3
Total Credits	3

All credits must come from courses taken at Bucknell University.

Mathematics (Statistics) Specific Minor

The minor can be specified as mathematics (statistics), if at least two of the required credits are from among:

MATH 217	Statistics II	1
MATH 303	Probability	1
MATH 304	Statistical Inference Theory	1
MATH 405	Statistical Modeling	1
MATH 407	Statistical Design of Scientific Studies	1

Mathematics (Applied/Modeling Mathematics) Specific Minor

The minor can be specified as mathematics (applied/modeling mathematics) if at least two of the required credits are from among the courses:

MATH 212	Differential Equations	1
MATH 222	Differential Equations for Engineers	.5
MATH 226	Probability and Statistics for Engineers	.5
MATH 343	Numerical Analysis	1
MATH 350	Methods in Applied Mathematics	1
MATH 358	Topics in Operations Research	1

The Department of Mathematics aims to provide both majors and non-majors with the mathematical and statistical knowledge and skills needed to succeed in their chosen field of endeavor. It is also intended that the student experience the elegance and broader impacts of the discipline.

Military Science (MILS)

Faculty

Director: MAJ Michael Kavadias

Senior Instructor: MSG Sean McGlensey

Instructors: CPT Jeff Cherry, SFC Jeff Garland, LT COL (Retired) Andy Mahoney, CPT Garrett Ruud

Military Science/Reserve Officer Training Corps (ROTC) is a multi-year program designed to prepare college students as leaders and make possible the commission of military officers into the United States Army, Army Reserve, and the Army National Guard. The courses are centered on the development of 16 leadership dimensions.

All Bucknell students may enroll and attend the first-year and sophomore-level classes with the only requirement being class attendance (one hour weekly for first-year students, two hours weekly for sophomore). Bucknell students attending military science classes as students are not part of the formal ROTC program.

ROTC scholarship first-year students and ROTC non-scholarship first- and second-year students may enroll on a trial basis with no commitment to the military. Students may leave the program or continue with advanced courses to earn a commission as an officer upon graduation.

The program is intended to start with new first-year students each fall; it is possible to enter the program as late as spring of the sophomore year. Students with prior military service or those who complete a 28-day summer training program may bypass the first-year and sophomore-level training.

Various types and lengths of scholarships are available, some of which can guarantee duty in the Army Reserve or Army National Guard.

Scholarship Cadets receive FULL tuition, a subsistence allowance of up to \$500 a month, and a book allowance of \$1,200 a year. Bucknell University pays room and board for their Scholarship Cadets who are living on campus.

Contracted non-scholarship Cadets receive a subsistence allowance of up to \$500 a month.

ROTC program requirements include a 30-day summer training course between the junior and senior years. Opportunities exist for other specialized summer training such as Airborne School, Air Assault School, internships with Active Duty Army units and Federal government agencies. A 30-day optional Culture Understanding and Language Proficiency (CULP) overseas experience is available to cadets. Over the past few years, Bucknell cadets have traveled over the summer to numerous countries including France, Korea, Tanzania, Thailand, China, Albania, Vietnam, and Italy.

The time commitment for first- and second-year Cadets during the school year is approximately six hours a week. For third- and fourth-year Cadets, the time commitment is approximately 10 hours a week. Time is spent on weekly classes, physical training, monthly leadership labs, and a once-a-semester field training exercise.

Courses in Military Science do not carry credit toward the academic courses required for a degree. However, credit for one elective course may be granted upon request for satisfactory completion of the advanced course.

For more information, contact the ROTC department at 570-577-1013 or 570-577-1246.

Music (MUSC)

Faculty

Professors: Barry T. Hannigan, William E. Kenny, Annie J. Randall

Associate Professors: Bethany Collier, Kimberly H. Council, Barry Long (Chair), Christopher Para

Assistant Professors: Paul Botelho, Lisa Caravan, Ryan Malone, Emily Martin, Beth C. Willer

Visiting Assistant Professor: Sezi Seskir

Adjunct Artist Affiliates: Gregory Alico, Susan S. Beckley, Richard Benjamin, Ronald L. Bixler, Lawrence Cooper, Karena Creasy, Leslie Cullen, Trina Gallup, Phillip Haynes, Ruth Hunter, Dale A. Orris, Lou Ann Potter, Samuel Robinson, Marcus Smolensky, Jay M. Umble

In the Department of Music, a faculty of active performers, composers, and scholars collaborates with students in the critical and creative study of music from diverse historical periods and cultural traditions, engaging the mind and ear in a process that develops artistic, aesthetic, and human understanding.

Resources

The Sigfried Weis Music Building has well-equipped faculty studios, 13 practice rooms, a percussion studio, an electronic music studio, a keyboard lab, classrooms, its own music library of scores and recordings, and the Cook Collection of Musical Instruments. The department offers approximately 100 musical events per year in the Rooke Recital Hall or the Weis Center for the Performing Arts. The Kushell Music Endowment of Bucknell University allows the department to sponsor several residencies by prominent musicians each year. Additionally, the Weis Center for the Performing Arts and the Department of Music offer joint workshops and master classes each year.

Accreditation

Bucknell University's Department of Music is accredited by the National Association of Schools of Music.

Admissions and Auditions

Students seeking admission into any of the music degree programs must audition before members of the department faculty. Recordings are not normally accepted. Additionally, applicants for the Concentration in Contemporary Composition must submit a portfolio of their work, and music education applicants must complete an interview. The Department of Music website contains additional information about the audition process, dates of auditions, and scholarships. Prospective students must complete both a Department of Music audition form and the Arts Merit Scholarship application form.

Regulations

Deviation from the established program of study for the major in music may be granted only by permission of the faculty adviser, the department chair, and the dean of the College of Arts and Sciences.

Non-music majors are charged a fee for lessons. Contact the Department of Music for a fee schedule.

Private instruction is offered in the following areas of performance: voice, piano, violin, viola, cello, bass, organ, woodwind, brass, guitar, and percussion instruments, as well as improvisation.

Non-music majors may receive one-quarter credit for participation in each recognized ensemble with a maximum of one-half credit permitted per semester and a limit of two full course credits total. Music majors and minors audit ensembles rather than participate for credit because these credits do not count toward fulfilling the minimum degree requirements.

The department administers jury examinations for students in the various music degree programs. Jury requirements vary for the different programs; all music majors should contact the department for further information.

Music Majors

The University offers two degrees in music: the **Bachelor of Arts** and the **Bachelor of Music** in performance and in music education. Regarding the Bachelor of Arts (BA) degree, students may pursue a concentration within the BA degree in Contemporary Composition, Cultural and Critical Studies in Music (CCSM), or Performance if they so wish. Requirements for the degree programs and concentrations within the BA are discussed below.

Requirements for All Majors

College Core Curriculum

All students, regardless of degree program, must satisfy requirements of the College Core Curriculum. A description and components of the College Core Curriculum may be found elsewhere in this catalog. All music degree programs require 14 credits of College Core Curriculum courses. Bachelor of Music and Bachelor of Arts students will meet the three intellectual competency goals (writing, speaking, and information literacy) within core coursework required for all degree programs. Culminating Experiences will be discussed within each degree program's description below.

Ensembles

All music majors must participate in at least one Department of Music ensemble each semester. The only two exceptions to this policy are the semester in which a student is studying abroad or in which music education majors are student teaching. Music majors audit ensembles rather than take them for credit because the credits do not count toward fulfilling the minimum degree requirements. Auditions are required for Symphonic Band, Jazz Band, Camerata, Concert Chorale, Orchestra, Bucknell Opera Theatre, and Rooke Chapel Ringers (handbells). The Gamelan Ensemble requires the permission of the director.

Recital Attendance

All students, regardless of degree program, must attend a minimum of 10 approved recitals/performances each semester in order to satisfy degree requirements.

Bachelor of Music

A candidate for the Bachelor of Music degree may choose from two curricula:

1. Vocal Performance

2. Music Education

A student wishing to change the degree program from a Bachelor of Arts in music to a Bachelor of Music may apply for admission to the Bachelor of Music program at the end of each semester through the sophomore year. The application must be made in writing to the chair of the Department of Music and involves the same process outlined above for prospective students. Students are not accepted into the Bachelor of Music degree program after the sophomore year.

All Bachelor of Music students must pass a functional keyboard requirement (see description under MUSC 152 Functional Keyboard), fulfill the recital requirements specified in the respective degree programs, and participate in prescribed assessment activities such as exit interviews and exams.

Bachelor of Music in Vocal Performance

Candidates in Vocal Performance are reviewed at the end of each semester through an examination by a jury comprising members of the faculty of the Department of Music. At the end of the sophomore year, students must be approved for upper-level study by the department. Candidates whose progress is determined to be insufficient will not be permitted to continue in the Bachelor of Music degree program.

Students in the Bachelor of Music in Vocal Performance degree must demonstrate basic proficiency in Italian, French, and German. Students enrolling in the University who have had at least the equivalent of one college semester of study in a language (one full year in secondary school) may petition the voice faculty to waive further study in that language during the degree process. Singers are encouraged to pursue as much language study as possible.

Culminating Experience

Vocal Performance majors are expected to appear in several successful performances as soloist and in chamber ensembles prior to presenting a full public recital in the senior year as a Culminating Experience. The senior recital demonstrates a student's synthesis of theoretical and historical knowledge, technical skills, understanding of musical language and concepts, and musicality.

Degree Requirements

The Bachelor of Music in Vocal Performance requires 14 credits of College Core Curriculum courses in addition to 19 music credits.

Program Requirements

MUSC 200	Diatonic Theory	1
MUSC 201	Chromatic Theory	1
MUSC 202	Advanced Theory	1
MUSC 249	Cross-Cultural Perspectives in Music (or another course in world music)	1
MUSC 252	Music and Culture: Chant to Beethoven	1
MUSC 253	Music and Culture: Beethoven to Virtual Music	1
MUSC 259	Conducting I	1
MUSC 340	Performance Seminar I	.5
MUSC 342	Repertoire and Pedagogy	.5

Electives

Two music electives	2
One elective in jazz theory or history	1
One elective in 19th-century topics	1
One elective in 20th-century topics	1

Applied (Private Lessons)

Four semesters at .5 credit per semester (1st & 2nd year)	2	
Four semesters at 1 credit (3rd & 4th year)	4	
MUSC 152	Functional Keyboard	0

Total Credits	19
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Other Requirements

Ensembles

Senior Recital

Recital Attendance Requirement (see Major Requirements comments above)

Bachelor of Music in Music Education

The curriculum in music education prepares students to teach music in the public schools. The curriculum is approved by the Pennsylvania Department of Education as a requirement for professional certification. Through this course of study a student will be expected to develop

1. Sound musicianship in an applied area,
2. Knowledge of music theory and the history of music, and
3. Broad cultural awareness through courses other than music.

Students may choose a curriculum that reflects either a vocal or instrumental emphasis; however, each emphasis is designed to fulfill, at least, the minimum requirements for K-12 certification in the state of Pennsylvania. Candidates are reviewed at the end of each semester through an examination by a jury comprising members of the faculty of the Department of Music as well as by an interview with the Music Education Coordinator. At the end of the sophomore year, students must be approved for upper-level study by the department. Candidates whose progress is determined to be insufficient will not be permitted to continue in the Bachelor of Music degree program.

Music Education students are expected to make several successful appearances as soloist and in chamber ensembles before the senior year, and to present during the fall of the senior year a minimum of half a solo recital in a chosen applied area. The student must also complete an e-portfolio in accordance with departmental guidelines. Additionally, all music education majors will take four semesters of lessons in secondary instruments: those students whose primary performance area is instrumental will study secondary instruments, voice students will study piano, and piano students will study voice.

Culminating Experience

The Music Education major will meet the Culminating Experience requirements (carrying 4 credits) through student teaching and the Student Teacher Seminar. Student teaching placements are assigned and supervised by the Music Education Coordinator. During student teaching, Music Education majors will develop professional attitudes, human relationship skills, establish effective classroom climate and management skills, develop effective planning techniques, and demonstrate a command of subject-matter knowledge and materials. Criteria for grading have been established by the Bucknell University Education Department and are available through the Department of Music. Failure to achieve an appropriate grade in student teaching results in failure to receive state certification. It is not possible to place all student teachers at a partner school that is within walking distance of the Bucknell campus; students are responsible for providing their own transportation as needed.

Thirty-four full academic course credits are required for graduation, distributed as outlined below.

Degree Requirements

The Bachelor of Music in Music Education requires 14 credits of College Core Curriculum courses in addition to 21 music credits.

Program Requirements

MUSC 135	Introduction to Music Education	1
MUSC 142	String Methods	.25
MUSC 143	Woodwind Methods	.25
MUSC 144	Brass Methods	.25
MUSC 145	Percussion Methods	.25
MUSC 146 or MUSC 147	Voice Methods	.25
MUSC 200	Diatonic Theory	1
MUSC 201	Chromatic Theory	1
MUSC 202	Advanced Theory	1
MUSC 235	Principles of Teaching Music	1
MUSC 239 or MUSC 241	Choral Methods and Literature Instrumental Methods and Literature	1
MUSC 249	Cross-Cultural Perspectives in Music (or another course in world music)	1
MUSC 252	Music and Culture: Chant to Beethoven	1
MUSC 253	Music and Culture: Beethoven to Virtual Music	1
MUSC 259	Conducting I	1
MUSC 335	Student Teacher Seminar	1
MUSC 369	Conducting II	1
EDUC 201	Educational Psychology	1
EDUC 439	Student Teaching in Music	3
Plus one music elective at or above the 200-level		1
Applied (Private Lessons)		
Seven semesters at .25 credit per semester in primary instrument		1.75
Four semesters at .25 credit in secondary instrument/voice		1

MUSC 152	Functional Keyboard	0
Total Credits		21

Other Requirements

Ensembles

Senior Recital (at least a half recital)

Pennsylvania Department of Education Requirements for Certification

All music degree programs require 14 credits of College Core Curriculum courses. The Certification requires:

MUSC 230	Music for Exceptional Children	1
MUSC 231 or EDUC 375	English Language Learners for Music Educators Methods of Teaching English as a Second Language	1
Math courses ¹		2
Writing course ¹		1
English literature course ¹		1
PRAXIS exams and clearances (see Music Education Coordinator for details)		

¹ These may be double-counted with CCC requirements.

Bachelor of Arts with a Major in Music

Students pursuing the Bachelor of Arts in Music degree may elect to follow the requirements for the general BA, or they may elect to pursue a concentration within the confines of the Bachelor of Arts in Music degree. Concentrations include those in Cultural and Critical Studies in Music (CCSM), Contemporary Composition, and Performance.

Degree Requirements (without a concentration)

Comprises eight courses distributed as follows:

Program Requirements

MUSC 200	Diatonic Theory	1
MUSC 201	Chromatic Theory	1
MUSC 202	Advanced Theory	1
MUSC 249	Cross-Cultural Perspectives in Music (or another course in world music)	1
MUSC 252	Music and Culture: Chant to Beethoven	1
MUSC 253	Music and Culture: Beethoven to Virtual Music	1

Electives

Two music electives	2
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Applied (Private Lessons)

Eight semesters at .25 credit per semester (Note that when necessary, private lesson requirements are waived for the semester(s) during which a student studies abroad.)	2
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Total Credits	10
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Other Requirements

Ensembles

Recital Attendance Requirement (see Major Requirements comments above)

Successful completion of performance juries

Bachelor of Arts majors in music are expected to participate in at least one of the music department's vocal or instrumental performing organizations each semester in residence, to perform in studio classes or departmental recitals.

Culminating Experience

Students in the Bachelor of Arts degree (having no concentration) may choose from two options for meeting the Culminating Experience requirement:

- A full, public senior recital, or
- A research project done within an upper-level music course.

Students choosing a research project must receive permission from the instructor of the course in which they wish to fulfill the Culminating Experience.

Bachelor of Arts in Music with Concentration in Cultural and Critical Studies in Music

Cultural and Critical Studies in Music (CCSM) offers a concentration within the Bachelor of Arts in Music degree for students who wish to apply a variety of historical and analytical approaches to music study. In addition to pursuing traditional music instruction according to Western classical norms, CCSM equips students with the methodological tools to contextualize such study and to understand it as one system among many world traditions. These methodologies are drawn from the fields of Ethnomusicology, Musicology, Critical Theory, Jazz Studies, and Cultural Studies. Students will study notated, aural, and improvised musical traditions, classical and popular music of various cultures, and will learn interdisciplinary research techniques that will assist them in their work toward a final senior project on a topic of their choice. Each of the listed Music and Culture courses employs an interdisciplinary approach and encourages students to think across traditional academic boundaries as they pursue a degree in Music.

Students who choose CCSM as their concentration take the following courses:

MUSC 200	Diatonic Theory	1
MUSC 201	Chromatic Theory	1
MUSC 202	Advanced Theory	1
MUSC 252	Music and Culture: Chant to Beethoven	1
MUSC 253	Music and Culture: Beethoven to Virtual Music	1
MUSC 362	Music Projects: Selected Topics	1
One credit in World Music, selected from the following list:		1
MUSC 249	Cross-Cultural Perspectives in Music	
MUSC 254	Music and Culture: Africa and the Diaspora	
MUSC 255	Music and Culture: The Silk Road and Beyond	
One elective, selected from the following list:		1
MUSC 247	Music and Culture: Indonesia	
MUSC 248	Music and Culture: History of Jazz	
MUSC 249	Cross-Cultural Perspectives in Music	
MUSC 254	Music and Culture: Africa and the Diaspora	
MUSC 255	Music and Culture: The Silk Road and Beyond	
MUSC 257	Music and Culture: Jazz, Rock, and Race	
MUSC 258	Music and Culture: Music in American Life	
MUSC 350/UNIV 200	Studies in Music	
Culminating Experience: Students pursuing the CCSM Concentration complete a research paper written as part of the MUSC 362 course requirements.		
Eight semesters at .25 credit per semester (Note that when necessary, private lesson requirements are waived for the semester(s) during which a student studies abroad.)		2
Total Credits		10

Other Requirements

Ensembles

Recital Attendance Requirement (see Major Requirements comments above)

Successful completion of performance juries

Total Number of Music Credits: 10

Bachelor of Arts majors in the CCSM Concentration are required to participate in at least one of the music department's vocal or instrumental performing organizations each semester in residence.

Bachelor of Arts in Music with Concentration in Contemporary Composition

The Contemporary Composition concentration of the Bachelor of Arts in Music degree allows students to engage in the study and practice of music composition and creation through the development of their creative compositional voices. Students will engage various perspectives of music composition while building a strong musical foundation based on the study of composition, music theory, instrumental performance, notational

issues, music history and culture, and music technology. Students are encouraged to compose for a variety of acoustic and electro-acoustic media, and are expected to build a portfolio of composed works throughout their course of study with performance of their works occurring regularly.

The concentration in Contemporary Composition requires 10 credits specified as follows:

Select two of the following:		2
MUSC 200	Diatonic Theory	
MUSC 201	Chromatic Theory	
MUSC 203	Jazz Theory and Arranging	
Private composition lessons six semesters		1.5
MUSC 202	Advanced Theory	1
MUSC 249	Cross-Cultural Perspectives in Music	1
MUSC 252	Music and Culture: Chant to Beethoven	1
MUSC 253	Music and Culture: Beethoven to Virtual Music	1
MUSC 362	Music Projects: Selected Topics	1
MUSC 232	Music Technology	.5
Applied Music (Private Lessons in major performance area): four semesters at .25 credit per semester.		1
MUSC 152	Functional Keyboard	0
<hr/>		
Total Credits		10

Other Requirements:

Ensembles

Senior Composition Recital

Recital Attendance Requirement (see Major Requirements comments above)

Culminating Experience

Students pursuing the Contemporary Composition Concentration are required to present a recital comprising students' compositions.

Total Number of Music Credits: 10

Bachelor of Arts in Music with Concentration in Performance

The Bachelor of Arts with a Concentration in Performance degree allows students to develop strong performance skills through the practice and study of musicianship and technique. Students explore a variety of musical styles along with performance practice and healthy body use. Students are expected to build a strong musical foundation through the study of music theory and history. Performance Concentration students receive an hour-long lesson weekly each semester they are in residence, and are required to perform each semester on department recitals. Performance Concentration students must present a full recital during their senior year. Vocalists may choose either the BM Performance degree or the BA performance concentration depending upon their own goals as well as the outcome of the audition process.

The Concentration in Performance requires 10 credits specified as follows:

Music Theory		3
MUSC 200	Diatonic Theory	
MUSC 201	Chromatic Theory	
MUSC 202	Advanced Theory	
or MUSC 203	Jazz Theory and Arranging	
Music History		2
MUSC 252	Music and Culture: Chant to Beethoven	
MUSC 253	Music and Culture: Beethoven to Virtual Music	
World Music		1
Select one course from the following:		
MUSC 249	Cross-Cultural Perspectives in Music	
MUSC 254	Music and Culture: Africa and the Diaspora	
MUSC 255	Music and Culture: The Silk Road and Beyond	
Seminar		1
MUSC 362	Music Projects: Selected Topics	

Two Performance Studies Courses ²		1
MUSC 340 & MUSC 342	Performance Seminar I and Repertoire and Pedagogy	
Hour lessons on the major instrument: eight semesters (.25 credit each)		2
MUSC 152	Functional Keyboard	0
Total Credits		10

Other Requirements:

A minimum of one recital performance each semester

Full senior recital

Participation in a department ensemble each semester

Recital Attendance

Culminating Experience

Students pursuing the Performance Concentration complete a senior recital demonstrating a synthesis of theoretical and historical knowledge, technical skills, understanding of musical language and concepts, and musicality.

² MUSC 342 Repertoire and Pedagogy requirement may be fulfilled by taking the class proper, or by successfully completing four semesters of studio class as determined by the student's applied music instructor. In the latter case, the student enrolls in MUSC 342 during the fourth semester of studio class.

Minor in Music**Minor Requirements**

The minor in music consists of six course credits as outlined below. A minimum of two credits must be above the 100-level.

Program Requirements

MUSC 200 & MUSC 201	Diatonic Theory and Chromatic Theory ²	2
MUSC 252	Music and Culture: Chant to Beethoven	1
or MUSC 253	Music and Culture: Beethoven to Virtual Music	
Course at the 200 or 300-level in music and culture		1
Elective (may not be ensemble credit)		1
Applied (Private Lessons)		
Four semesters at .25 per semester		1
Total Credits		6

² Students lacking sufficient music theory background to begin the theory sequence with MUSC 200 Diatonic Theory should enroll in MUSC 121 Introduction to Music Fundamentals or pursue an individualized course of instruction on their own before enrolling in MUSC 200 Diatonic Theory.

As with the music major, credits received from participation in ensembles will not count toward the minimum requirements for the minor.

DEPARTMENT OF MUSIC LEARNING GOALS

1. Students will demonstrate the ability to engage in appropriate performance practice in solo/chamber/ensemble music across a varied section of repertoire in their major performance area.
2. Students will demonstrate knowledge of historical, cultural, and stylistic musical traditions through the present time.
3. Students will demonstrate knowledge of musical forms, processes, and structures in compositional, performance, analytical, scholarly, and pedagogical applications.

Neuroscience (NEUR)**Faculty**

Director: Peter G. Judge

Affiliated Faculty: Elizabeth A. Capaldi, David W. Evans, Judith E. Grisel, Andrea R. Halpern, Peter G. Judge, Heidi Lorimor, Elizabeth C. Marin, Aaron Mitchel, Kevin P. Myers, Kathleen C. Page, Jennifer Rice Stevenson, Ruth Tincoff, Joseph V. Tranquillo, T. Joel Wade

Coordinating Committee: Peter G. Judge, Elizabeth C. Marin, Jennifer Rice Stevenson

The program in neuroscience offers students an interdisciplinary major representing biology, psychology, animal behavior, chemistry, mathematics, biomedical engineering, and physics. The neuroscience major is intended to give students opportunities through coursework and research experience to study the nervous system, its development and influence on behavior (broadly defined). Our faculty are active and productive scholars who involve students in their research programs, and thus we view research experience as a key aspect to the learning process.

The neuroscience major is offered within the Bachelor of Science degree program. All students are strongly encouraged to participate in research with faculty as volunteers in their laboratories or through independent studies and honors theses. Faculty interests and facilities include cell and molecular wet labs, electroencephalography for studying brain activity and cognitive/affective and perceptual processes, animal behavior labs for studying behavior and development in vertebrates (we house four species of primates, as well as rats, fish, turtles, mice, prairie voles, and bats), and invertebrates (e.g., flies and honey bees). We also have facilities for studying vision, cognition, and hormones and behavior. Students who succeed in neuroscience will be well-equipped to go on to graduate study in neuroscience, biology, psychology, and medicine, as well as to work in a variety of other disciplines including fields relating to biotechnology, pharmaceuticals, or medical instrumentation.

Bachelor of Science In Neuroscience

The **Bachelor of Science major** in neuroscience requires 17 courses (12 basic courses, plus five required 300-level courses). The students choose these five courses from a specified list of advanced neuroscience courses. One of the five can be chosen from a list of related courses as described below.

Of the 17 total courses taken by neuroscience majors, the following 12 courses are required:

Program Requirements

NEUR 100	Introduction to Neuroscience	1
BIOL 205	Introduction to Molecules and Cells	1
BIOL 207	Genetics	1
NEUR/PSYC 250	Biopsychology	1
NEUR 253	Neural Cell Biology	1
CHEM 211 & CHEM 212	Organic Chemistry I and Organic Chemistry II	2
MATH 201	Calculus I	1
MATH 216	Statistics I	1
Select one of the following:		1
NEUR 248	Developmental Psychobiology	
PSYC 203	Learning	
PSYC 204	Human Cognition	
PSYC 252	Sensation and Perception	
PHYS 211 & PHYS 212	Classical and Modern Physics I and Classical and Modern Physics II	2
Electives		
Five advanced neuroscience electives ^{1,2}		5

¹ Advanced neuroscience electives must be chosen from the courses listed in Category I and Category II with a minimum of two from Category I and two from Category II. One credit of Undergraduate Research (NEUR 399) or Honors Thesis (NEUR 360) can be counted toward one of the two Categories. The Category toward which the research counts depends on the nature of the research. One course from the neuroscience-related electives list can also be counted as one of the five.

² Students are encouraged to become involved in independent study research, (NEUR 399 Undergraduate Research); however, only one undergraduate research credit can be counted toward the five courses required for the major.

Category I

BIOL 322	Physiological Mechanisms	1
BIOL 324	Neurophysiology	1
BIOL/NEUR 332	Developmental Neurobiology	1
BIOL 342	Neuroethology	1
BMEG 441	Neural Signals and Systems	1

NEUR 348	Behavioral Pharmacology	1
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Category II

PSYC 305	Developmental Psychopathology	1
PSYC/NEUR 313	Researching Behavioral Neuroscience	1
PSYC 318	Cognitive Aging	1
PSYC 339	Psychology of Music	1
PSYC 340	Behavioral Neuroscience	1
PSYC/NEUR 344	Developmental Brain Research	1
PSYC 349	Cognitive Neuroscience	1
PSYC 352	Face Perception	1

Neuroscience-related Courses

General Neuroscience-related Courses

BIOL 318	Principles of Physiology	1
BIOL 328	Endocrinology	1
BIOL 337	Biology of Aging	1
BMEG 300	Biotransport I	1
BMEG 409	Fabrication and Experimental Design	.5
BMEG 461	Brain, Mind and Culture	1
NEUR 399	Undergraduate Research	1
PSYC 315	Language Development	1
PSYC 324	Advanced Psychological Statistics	1

Courses Reflect Interests In Cell and Molecular Neuroscience

BIOL 304	Biology of Cancer	1
BIOL 327	Molecular Biology	1
BIOL 331	Genomics	1
BIOL 339	Developmental Biology	1
BIOL 340	Biochemical Methods	1
BIOL 347	Virology	1
BIOL 352	Cell Biology	1
CHEM 351	Biochemistry I	1

Courses Recommended but Not Required

Select one of the following:

CHEM 201 & CHEM 202	General Chemistry I and General Chemistry II	
CHEM 221 & CHEM 231	Inorganic Chemistry I and Analytical Chemistry	
MATH 202	Calculus II	1

Students need not choose any specific course of study or concentration within neuroscience. However, students with interests in particular aspects of the neuroscience major may consider choosing among courses that reflect these interests, such as cognitive and behavioral neuroscience or cellular and molecular neuroscience. Students interested in pursuing such interests should consult with their adviser on how best to accomplish their goals.

The recommended sequence for the neuroscience Bachelor of Science major is as follows:

First Year

First Semester	Credits	Second Semester	Credits
NEUR 100	1	PSYC 250	1
BIOL 205	1	MATH 216	1
MATH 201	1		
	3		2

Sophomore

First Semester	Credits	Second Semester	Credits
CHEM 211		1 CHEM 212	1
BIOL 207		1 NEUR 248, PSYC 203, PSYC 204, or PSYC 252	1
NEUR 253	1		
	3		2

Junior

First Semester	Credits	Second Semester	Credits
PHYS 211		1 PHYS 212	1
300-level advanced neuroscience elective(s)		1 300-level advanced neuroscience elective(s)	1
	2		2

Senior

First Semester	Credits	Second Semester	Credits
300-level advanced neuroscience elective(s)		2 300-level advanced neuroscience elective(s)	1
	2		1

Total Credits: 17

We recommend that students who come to Bucknell with Advanced Placement (AP) credit in calculus begin their CHEM sequence in the first semester of the first year.

Writing in the Major

Neuroscience students will satisfy the writing in the major requirement by completing BIOL 205 Introduction to Molecules and Cells. In BIOL 205 Introduction to Molecules and Cells students are given direct instruction by the professor and through assigned readings from a text on scientific writing. Students will submit sections of four laboratory reports describing the results and conclusions from their experiments. Students will receive feedback on preliminary drafts of each report and will be given an opportunity to discuss their drafts as they prepare their final submissions.

Formal Presentation Experience

Students in the NEUR major will satisfy the formal presentation requirement by completing NEUR 253 Neural Cell Biology. Other NEUR courses also offer instruction on, and assessment of, formal presentations, or leading discussions. Students who are interested in gaining further instruction on presentations might consider taking one or some of the following courses:

ANBE/BIOL 342	Neuroethology	1
BIOL 324	Neurophysiology	1
NEUR 248	Developmental Psychobiology	1
NEUR/PSYC 305	Developmental Psychopathology	1
NEUR/PSYC 348	Behavioral Pharmacology	1
PSYC 203	Learning	1
PSYC 315	Language Development	1
PSYC 318	Cognitive Aging	1
PSYC 339	Psychology of Music	1

Information Literacy

Neuroscience students will satisfy their information literacy requirement by completing BIOL 205 Introduction to Molecules and Cells and NEUR 253 Neural Cell Biology. Students may also satisfy their information literacy requirement by completing an independent study (NEUR 399 Undergraduate Research). Students who want their independent study credit to count toward the NEUR major should be prepared to document how their independent study addresses some aspect of neuroscience so as to warrant 300-level NEUR credit. In all these experiences students receive direct instruction on the gathering and assimilation of scientific literature through a variety of search mechanisms, including, for example, PubMed, Medline and PSYCInfo.

Culminating Experience

Neuroscience seniors will satisfy their Culminating Experience requirement through any one of the following activities:

- Registering for Undergraduate Research NEUR 399 Undergraduate Research in their senior year (for a minimum of .5 credit). Students who do so will be graded on their participation and competency throughout the semester and will also be required to submit a written laboratory report based on their practical experiences. As noted above, the content of the independent study should be directly related to some aspect of neuroscience.
- Successful completion of an Honors Thesis (NEUR 360) in Neuroscience
- Students will have the opportunity to register for NEUR 400 Senior Seminar in Neuroscience – a seminar series – (.25 credit) in the spring semester of their senior year. This seminar series will require attendance at no fewer than four lectures. For example: attending lectures given by

invited speakers from Biology, Chemistry, Physics or Psychology would fulfill this requirement. Attendance will be mandatory and students will be required to submit a written summary/reaction of each lecture, which will be graded by the members of the NEUR faculty.

Majors in Neuroscience will:

1. Understand the structure and function of the nervous system.
2. Understand the neural bases of behavior from a variety of theoretical perspectives.
3. Understand how the nervous system is manipulated, measured or modeled to understand its processes.
4. Acquire a broad background in the natural sciences and a basic understanding of psychological principles.
5. Understand the processes through which scientific information is derived, evaluated, and communicated.

Nontraditional Study (NTST)

Faculty

Coordinator: Robert M. Midkiff Jr.

Recognizing that there may be meaningful educational endeavors outside of the scheduled course or conventional independent study (which usually emphasizes library, laboratory, or field work), individual Nontraditional Study projects may be proposed. While such projects may be related to work experiences or internships, whether on or off campus, the student also must propose goals and procedures, and ultimately produce materials for faculty evaluation, which give evidence of significant learning and advancement in an academic discipline at Bucknell University (and thus justify degree credit).

Nontraditional Study projects may be arranged with any instructor; they must be approved by the department or program chair and by the academic dean. Approved projects are normally for 1.0 course credit; it is possible to propose 2.0, 3.0, or 4.0 credits. Projects are numbered according to level as follows:

- elementary (1NT),
- intermediate (2NT), and
- advanced (3NT).

The means of evaluation must be determined before the project is begun; grading may be either conventional (A-F) or pass/fail. Additional information and proposal forms are available on the website of the College of Arts and Sciences Dean's Office.

The Nontraditional Study program and the University Course program include a quarter-credit option for non-paid internships. The course designated for the partial credit is UNIV 1NT Internship Credit. The UNIV 1NT Internship Credit program recognizes that the University has a strong interest in and commitment to facilitating more opportunities for students in the liberal arts interested in exploring opportunities in a variety of fields. Such internships round out formal academic experiences, particularly when completed within a structure that emphasizes self-reflection.

The number of UNIV 1NT Internship Credit opportunities is limited to two per student or one-half credit toward the degree. Students may complete additional UNIV 1NT Internship Credit experiences and have those recorded on the transcript, but those additional experiences will not earn degree credit. Students may earn only pass/fail grades for UNIV 1NT Internship Credit. Students may not receive UNIV 1NT Internship Credit for participation in an internship for which they receive financial remuneration.

Additional information and proposal forms are available in the dean's office of the College of Arts and Sciences.

Peace Studies Minor

Faculty

Coordinator: Tansa G. Massoud

There are more than 160 higher learning institutions offering Peace Studies programs in the United States and more than 500 colleges around the world. The United States government gave official recognition to the field of Peace Studies in 1984, when it established the U.S. Institute of Peace. In 1987, the Peace Studies Association, a professional academic body, was established. In addition, the field is represented by the Consortium on Peace Research, Education, and Development (COPRED). There are at least six scholarly journals devoted to Peace Studies.

Peace Studies is an interdisciplinary field of study housed primarily in the social sciences. Other labels for Peace Studies include "peace and conflict studies," "peace and justice studies," and "conflict analysis and resolution." Peace Studies explores the causes and nature of human conflict from the interpersonal to the global level. Historically, Peace Studies programs concentrated on "negative peace" or absence of war. Today, more attention is devoted to the concept of "positive peace" promoting social, political, and economic justice. A partial list of topics under Peace Studies includes: violence, war, ethnic conflict, conflict management, conflict resolution, peacemaking, law, human rights, values, justice, environment, racism, sexism, and nonviolence. Normatively, the goal of Peace Studies is to promote a more just and peaceful world.

The Peace Studies minor selects courses related to this topic from a variety of departments and programs, including: anthropology, biology, East Asian Studies, economics, English, environmental studies, geography, history, international relations, philosophy, political science, psychology, religion, sociology, and women's and gender studies.

The Peace Studies minor allows students to group a number of courses to advance their interest in conflict, violence, justice, and peace. A Peace Studies concentration will enrich students' understanding of their respective majors and prove useful to careers or graduate studies in a variety of fields, including: journalism, education, media, politics, public policy, law, business, domestic and international organizations, and international relations.

The Peace Studies minor will consist of five courses, none of which may be double counted in the student's major and with no more than three of those five courses being in the same department.

Select two of the following:

2

PHIL 233	The Philosophy of Peace and Nonviolence
POLS 280	War
UNIV 219/POLS 281	Peace Studies: Conflict Resolution

Select three of the following: ¹

3

ANBE 266	Animal Behavior
ANTH 235	Modern Africa
BIOL 266	Animal Behavior
EAST 226	East Asian Politics
EAST 234	China Since 1800
EAST 248	International Relations in East Asia
EAST 255	Modern Japanese History
EAST 269	Chinese Politics
EAST 382	U.S.-China Relations
ECON 235	African Economic Development
ECON 236	Unemployment and Poverty
ECON 258	Intermediate Political Economy
ECON 333	Seminar in Economic Topics
ENLS 221	Introduction to African American Literature
ENLS 228	Gender and Sexuality in America
ENST 205	Green Utopias
ENST 255	Environmental Injustice
ENST 260	Environmental Law
GEOG 113	Human Impact on Environment
GEOG 209	Economic Geography
GEOG 210	Urban Condition
GEOG 211	Political Geography
GEOG 236	Third World Development
HIST 220	American Civil War and Reconstruction
HIST 223	Twentieth-century African-American History: Eyes on the Prize
HIST 239	Contemporary Europe, 1890-1995
HIST 290	Europe Imperialism and Colonialism
HIST 292	African History II
HIST 311	U.S. History since 1865
IREL 225	Chinese Politics
IREL 226	East Asian Politics
IREL 255	International Law
IREL 283	East Asian International Relations
IREL 425	International Relations of Migration
LAMS 150	Latin America: An Introduction
LAMS 297	Colonial Latin America
POLS 170	International Politics
POLS 205	Comparative Politics

POLS 211	Third World Politics
POLS 219	Latin American Politics
POLS 222	Russian Politics
POLS 224	Government and Politics of the Middle East
POLS 225	Chinese Politics
POLS 226	East Asian Politics
POLS 238	Women and Politics
POLS 271	American Foreign Policy
POLS 272	U.S. National Security Policy
POLS 275	Global Governance
POLS 283	East Asian International Relations
POLS 285	The International Relations of Latin America in the 21st Century
POLS 287	U.S. Foreign Policy and the Middle East
POLS 289	The Arab-Israeli Conflict
POLS 382	U.S.-China Relations
PSYC 209	Social Psychology
PSYC 233	Black Psychology
PSYC 266	Animal Behavior
PSYC 306	Trauma Psychology
RELI 201	Islam
RELI 202	Hinduism
RELI 226	Environmental Ethics
RELI 234	Issues of Religion and Culture
RELI 245	Marketing Chinese Religions
RELI 246	Religions of Japan
RELI 280	Religion and Constitutional Law
RELI 281	Religion and American Politics
SOCI 213	Race in Historical and Comparative Perspectives
SOCI 234	Criminology
SOCI 243	Sociology of Race and Ethnicity
SOCI 251	Violence and Society
SOCI 309	How Holocausts Happen
SOCI 410	Remember the Holocaust
WMST 150	Introduction to Women's and Gender Studies
WMST 238	Women and Politics

¹ Students may propose to include another relevant course by consulting with and obtaining approval from the coordinator of the minor. Students also may manage to have an internship or field work related to the minor count for credit.

Philosophy (PHIL)

Faculty

Professors: Richard Fleming, Gary M. Steiner

Associate Professors: Peter S. Groff, Jason Leddington, Sheila M. Lintott (Chair), Matthew Slater, Jeffrey S. Turner

Visiting Assistant Professor: Maria Balcells

Philosophy examines questions pertaining to the nature of language, truth, knowledge, reality, beauty, and ethical commitment – questions that are so fundamental to human existence that they are neither easily answered nor easily ignored. The study of philosophy develops skills in interpreting texts, thoughtfully responding to other viewpoints, constructing and evaluating argumentation, and the disciplined imagining of novel possibilities for human knowing, valuing, and living. In addition to its intrinsic interest and value, it also provides excellent training for graduate, medical, law or business school and prepares students for a variety of potential careers, from the corporate world to nonprofit work to creative, educational, or entrepreneurial pathways.

Bucknell's philosophy curriculum offers courses in a wide variety of subjects, figures, historical periods, traditions, movements, and methodological perspectives. Some courses focus on general fields such as ethics, aesthetics, metaphysics, epistemology, and logic. Others raise philosophical questions about topics such as mind, language, art, music, science, religion, politics, gender, and law. Historically oriented courses range from the earliest Greek philosophers up through revolutionary 20th-century thinkers such as Heidegger and Wittgenstein. Still others span whole philosophical traditions (Chinese, Indian, Islamic, Jewish) or survey specific movements (existentialism, phenomenology, analytic philosophy, feminist philosophy).

Course Areas

Introductory

PHIL 100	Introduction to Philosophy	1
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Logic

A study of the principles of reasoning.

PHIL 103	Logic	1
PHIL 201	Symbolic Logic	1

Core Historical Periods

Studies of the two essential periods in the history of Western philosophy: Ancient Greek (5th-4th c. BC) and modern European (17th-18th c.).

PHIL 205	Greek Philosophy	1
PHIL 207	History of Modern Philosophy	1

Axiology/Value Theory

One of the major branches of philosophy, Axiology concerns itself with the nature of value (*axios*), e.g., the good in ethics; justice in social and political philosophy; the right in law; and the beautiful, the sublime, and the ugly in aesthetics.

PHIL 212	Philosophy of Art	1
PHIL 213	Ethics	1
PHIL 214	Social and Political Philosophy	1
PHIL 215	Philosophy of Music	1
PHIL 218	Ecology, Nature, and the Future	1
PHIL 228	Contemporary Ethical Theory	1
PHIL 246	Philosophy of Law	1
PHIL 265	Contemporary Philosophy of Art	1
PHIL 271	Eating Animals: Philosophical Perspectives	1

Metaphysics and Epistemology

Two major branches of philosophy, which are closely intertwined. Metaphysics concerns itself with the most general of all topics: being or existence itself. What does it mean to be? What are the ultimate constituents of reality? It encompasses numerous sub-topics such as the nature of universals, mind, personal identity, freedom, time, and God. Epistemology constitutes a systematic investigation into the nature, sources, and limitations of knowledge.

PHIL 204	Scientific and Everyday Reasoning	1
PHIL 220	Philosophy of Science	1
PHIL 223	Philosophy of Religion	1
PHIL 224	Theory of Knowledge	1
PHIL 225	Metaphysics	1
PHIL 226	Philosophy of Mind	1
PHIL 227	Philosophy of Language	1
PHIL 268	Topics in Metaphysics	1
PHIL 272	Philosophy of Biology	1

Movements and Traditions

Many important philosophical figures, problems, and positions are deeply rooted in particular movements and traditions. These can represent radically different philosophical perspectives, concerns, or ways of thinking.

PHIL 206	Medieval Philosophy	1
PHIL 219	The Problem of False Consciousness	1
PHIL 222	Analytic Philosophy	1
PHIL 229	Philosophy and Race	1

PHIL 230	Feminist Philosophy	1
PHIL 233	The Philosophy of Peace and Nonviolence	1
PHIL 256	From Hegel to Nietzsche	1
PHIL 258	Existentialism	1
PHIL 260	Phenomenology	1
PHIL 262	Contemporary Continental Philosophy	1
PHIL 266	Chinese Philosophy	1
PHIL 267	Islamic Philosophy	1
PHIL 269	Indian Philosophy	1
PHIL 270	Jewish Philosophy	1
PHIL 280	Buddhist Philosophy in Comparative Perspective	1

Senior Seminar/Culminating Experience

A different senior seminar is offered every semester. These are advanced courses, primarily intended for majors, which focus in depth on a particular philosophical figure, historical period, topic, problem, or movement. Individual studies and Senior or Honors theses must be specially arranged with the professor who will be supervising it.

PHIL 309	Seminar in Historical Studies: Individual Philosophers	1
PHIL 310	Seminar in Historical Studies: Historical Periods	1
PHIL 311	Seminar in Philosophical Problems	1
PHIL 319	Individual Studies in Philosophy	1
PHIL 320	Individual Studies in Philosophy	1
PHIL 321	Honors Thesis	1
PHIL 322	Honors Thesis	1
PHIL 323	Senior Thesis	1

Philosophy Major

The philosophy **major** consists of a minimum of nine courses drawn from different areas:

Introduction to Philosophy requirement:

PHIL 100	Introduction to Philosophy (any section) ¹	1
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Logic requirement:

PHIL 103	Logic	1
or PHIL 201	Symbolic Logic	

Two Core Historical Period requirements:

PHIL 205	Greek Philosophy	1
PHIL 207	History of Modern Philosophy	1

Select one Axiology (Value Theory) requirement:

PHIL 212	Philosophy of Art	1
PHIL 213	Ethics	
PHIL 214	Social and Political Philosophy	
PHIL 215	Philosophy of Music	
PHIL 218	Ecology, Nature, and the Future	
PHIL 228	Contemporary Ethical Theory	
PHIL 246	Philosophy of Law	
PHIL 265	Contemporary Philosophy of Art	
PHIL 271	Eating Animals: Philosophical Perspectives	

Select one Metaphysics and Epistemology requirement:

PHIL 204	Scientific and Everyday Reasoning	1
PHIL 220	Philosophy of Science	
PHIL 223	Philosophy of Religion	
PHIL 224	Theory of Knowledge	
PHIL 225	Metaphysics	
PHIL 226	Philosophy of Mind	

PHIL 227	Philosophy of Language	
PHIL 268	Topics in Metaphysics	
PHIL 272	Philosophy of Biology	
Select one Movements and Traditions requirement:		1
PHIL 206	Medieval Philosophy	
PHIL 219	The Problem of False Consciousness	
PHIL 222	Analytic Philosophy	
PHIL 230	Feminist Philosophy	
PHIL 233	The Philosophy of Peace and Nonviolence	
PHIL 256	From Hegel to Nietzsche	
PHIL 258	Existentialism	
PHIL 260	Phenomenology	
PHIL 262	Contemporary Continental Philosophy	
PHIL 266	Chinese Philosophy	
PHIL 267	Islamic Philosophy	
PHIL 269	Indian Philosophy	
PHIL 270	Jewish Philosophy	
PHIL 280	Buddhist Philosophy in Comparative Perspective	
Senior seminars/Culminating Experience		
Select one of the following options:		2-4
Option 1		
Two 300-level seminars		
Option 2		
One 300-level seminar		
PHIL 321	Honors Thesis	
Option 3		
One 300-level seminar		
PHIL 322	Honors Thesis	
Option 4		
One 300-level seminar		
PHIL 323	Senior Thesis	

¹ This course is a prerequisite for most 200 and 300-level PHIL courses.

This curriculum aims at providing students with a balance of breadth and depth in the field, while allowing them a large degree of flexibility in choosing the specific courses that best fit their particular interests.

The learning goals of the philosophy major include:

1. a general comprehension of several major periods and authors in the history of Western philosophy,
2. skill in constructing and evaluating argumentation,
3. skill in developing and evaluating interpretations of philosophical texts and
4. an appreciation of the fundamental ambiguities and complexities involved in the human attempt to answer questions about knowing, valuing and living.

In addition to these discipline-specific goals, the philosophy major is designed to cultivate a number of more general skills and competencies, in accordance with the "Disciplinary Depth" component of the College Core Curriculum. They are:

1. **Skills in writing.** Students majoring in philosophy will gain significant experience in the written analysis and evaluation of texts and arguments. Almost every course offered by the philosophy department includes both an intensive and an extensive focus on writing skills.
2. **Skills in formal presentation.** Regardless of one's eventual choice of profession, one must develop skills in oral argumentation, articulate discussion, and persuasion. Many of the courses offered by the philosophy department include work that will enhance students' oral presentation skills, including individual and/or group presentations, oral summaries and other presentations of assigned work, and formal classroom debates. All students in PHIL 207 History of Modern Philosophy will develop skills in preparing, revising, and delivering oral presentations of various kinds, including individual presentations, group presentations, and/or formal in-class debates. In addition, in many of the 300-level seminars offered by the philosophy department, students will further develop their formal presentation skills.

3. **Information literacy.** Students majoring in philosophy will gain facility in the use of both primary and secondary sources; learn how to locate, access, and retrieve both primary and secondary materials; learn to evaluate these materials critically through in-class discussion and their written work; become familiar with the legal and ethical standards of information access and use; and learn to use various technological resources in support of their academic work. All students in PHIL 205 Greek Philosophy will devote special attention to the development of information literacy.
4. **Culminating Experience (CE).** Students majoring in philosophy will complete a two-part Culminating Experience, usually during the senior year. The Culminating Experience is designed to distill and synthesize students' previous studies in philosophy, enriching and cementing the knowledge and skills mentioned above. Students engaged in the Culminating Experience will typically have completed most if not all of the other major requirements. In order to fulfill the Culminating Experience in philosophy, students will either take two 300-level seminars in philosophy or take one 300-level seminar in philosophy and write a senior or honors thesis. At least one of these seminars (or the student's thesis, if the student elects to write one) must be taken during the student's senior year, with the exception that second-semester juniors may complete this Culminating Experience in the major with permission of the adviser and the department chair.

Philosophy majors interested in study abroad are encouraged by the department to do so, and may work with faculty in the department to find a program of study suitable to their interests. Qualified students are also encouraged to pursue honors study in philosophy; they should consult with their department advisers or with the chair of the department in advance about this option. Students will be expected to submit a substantial honors thesis, the equivalent of two semesters of work in their senior year. Credit may be taken either in one semester of the senior year or two. Students pursuing this course of study are exempt from one of the two required CE-related senior seminars. Students wishing to do graduate work in philosophy may want to supplement their philosophical studies with language courses, for example in ancient Greek, Latin, French, German, Chinese or Arabic.

Minor in Philosophy

The **minor** in philosophy consists of four courses, two of which must be 200-level or above. No particular combination of courses is required and students may wish to design a minor with their particular interests and aims in mind.

The learning goals of the philosophy major are:

1. A general comprehension of several major periods and authors in the history of Western philosophy.
2. Skill in constructing and evaluating argumentation.
3. Skill in developing and evaluating interpretations of philosophical texts.
4. An appreciation of the fundamental ambiguities and complexities involved in the human attempt to answer questions about knowing, valuing, and living.

Physics and Astronomy (PHAS)

Faculty

Professors: Sally Koutsoliotas, Edwin F. Ladd, Thomas H. Solomon, Katharina Vollmayr-Lee

Associate Professors: Katelyn Allers, Jiajia Dong, Jack F. Gallimore, Martin K. Ligare, David C. Schoepf, Michele D. Thornley (Chair), Brian C. Utter, Benjamin P. Vollmayr-Lee

Assistant Professors: A. Matthew Amthor, Deepak Iyer, Ibrahim A. Sulai

Physics is the fundamental science of the natural world. The study of physics and astronomy leads to a deeper appreciation and awareness of the world around us. From the quantum mechanical behavior at the smallest scale to the workings of the cosmos at the largest scale, physics consists of a few general principles that explain a vast range of phenomena. Coursework in physics leads to an understanding of these phenomena and gives students experience in abstract mathematical modeling as well as experimental and computational techniques. As a means to enhance the physics curriculum, research opportunities in astronomy and physics also are available and strongly encouraged.

A physics major is an appropriate first step on the path to a career as a research scientist. Because physics is such a fundamental science, it can be the basis for the understanding of principles that are relevant to a wide variety of fields. It provides preparation for graduate study in physics or in related fields such as astrophysics, biophysics, medical physics, chemical physics, geophysics, or engineering. A fundamental understanding of nature has been a goal throughout history, and a study of physics can be the focus of a liberal education because of its connections with intellectual history and philosophy. A major in physics can be the platform for pursuing a wide variety of careers including medicine, law, business, and teaching.

A major in physics may be pursued under the Bachelor of Arts or Bachelor of Science degree programs, either of which can provide adequate preparation for graduate study. Students in the Bachelor of Arts program who plan to attend graduate school in physics or astronomy should consult with their advisers to select an appropriate set of electives. The standard entry point for either degree program is the yearlong introductory sequence PHYS 211 Classical and Modern Physics I-PHYS 212 Classical and Modern Physics II.

Modern astrophysics involves the application of physics toward understanding the workings of the universe. Students interested in an introductory survey are encouraged to enroll in ASTR 101 Our Solar System or ASTR 102 Stars, Galaxies, and Beyond. The department also offers an astrophysics concentration as an option in the Bachelor of Science degree program, so that interested students may obtain a strong grounding in fundamental

physics along with specialized coursework in astrophysics. This concentration is primarily designed for students considering advanced study in astrophysics or careers in astronomy and related fields.

The Department of Physics and Astronomy encourages students to participate in research projects; research serves as an important complement to the classroom study of physics and astronomy. The department offers research opportunities in atomic and molecular physics, chaos and nonlinear dynamics, astronomy and astrophysics, theoretical quantum optics, laser spectroscopy, nuclear physics, positron physics, biological physics, condensed matter theory and computer simulation, and statistical physics.

Bachelor of Arts in Physics

A **Bachelor of Arts major** in physics consists of:

PHYS 211	Classical and Modern Physics I	1
PHYS 212	Classical and Modern Physics II	1
or PHYS 212E	Classical and Modern Physics II	
PHYS 221	Classical Mechanics	1
PHYS 222	Wave Mechanics and Quantum Physics	1
PHYS 310	Experimental Physics	1
A minimum of three other 200 or 300-level physics courses, two of which must be at the 300-level.		
One of the 300-level courses must be one of the following:		
PHYS 317	Thermodynamics and Statistical Mechanics	1
PHYS 331	Advanced Classical Mechanics	
PHYS 332	Quantum Mechanics	
PHYS 333	Electromagnetic Theory I	
Other courses may include:		
ASTR 201	Observational Astrophysics	1
ASTR 301	Astrophysics	1

Bachelor of Science in Physics

A **Bachelor of Science major** in physics consists of:

PHYS 211	Classical and Modern Physics I	1
PHYS 212	Classical and Modern Physics II	1
or PHYS 212E	Classical and Modern Physics II	
PHYS 221	Classical Mechanics	1
PHYS 222	Wave Mechanics and Quantum Physics	1
PHYS 235	Applied Electronics	1
PHYS 310	Experimental Physics	1
PHYS 317	Thermodynamics and Statistical Mechanics	1
PHYS 331	Advanced Classical Mechanics	1
PHYS 332	Quantum Mechanics	1
PHYS 333	Electromagnetic Theory I	1
A minimum of two other 300-level physics credits ¹		
MATH 212	Differential Equations	1
MATH 245	Linear Algebra	1
200 or 300-level biology, chemistry, or geology course		

¹ These courses may include ASTR 301 Astrophysics.

Bachelor of Science in Physics with a Concentration in Astrophysics

A **Bachelor of Science major in physics with a concentration in astrophysics** consists of:

PHYS 211	Classical and Modern Physics I	1
PHYS 212	Classical and Modern Physics II	1
or PHYS 212E	Classical and Modern Physics II	
PHYS 221	Classical Mechanics	1

PHYS 222	Wave Mechanics and Quantum Physics	1
ASTR 201	Observational Astrophysics	1
PHYS 310	Experimental Physics	1
PHYS 317	Thermodynamics and Statistical Mechanics	1
PHYS 331	Advanced Classical Mechanics	1
PHYS 332	Quantum Mechanics	1
PHYS 333	Electromagnetic Theory I	1
ASTR 301	Astrophysics	1
A minimum of one other 300-level physics credit		
MATH 212	Differential Equations	1
MATH 245	Linear Algebra	1
200 or 300-level biology, chemistry, or geology course		

In addition to the required coursework, students pursuing a concentration in astrophysics will be advised to participate in one or more on- or off-campus research experiences in astronomy or astrophysics; such opportunities are frequently offered by department faculty as well as through a number of research programs for undergraduates which are hosted at observatories, research institutes, and other universities across the country.

The recommended course sequence for students pursuing the Bachelor of Science physics major is the following:

First Year

First Semester	Credits	Second Semester	Credits
PHYS 211	1	PHYS 212	1
MATH 201	1	MATH 202	1
		2	2

Sophomore

First Semester	Credits	Second Semester	Credits
PHYS 221	1	PHYS 222	1
MATH 211	1	PHYS 235	1
		MATH 212	1
		2	3

Junior

First Semester	Credits	Second Semester	Credits
PHYS 332	1	PHYS 310	1
PHYS 333	1	Elective(s) in physics	
MATH 245	1		
		3	1

Senior

First Semester	Credits	Second Semester	Credits
PHYS 331	1	Elective(s) in physics	
PHYS 317	1		
Elective in science			
		2	0

Total Credits: 15

Additional Notes

A physics major leading to the Bachelor of Arts degree also is available in combination with a Bachelor of Science in engineering in a five-year program.

Courses in both of our degree programs are designed to provide students with many opportunities to practice and develop their writing, speaking, and information literacy skills, consistent with the learning objectives of the College Core Curriculum.

Students in our department also satisfy the Culminating Experience component of the College Core Curriculum by taking PHYS 310 Experimental Physics, a required course for both B.S. and B.A. majors. In this course students perform substantial multi-week experiments that explore concepts that they have learned throughout the major, including classical mechanics, wave phenomena, electricity and magnetism, quantum physics,

thermodynamics, computer simulation, and astronomy. This course also stresses other learning objectives through writing of research papers and weekly oral presentations.

Honors in physics is given to those students who are accepted by the University Honors Council and successfully complete and defend an honors thesis in physics.

Study abroad is possible for students completing either a Bachelor of Arts or Bachelor of Science degree. Such study should be discussed well in advance with the academic adviser and the chair of the Department of Physics and Astronomy.

Students wishing to become certified as secondary school physics teachers should consult with the Department of Education and the chair of the Department of Physics and Astronomy to arrange a plan of study that ensures that all of the requirements for certification will be met.

Minor in Physics

A **minor** in physics consists of four 200 or 300-level physics courses, which may include ASTR 201 Observational Astrophysics. Advanced placement credit does not count toward the minor.

Majors in Physics (B.A. and B.S) will:

- Be able to solve quantitative problems that require an understanding of the fundamental principles in each of the major areas of physics. Show a working knowledge of how a broad array of physical phenomena can be explained using these fundamental concepts.
- Exhibit a proficiency in the methods of scientific inquiry in laboratory and/or research projects.
- Use critical thinking skills to formulate and solve quantitative problems.
- Present well-organized, logical and scientifically sound oral and written scientific reports.
- Understand the variety of career paths and opportunities that are open to students who have majored in physics and/or astronomy.

Non-majors in Physics (meeting lab-science requirements) will:

- Demonstrate an understanding of fundamental concepts in a field of physics and/or astronomy.
- Develop an appreciation for the methods of scientific inquiry through laboratory experiences.
- Demonstrate the critical thinking and problem solving skills required in scientific disciplines.

Political Science (POLS)

Faculty

Professor: Gregory S. Sanjian

Associate Professors: John A. Doces, Christopher Ellis, R. Douglas Hecock, Michael R. James (Chair), Tansa G. Massoud, Amy R. McCready, Scott R. Meinke, David Mitchell, Andrea Stevenson Sanjian, Atiya Stokes-Brown, Zhiqun Zhu

Visiting Assistant Professors: Alexis Henshaw, Carolyn E. Holmes, Lindsay Nielson

Political Science is the systematic study of all aspects of collective decision making in human society. This includes questions of right and wrong, law, power, and justice. Political scientists explore and analyze politics in the United States (American politics and policy), politics in other societies around the world (comparative politics), interactions and processes at the global level (international politics), and questions of political fairness (political theory).

For undergraduates, the study of Political Science, like other programs for the Bachelor of Arts degree, is intended to contribute to the acquisition of skills and knowledge that form the foundation of a liberal arts education. The study of Political Science provides a background for careers in public service, law, journalism, international organizations, political consulting, teaching, or business.

Course Areas

Core Courses (Required for Major)

POLS 140	American Politics	1
POLS 170	International Politics	1
POLS 205	Comparative Politics	1
POLS 210	Political Theory	1

Comparative

POLS 211	Third World Politics	1
POLS 219	Latin American Politics	1
POLS 221	Political Economy of the European Integration	1
POLS 222	Russian Politics	1

POLS 223	European Politics	1
POLS 224	Government and Politics of the Middle East	1
POLS 225	Chinese Politics	1
POLS 226	East Asian Politics	1
American		
POLS 231	American Public Policy	1
POLS 234	State and Local Internship Program	1
POLS 235	Media and Politics	1
POLS 236	Campaigns and Elections	1
POLS 238	Women and Politics	1
POLS 239	Latino Politics in the United States	1
POLS 240	The American Congress	1
POLS 241	Constitutional Law: Civil Rights	1
POLS 242	Constitutional Law: Civil Liberties	1
POLS 243	The American Presidency	1
POLS 244	American Judicial Politics	1
POLS 246	Race Ethnicity and American Politics	1
POLS 248	Political Behavior	1
Political Theory		
POLS 254	Sex and Social Order	1
POLS 256	Topics in Social and Political Ethics	1
POLS 257	Ethics and Public Policy	1
POLS 258	States of Nature	1
POLS 261	Twentieth-century American Legal Thought	1
POLS 263	Race and Ethnicity in American Legal Thought	1
POLS 266	Nationalism East and West	1
POLS 268	Contemporary Democratic Theory	1
International		
POLS 271	American Foreign Policy	1
POLS 272	U.S. National Security Policy	1
POLS 273	The Atlantic Alliance	1
POLS 275	Global Governance	1
POLS 276	Comparative Foreign Policy	1
POLS 277	International Political Economy	1
POLS 278	International Law	1
POLS 279	Government and the Economy	1
POLS 280	War	1
POLS 281	Peace Studies: Conflict Resolution	1
POLS 282	European Security	1
POLS 283	East Asian International Relations	1
POLS 284	International Relations of Europe	1
POLS 285	The International Relations of Latin America in the 21st Century	1
POLS 286	Nonstate Actors in International Relations	1
POLS 287	U.S. Foreign Policy and the Middle East	1
POLS 288	French Foreign Policy Since 1945	1
POLS 289	The Arab-Israeli Conflict	1
Seminars		
POLS 350	Seminar in Comparative Politics	1
POLS 351	Social Policies in Rich Democracies	1
POLS 352	Politics of Economic Development	1

POLS 360	Seminar in Political Theory	1
POLS 362	American Constitutional Theory	1
POLS 364	Justice and Public Policy	1
POLS 370	Seminar in American Politics	1
POLS 371	Minority Politics	1
POLS 373	Public Opinion	1
POLS 375	Analyzing Legislatures	1
POLS 380	Seminar in International Politics	1
POLS 381	Arab-Israeli Conflict, Peace Process	1
POLS 382	U.S.-China Relations	1
POLS 389	Human Rights	1
POLS 393	International Environmental Aid	1

General and Cross-Subfield

POLS 290	Topics in Politics	1
POLS 291	Environmental Policy and Politics	1
POLS 292	Political Economy of Growth	1
POLS 294	Dance, Performance, and the Political Body	1
POLS 295	Internship	1
POLS 395	Independent Study	1
POLS 396	Independent Study	.5-1
POLS 397	Honor Thesis	1

Major in Political Science

A **major** in Political Science consists of a minimum of eight courses. A core of four courses is required to provide a grounding in the traditional subfields of the discipline, and so should be taken at the outset of study in the major. Three 200-level electives and one 300-level seminar must also be taken. Among the three 200-level electives and the one 300-level seminar, students must take courses from at least two subfields.

POLS 140	American Politics	1
POLS 170	International Politics	1
POLS 205	Comparative Politics	1
POLS 210	Political Theory	1
At least three electives		3
A 300-level seminar ¹		1

¹ Normally taken during the senior year. Note that POLS 395 Independent Study, POLS 396 Independent Study, and POLS 397 Honor Thesis are not seminars and do not fulfill the 300-level seminar requirement for the major.

Upon declaration of a major in Political Science, during the sophomore year, students consult with the chair to determine assignment of an appropriate faculty adviser.

In putting together their academic program, students intending to major in Political Science should plan to complete the core courses in each subfield before electing other 200-level courses within the same subfield. A core course may be prerequisite for some courses. Successful completion of the appropriate core course is also a prerequisite for all seminars. In addition, permission of the seminar instructor may be required at the time of registration. The Political Science Department encourages study abroad and participation in other approved off-campus programs. Up to two course credits earned off campus may be used to meet the major's elective requirements. (This limit does not apply to courses offered by Bucknell-administered programs.) Students planning to undertake off-campus or nontraditional study should consult closely with their adviser. Students seeking transfer credit toward the major for off-campus internship or other nontraditional programs must get departmental approval in advance. On-line courses will not count toward the major.

Qualified juniors are invited to pursue Honors in Political Science by writing and defending an honors thesis in their senior year. Interested juniors should consult with their adviser, with the department chair, or with another member of the department no later than the spring of the junior year. The University Honors Council established the basic requirements and procedures for honors theses. Interested students also may pursue independent study (POLS 395 Independent Study or POLS 396 Independent Study) under a plan worked out with a member of the department and approved by the department chair.

The College Core Curriculum requires that all students in the College of Arts and Sciences receive instruction in writing, speaking, and information literacy in their major discipline. Students majoring in Political Science receive instruction in these areas through the required core courses, electives,

and/or a seminar. The College Core Curriculum also requires students to complete an approved Culminating Experience in the major. Political Science majors will meet this requirement by taking at least one 300-level seminar in the senior year or second semester of the junior year.

Subfield coursework is distributed as follows:

American Politics

POLS 140	American Politics	1
POLS 231	American Public Policy	1
POLS 234	State and Local Internship Program	1
POLS 235	Media and Politics	1
POLS 236	Campaigns and Elections	1
POLS 238	Women and Politics	1
POLS 239	Latino Politics in the United States	1
POLS 240	The American Congress	1
POLS 241	Constitutional Law: Civil Rights	1
POLS 242	Constitutional Law: Civil Liberties	1
POLS 243	The American Presidency	1
POLS 244	American Judicial Politics	1
POLS 246	Race Ethnicity and American Politics	1
POLS 247	Religion and Constitutional Law	1
POLS 248	Political Behavior	1
POLS 370	Seminar in American Politics	1
POLS 371	Minority Politics	1
POLS 373	Public Opinion	1
POLS 375	Analyzing Legislatures	1

Comparative Politics

POLS 205	Comparative Politics	1
POLS 211	Third World Politics	1
POLS 219	Latin American Politics	1
POLS 220	British Political System	1
POLS 221	Political Economy of the European Integration	1
POLS 222	Russian Politics	1
POLS 223	European Politics	1
POLS 224	Government and Politics of the Middle East	1
POLS 225	Chinese Politics	1
POLS 226	East Asian Politics	1
POLS 350	Seminar in Comparative Politics	1
POLS 351	Social Policies in Rich Democracies	1
POLS 352	Politics of Economic Development	1
POLS 356	Nationalism, Identity and Nature	1

International Politics

POLS 170	International Politics	1
POLS 271	American Foreign Policy	1
POLS 272	U.S. National Security Policy	1
POLS 273	The Atlantic Alliance	1
POLS 275	Global Governance	1
POLS 276	Comparative Foreign Policy	1
POLS 277	International Political Economy	1
POLS 278	International Law	1
POLS 279	Government and the Economy	1
POLS 280	War	1
POLS 281	Peace Studies: Conflict Resolution	1

POLS 282	European Security	1
POLS 283	East Asian International Relations	1
POLS 284	International Relations of Europe	1
POLS 285	The International Relations of Latin America in the 21st Century	1
POLS 286	Nonstate Actors in International Relations	1
POLS 287	U.S. Foreign Policy and the Middle East	1
POLS 288	French Foreign Policy Since 1945	1
POLS 289	The Arab-Israeli Conflict	1
POLS 380	Seminar in International Politics	1
POLS 381	Arab-Israeli Conflict, Peace Process	1
POLS 382	U.S.-China Relations	1
POLS 389	Human Rights	1

Political Theory

POLS 210	Political Theory	1
POLS 254	Sex and Social Order	1
POLS 256	Topics in Social and Political Ethics	1
POLS 257	Ethics and Public Policy	1
POLS 258	States of Nature	1
POLS 260	Topics in Legal Thought	1
POLS 261	Twentieth-century American Legal Thought	1
POLS 263	Race and Ethnicity in American Legal Thought	1
POLS 266	Nationalism East and West	1
POLS 268	Contemporary Democratic Theory	1
POLS 360	Seminar in Political Theory	1
POLS 362	American Constitutional Theory	1
POLS 364	Justice and Public Policy	1

General and Cross-subfield

POLS 290	Topics in Politics	1
POLS 291	Environmental Policy and Politics	1
POLS 292	Political Economy of Growth	1
POLS 294	Dance, Performance, and the Political Body	1
POLS 295	Internship	1
POLS 393	International Environmental Aid	1
POLS 395	Independent Study	1
POLS 396	Independent Study	.5-1
POLS 397	Honor Thesis	1

Minors in Political Science

Five **minors** are available in Political Science.

Open-topic courses (POLS 290 Topics in Politics) may be counted toward a minor where the topics are appropriate. Off-campus and nontraditional courses in Political Science may be used as one of the non-specified courses in a minor.

American Politics Minor

Five courses in Political Science including:

POLS 140	American Politics	1
Select at least two of the following:		
POLS 231	American Public Policy	
POLS 234	State and Local Internship Program	
POLS 235	Media and Politics	
POLS 236	Campaigns and Elections	

POLS 238	Women and Politics
POLS 239	Latino Politics in the United States
POLS 240	The American Congress
POLS 241	Constitutional Law: Civil Rights
POLS 242	Constitutional Law: Civil Liberties
POLS 243	The American Presidency
POLS 244	American Judicial Politics
POLS 246	Race Ethnicity and American Politics
POLS 247	Religion and Constitutional Law
POLS 248	Political Behavior
POLS 370	Seminar in American Politics
POLS 371	Minority Politics
POLS 373	Public Opinion
POLS 375	Analyzing Legislatures

Comparative Politics Minor

Five courses in Political Science including:

POLS 205	Comparative Politics	1
Select at least two of the following:		
POLS 211	Third World Politics	
POLS 219	Latin American Politics	
POLS 220	British Political System	
POLS 221	Political Economy of the European Integration	
POLS 222	Russian Politics	
POLS 223	European Politics	
POLS 224	Government and Politics of the Middle East	
POLS 225	Chinese Politics	
POLS 226	East Asian Politics	
POLS 350	Seminar in Comparative Politics	
POLS 351	Social Policies in Rich Democracies	
POLS 352	Politics of Economic Development	
POLS 356	Nationalism, Conflict and Nature	

International Politics Minor

Five courses in Political Science including:

POLS 170	International Politics	1
Select at least two of the following:		
POLS 271	American Foreign Policy	
POLS 272	U.S. National Security Policy	
POLS 273	The Atlantic Alliance	
POLS 275	Global Governance	
POLS 276	Comparative Foreign Policy	
POLS 277	International Political Economy	
POLS 278	International Law	
POLS 279	Government and the Economy	
POLS 280	War	
POLS 281	Peace Studies: Conflict Resolution	
POLS 282	European Security	
POLS 283	East Asian International Relations	
POLS 284	International Relations of Europe	
POLS 285	The International Relations of Latin America in the 21st Century	
POLS 286	Nonstate Actors in International Relations	

POLS 287	U.S. Foreign Policy and the Middle East
POLS 288	French Foreign Policy Since 1945
POLS 289	The Arab-Israeli Conflict
POLS 380	Seminar in International Politics
POLS 381	Arab-Israeli Conflict, Peace Process
POLS 382	U.S.-China Relations
POLS 389	Human Rights

Political Theory Minor

Five courses in Political Science including:

POLS 210	Political Theory	1
POLS 250	History of Western Political Thought I	1
POLS 254	Sex and Social Order	1
POLS 256	Topics in Social and Political Ethics	1
POLS 257	Ethics and Public Policy	1
POLS 258	States of Nature	1
POLS 260	Topics in Legal Thought	1
POLS 261	Twentieth-century American Legal Thought	1
POLS 263	Race and Ethnicity in American Legal Thought	1
POLS 266	Nationalism East and West	1
POLS 268	Contemporary Democratic Theory	1
POLS 360	Seminar in Political Theory	1
POLS 362	American Constitutional Theory	1
POLS 364	Justice and Public Policy	1

General Political Science Minor

Five courses in Political Science, including one course from each of the four subfields/minors listed above.

- DLO 1: Demonstrate an understanding of fundamental political processes, institutions, behavior, and ideas; and familiarity with major theories, methods, and concepts in Political Science and its four major sub-fields
- DLO 2: Demonstrate proficiency in thinking systematically about political interactions in national, global, and international contexts
- DLO 3: Demonstrate proficiency in thinking systematically about the ethical dimensions of politics
- DLO 4: Write effectively, engage in intellectually grounded oral debate, and form and express cogent arguments
- DLO 5: Synthesize, analyze, and critically evaluate major arguments in the discipline, assess original and secondary sources of argumentation and evidence, and apply scholarly findings to new situations
- DLO 6: Demonstrate continuing engagement in public affairs on local, national, and/or international levels
- DLO 7: Gain intellectual skills for graduate work and employment

Psychology (PSYC)

Faculty

Professors: Chris J. Boyatzis, David W. Evans, Judith E. Grisel, Andrea R. Halpern, Peter G. Judge, John T. Ptacek (Chair), Michael A. Smyer, T. Joel Wade

Associate Professors: Kimberly A. Daubman, William F. Flack, Kevin P. Myers

Assistant Professors: Regina Gazes, Aaron Mitchel, Jennifer Rice Stevenson, Ruth Tincoff

Visiting Assistant Professors: David M. Freestone, Agnieszka J. Jasinska, Jean Lamont

The science of psychology investigates human and animal behavior, cognition, and emotion by analyzing the complex interactions among environmental, social, cultural, and biological influences. Students are trained in scientific methods and different theoretical perspectives in a variety of areas of psychology: physiological psychology, neuropsychology, sensation and perception, cognition, learning, child and adult development, social psychology, personality, health psychology, abnormal psychology, and animal behavior. In short, psychology seeks to explain and understand how and why people and animals think and behave in the ways they do.

Through acquiring a better understanding of behavior, cognition, and emotion, and scientific methods of investigation and analysis, psychology majors are well prepared to enter many fields. A major in psychology can lead to graduate study enabling a career in many areas of psychology, from experimental research to clinical/counseling work. Psychology majors also pursue further education and careers in law and medicine. Psychology majors who do not pursue graduate study are well prepared for a variety of careers in the corporate and not-for-profit sectors, relying on the skills they have developed in their psychology courses, such as scientific reasoning, writing, data analysis, critical reading, writing and presentation skills.

Psychology Major

A **major** in psychology consists of 10 course credits: Two courses above the 200-level, at least one of which must be taken at Bucknell. At least one of the courses above the 300-level must have been designated as meeting the Culminating Experience requirement (described below)

PSYC 100	Introduction to Psychology	1
PSYC 215 or MATH 216	Psychological Statistics ¹ Statistics I	1
PSYC 216	Research Methods in Psychology	1
One discipline-specific research lab ²		1
Four 200-level content courses ³		4
Two seminars above the 200-level ⁴		2
Total Credits		10

¹ Majors should complete PSYC 215 Psychological Statistics and PSYC 216 Research Methods in Psychology by the end of the sophomore year.

² The discipline-specific research lab course, titled "Research Methods in _____" can be taken only after having completed PSYC 215 Psychological Statistics and PSYC 216 Research Methods in Psychology.

³ The courses in the 200-level clusters are designed to be foundational and, taken together, provide exposure to critical content areas and perspectives in the field. Thus, at least one course must come from each of the *Brain and Behavior*, *Cognition and Learning*, and *Person and the Group* clusters. The fourth course can come from any of these clusters or may come from the *Psychological Breadth* cluster. Ideally, all 200-level requirements should be completed by the end of the junior year. The optimal scheduling of these courses should be determined in consultation with a member of the department, and is especially important for students who enter the major late, hope to study abroad, or have strong preferences among alternative courses.

⁴ At least one course must be taken at Bucknell. Majors **may not** use PSYC 329 Undergraduate Research or PSYC 360 Honors Thesis to satisfy this requirement. One of these 300-level seminars may be designated as meeting the Culminating Experience requirement. PSYC 350 Culminating Research Experience+ taken in a student's final three semesters may fulfill one of the 300-level seminar requirements AND the Culminating Experience requirement.

Brain and Behavior

PSYC 250	Biopsychology	1
PSYC 252	Sensation and Perception	1
PSYC 266	Animal Behavior	1

Cognition and Learning

PSYC 203	Learning	1
PSYC 204	Human Cognition	1

Person and the Group

PSYC 207	Developmental Psychology	1
PSYC 209	Social Psychology	1
PSYC 210	Psychopathology ⁵	1
PSYC 213	Abnormal and Clinical Psychology ⁵	1

⁵ PSYC 210 Psychopathology and PSYC 213 Abnormal and Clinical Psychology cannot both be counted toward fulfilling the 200-level course requirement

Psychological Breadth

PSYC 211	Health Psychology	1
PSYC 212	Emotion	1
PSYC 228	Personality Psychology	1
PSYC 232	Psychology of Women	1

PSYC 233	Black Psychology	1
PSYC 234	Introduction to Sport Psychology	1
PSYC 236	Drugs and Behavior	1
PSYC 242	Positive Psychology	1
PSYC 248	Developmental Psychobiology	1

Or additional psychology courses with departmental approval - often taken abroad.

Psychology majors satisfy the requirements of the College Core Curriculum for writing, information literacy, and presentation skills through their Research Methods course and their discipline specific research method course. In the context of psychological research, each of these courses provides formal training in writing, library and information research, and presentation skills. Frequent instruction and practice in writing, information search, and presentation skills are also provided in a variety of additional courses at all levels of the major. (See Meeting the CCC requirements for specific information)

To complete the Culminating Experience requirements of the College Core Curriculum, students select one of their 300-level seminars from a list of those identified by the department as drawing from and integrating an especially broad variety of perspectives and research areas of psychology. Alternatively, students who are academically eligible to participate in the Honors Program in their senior year may undertake an original research project leading to a written Honors Thesis. Successful completion of an Honors Thesis requirements defined by the University Honors Council fulfills the Culminating Experience requirement. PSYC 329 Undergraduate Research taken in a student's final three semesters may also count toward the Culminating Experience requirement (See Meeting the CCC requirements below for specific information).

The department strongly encourages students to engage in independent research, done in close collaboration with a faculty member, either on a volunteer basis or for academic credit. This is an excellent preparation for graduate study, and also an exciting way for students to apply the skills they learn in their coursework by engaging intellectually in the process of discovery in psychology. Seniors, if academically eligible, often conduct senior honors projects and many others conduct independent studies at the 200-level or the 300-level. Students who are engaged in 300-level independent study AND enroll in PSYC 350 Culminating Research Experience+ in their final three semesters may use this experience as one of their 300-level requirements AND a Culminating Experience.

Meeting the CCC Requirements

Writing Within the Major

Psychology majors can satisfy the Writing in the Major requirement by taking:

Select one of the following:

PSYC 100	Introduction to Psychology
200-level psychology courses that are not Applied Research Methods Seminars	
Applied Research Methods Seminars	
300-level Psychology courses	

Formal Presentation Experience

Psychology majors can satisfy the Formal Presentation Experience requirement by taking: Applied Research Methods Seminars, or:

PSYC 305	Developmental Psychopathology	1
PSYC 307	Culture and Child Development	1
PSYC 309	Appetite and Eating Behavior	1
PSYC 311	Advanced Health Psychology	1
PSYC 317	Comparative Animal Cognition	1
PSYC 318	Cognitive Aging	1
PSYC 325	Personality, Psychopaths, and Serial Killers	1
PSYC 339	Psychology of Music	1
PSYC 348	Behavioral Pharmacology	1
PSYC 350	Culminating Research Experience+	1
PSYC 352	Face Perception	1
PSYC 370	Primate Behavior and Ecology	1

Additionally, psychology majors can fulfill this requirement by completing an Honors Thesis.

Information Literacy

Psychology majors can fulfill this requirement by taking: an Applied Research Methods Seminar, or 200-level psychology courses, or 300-level psychology courses, or by completing an Honors Thesis or an Independent Study.

Culminating Experience

Select one of the following 300-level psychology seminars to be taken during the final three semesters: ⁶

PSYC 300	Infancy	1
PSYC 301	History of Psychology	1
PSYC 303	Critical Psychologies	1
PSYC 306	Trauma Psychology	1
PSYC 313	Researching Behavioral Neuroscience	1
PSYC 315	Language Development	1
PSYC 316	Advanced Social Psychology	1
PSYC 320	Children's Studies	1
PSYC 350	Culminating Research Experience+ ⁷	1
PSYC 352	Face Perception	1
PSYC 360	Honors Thesis	1
PSYC 369	Psychology of Beauty and Attraction	1

⁶ Each seminar on this list meets one or more of the following requirements: a) involves an independent and original work of psychological research; 2) includes a service-learning experience; 3) results in the creation and delivery of applications and proposals based on psychological knowledge for the benefit of the community; or 4) culminates in a major paper that synthesizes psychological knowledge. Completing PSYC 329 Undergraduate Research that itself also meets one of the four requirements just listed or an Honors Thesis can also be used to fulfill this requirement.

⁷ Students who are engaged in independent study AND enroll in PSYC 350 Culminating Research Experience+ in their final three semesters may use this experience as one of their 300-level seminar requirements AND a Culminating Experience.

Minors in Psychology

Two **minors** are offered in psychology.

Cognitive and Perceptual Sciences Minor

This minor concentrates on how we take information from the external world and use it to construct our mental world. This minor can be completed in two ways depending on whether or not a student has completed PSYC 100 Introduction to Psychology.

1. For students who take PSYC 100 Introduction to Psychology, the minor consists of:

PSYC 100	Introduction to Psychology	1
PSYC 215	Psychological Statistics (or equivalent)	1
PSYC 204	Human Cognition	1
PSYC 252	Sensation and Perception	1
PSYC 292	Research Methods in Sensation and Perception	1
or PSYC 294	Research Methods in Human Cognition	
PSYC 318	Cognitive Aging	1
or PSYC 352	Face Perception	

2. For students who do not take PSYC 100 Introduction to Psychology, the minor consists of:

PSYC 215	Psychological Statistics (or equivalent)	1
PSYC 204	Human Cognition	1
PSYC 252	Sensation and Perception	1
PSYC 292	Research Methods in Sensation and Perception	1
or PSYC 294	Research Methods in Human Cognition	
PSYC 318	Cognitive Aging ⁵	1
PSYC 352	Face Perception	1

⁵ With the approval of the department chair, a research project in cognition or perception (PSYC 329 Undergraduate Research, PSYC 360 Honors Thesis) could be substituted for either PSYC 318 Cognitive Aging or PSYC 352 Face Perception for those students who do not take PSYC 100 Introduction to Psychology.

Neuropsychology Minor

The Neuropsychology minor allows exploration of the brain and its relation to behavior. It requires six courses.

PSYC 100	Introduction to Psychology	1
PSYC 204	Human Cognition	1
PSYC 215	Psychological Statistics (or equivalent)	1
PSYC 250	Biopsychology	1
PSYC 349	Cognitive Neuroscience	1
Select one of the following: ⁶		1
PSYC 210	Psychopathology	
PSYC 212	Emotion	
PSYC 252	Sensation and Perception	
PSYC 305	Developmental Psychopathology	
PSYC 309	Appetite and Eating Behavior	
PSYC 318	Cognitive Aging	
PSYC 339	Psychology of Music	
PSYC 340	Behavioral Neuroscience	
PSYC 352	Face Perception	

⁶ With the approval of the department chair, independent research in neuropsychology (PSYC 329 Undergraduate Research, PSYC 360 Honors Thesis) may be used to satisfy this last requirement.

Nonmajors are encouraged to discuss sequences of courses appropriate to their academic goals with any member of the department.

Department Mission Statement

The Department of Psychology fosters a community of scholars, both students and faculty, committed to exploring, producing, sharing, and applying knowledge in psychology, broadly conceived. We value open and critical thought and action, conducted in an ethical, inclusive, and compassionate manner, to enrich our own lives and the lives of others.

Department Goals

Goal 1: Students will acquire a breadth of knowledge in psychology.

Goal 2: Students will critically evaluate psychological knowledge and its applications.

Goal 3: Students will develop ethical values that support social responsibility in a diverse world.

Goal 4: Students will demonstrate competencies in writing and in oral and interpersonal communication skills.

Goal 5: Students will apply the knowledge and skills of psychology successfully in their personal and professional lives.

Public Policy Minor

Faculty

Co-coordinators: Janet T. Knoedler, Amy M. Wolaver

Steering Committee: John A. Doces, Elizabeth Durden, Christopher Ellis, Abra N. Feuerstein, R. Douglas Hecock, Michael R. James, Gregory A. Krohn, Christopher S. P. Magee, Scott R. Meinke

Public policy, as defined by Kraft and Furlong (2007), is “what public officials within government, and by extension the citizens they represent, choose to do or not to do about public problems. Public problems refer to conditions the public widely perceives to be unacceptable and therefore requiring intervention.” The minor in Public Policy is designed to give Bucknell students from a variety of academic majors the additional analytical and theoretical skills to supplement their academic majors and to participate knowledgeably and effectively in the public arena once they leave Bucknell, whether as policy makers or as engaged citizens.

The gateway course is an interdisciplinary Public Policy course that incorporates public policy theories and topics from two or more social sciences. The methods requirement ensures that students have exposure to at least one social science research discipline. Elective courses offered in various disciplines give students the opportunity to apply the basic theoretical and analytical tools to specific areas of public policy. These courses will prepare students completing the minor for graduate programs in public policy and other social science disciplines, as well as for fruitful careers in government and industry.

The minor consists of an introductory course, and a social science research methods course and three electives from the list below. If the student has fulfilled the methods requirement in their major, the minor consists of the introductory course and four of the elective courses. Sociology majors

wishing to fulfill the Public Policy minor may count SOCI 208 Methods of Social Research or SOCI 209 Analyzing the Social World as their methods requirement, but these courses are not open to non-majors. Students must distribute their electives in the following way:

- For depth, they must take exactly two electives from a single department; and,
- For breadth, the third (and fourth if applicable) elective must be taken from a different department.
- None of the electives may be in the same discipline as the student's major.

Core Course

UNIV 200	Integrated Perspectives Course (Introduction to Public Policy)	1
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Methods Course in Social Sciences

Select one of the following:		1
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ANTH 201	Field Research in Local Communities
ECON 341	Econometrics
EDUC 362	Quantitative Research Methods
EDUC 364	Qualitative Research Methods
ENST 302	Environmental Research Design
PSYC 289	Research Methods in Health Psychology
PSYC 291	Research Methods in Abnormal Psychology
PSYC 295	Research Methods in Emotion
PSYC 297	Research Methods in Developmental Psychology
PSYC 298	Research Methods in Personality
PSYC 299	Research Methods in Social Psychology
SOCI/ANTH 201	Field Research in Local Communities

Electives in Different Disciplines ¹

Select three of the following:	
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ANTH 235	Modern Africa
ANTH 251	Women and Development
ANTH 260	Environmental Anthropology
ANTH 267	Anthropology of Tourism
ANTH 352	Ritual, Resistance, and Rebellion in South America
CEEG 432	Sustainable Transportation Planning
ECON 103	Economic Principles and Problems
ECON 225	Cultivating Change
ECON 231	Resources and the Environment
ECON 236	Unemployment and Poverty
ECON 237	Health Politics and Health Policy
ECON 238	Urban Economics
ECON 311	Labor Economics
ECON 328	Money and Financial Institutions
ECON 412	Health Economics
ECON 413	Public Finance
ECON 431	Industrial Organization Economics
EDUC 101	Social Foundation of Education
EDUC 332	Remaking Public Education
EDUC 327	Immigrant Youth in U.S. Society
EDUC 350	Higher Education in the United States
ENST 100	Introduction to Environmental Studies
ENST 215	Environmental Planning
ENST 226	Water Politics and Policies
ENST 245	Environmental Policy and Politics
ENST 255	Environmental Injustice
ENST 260	Environmental Law
ENST 355	Advanced Topics in Environmental Policy

GEOG 257	Global Environmental Change
GEOG 345	Food and the Environment
MGMT 302	The Stakeholder Organization
MSUS 200	Managing for Sustainability I
POLS 140	American Politics
POLS 231	American Public Policy
POLS 234	State and Local Internship Program
POLS 240	The American Congress
POLS 248	Political Behavior
POLS 257	Ethics and Public Policy
POLS 263	Race and Ethnicity in American Legal Thought
POLS 271	American Foreign Policy
POLS 272	U.S. National Security Policy
POLS 351	Social Policies in Rich Democracies
POLS 364	Justice and Public Policy
PSYC 211	Health Psychology
SOCI 123	Law and Society
SOCI 130	Medicine and Society
SOCI 235	Nongovernmental Organizations
SOCI 245	Remaking America: Latin American Immigration
SOCI 322	Sociology of Medicine
WMST 332	Women and the Penal System

¹ Other courses may count as a Public Policy elective with the approval of the coordinator.

Race and Ethnicity Studies Minor

Faculty

Coordinating Committee: Nina E. Banks, Linden F. Lewis, Susan A. Reed

The minor in Race and Ethnicity Studies takes an interdisciplinary approach to the study of race and ethnicity. What do these categories of difference mean? How have they been defined, constructed, and applied in different historical and socio-cultural contexts? How do they intersect or overlap with other aspects of difference (e.g., gender, class, nation, sexuality, religion)? Exploring these questions with analytical tools and approaches developed in a range of academic disciplines, the minor leads to a critical examination of the construction of race and ethnicity in a variety of social, cultural, historical, political, and economic contexts.

The minor consists of five courses to be taken from three categories:

Course from any of the three categories	1
Race and Ethnicity Core Requirement	
Select at least one of the following:	1
POLS 263	Race and Ethnicity in American Legal Thought
SOCI 213	Race in Historical and Comparative Perspectives
SOCI 243	Sociology of Race and Ethnicity
Comparative/Theoretical	
Select at least one course from the list of approved comparative/theoretical courses. ¹	1
Area or Ethnic Group	
Select at least two courses from the list of approved area or ethnic group courses ²	2

¹ The list of approved comparative/theoretical courses is available on the website of the Center for the Study of Race, Ethnicity, and Gender (bucknell.edu/csreg.xml).

² The list of approved area or ethnic group courses is available on the website of the Center for the Study of Race, Ethnicity, and Gender (bucknell.edu/csreg.xml).

- The fifth course may be selected from any of the three categories.
- Any given course may not count for more than one category.

- At least one course in the social sciences and one course in the humanities are required.
- No more than one 100-level course may count toward the minor.
- Students are encouraged to take the core course as early as possible.
- Courses other than those on the approved list may be approved by the Coordinating Committee on a case by case basis, upon request of the student. These include interdisciplinary courses that span the humanities and social sciences and courses in the natural sciences.
- Students are encouraged to discuss their selection of courses for the minor with a member of the Coordinating Committee.
- Students may request that study abroad courses be considered for the minor. The Coordinating Committee will consider study abroad courses upon completion of the course and a review of the syllabus.

Religious Studies (RELI)

Faculty

Professors: Maria A. Antonaccio, Rivka Ulmer, Carol Wayne White

Associate Professors: Brantley Gasaway (Chair), Karline M. McLain (Associate Dean of Arts and Humanities)

Assistant Professors: John Penniman, Stuart Young

The academic study of religion examines one of the most powerful, influential, and contested forces in the world. It is critical to developing a deep understanding of different cultures and diverse perspectives necessary for living in a complex and interconnected world. Religious literacy is an integral component of a Liberal Arts education.

The Religious Studies curriculum is among the most interdisciplinary, international, and multicultural at Bucknell. Our courses offer students opportunities to study a diverse array of the world's religions; to interpret how religion shapes and is shaped by cultural dynamics and personal practices; to grapple with enduring questions of human existence; and to develop capacities of ethical reasoning. Our courses also teach students effective research, reading, writing, oral communication, and critical thinking skills that prepare them for work in a wide variety of fields.

Course Areas

Introductory Course

RELI 100	Introduction to Religion (Select one from a variety of sections)	1
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"Western" Religious Traditions

RELI 205	Hebrew	1
RELI 207	Holocaust: Event and Reception	1
RELI 209	Israel: Land, People, and Tradition	1
RELI 210	Judaism	1
RELI 212	Christianity	1
RELI 213	God, Suffering, and Evil	1
RELI 215	Essentials of Christian Thought	1
RELI 217	Catholicism	1
RELI 218	Christian Ethics	1
RELI 221	God and Morality	1
RELI 222	Images of Jerusalem	1
RELI 223	History Western Religious Thought	1
RELI 237	Judaism in Film	1
RELI 241	Religion and the Loss of Traditional Faith	1
RELI 242	Religious Naturalism	1
RELI 279	Judaism and Law	1
RELI 280/POLS 247	Religion and Constitutional Law	1
RELI 281	Religion and American Politics	1
RELI 306	Messianism and Madness	1
RELI 307	Post-biblical Literature	1
RELI 315	Topics in American Religion	1
RELI 318	Jewish Thought	1

"Non-Western" Religious Traditions

RELI 200/EAST 251	Buddhism	1
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RELI 201	Islam	1
RELI 202	Hinduism	1
RELI 203	Hinduism and Film	1
RELI 243	Religions of South Asia	1
RELI/EAST 244	Religions of East Asia	1
RELI 245/EAST 252	Marketing Chinese Religions	1
RELI 246/EAST 253	Religions of Japan	1
RELI 247	Epic India: Gods and Goddesses	1
RELI 249	Pilgrimage in South Asia	1

Religion, Culture, and Theory

RELI 211	Women In Judaism	1
RELI 214	God, Nature, and Knowledge	1
RELI 216/PHIL 223	Philosophy of Religion	1
RELI 219	Contemporary Religion: Race, Gender, and Sexuality	1
RELI 226/ENST 236	Environmental Ethics	1
RELI 228	Religions in the Modern World	1
RELI 229	The Ethics of Consumption	1
RELI 230	End of Nature, Posthuman Future	1
RELI 233	Global Feminism and Religion	1
RELI 234	Issues of Religion and Culture	1
RELI 235	Religion and Popular Culture	1
RELI 239	Queering (Christian) Theology	1
RELI 240	Perspectives in Religion and Science	1
RELI 276	Judaism and Masculinity	1
RELI 305	The Male Body in Judaism	1
RELI 310	Topics in Religion and Law	1
RELI 311	On Being Spiritual, Not Religious	1
RELI 316	Topics in Religion and Culture	1
RELI 317	Cultivating the Self	1

Individual and Specialized Study of Religion

RELI 320	Individual Studies In Religion	1
RELI 325	Major Religious Thinkers	1
RELI 326	Major Religious Movements	1
RELI 350	Honors Thesis	1
RELI 400	Senior Seminar - Culminating Experience	1

Major in Religious Studies

The Religious Studies **major** consists of eight courses:

RELI 100	Introduction to Religion (any section)	1
At least one "Western" Religious Traditions course		1
At least one "Non-Western" Religious Traditions course		1
At least one Religion, Culture, and Theory course		1
RELI 232	What is Religion? Theories and Methods ¹	1
An additional course at the 200-level or higher		1
At least one 300-level course		1
RELI 400	Senior Seminar - Culminating Experience	1

¹ RELI 232 What is Religion? Theories and Methods and RELI 400 Senior Seminar - Culminating Experience will address the writing, speaking, and information literacy requirements of the CCC.

Religious Studies majors are encouraged to pursue off campus study either abroad or in approved domestic programs in order to broaden their understanding of religious pluralism both globally and in the United States. No more than two religion courses earned off campus may be used to meet the major requirements. Transfer students may appeal this restriction by writing to the chair of the department.

The Religious Studies department encourages majors to consider honors candidacy by completing an honors thesis in their final academic year. Students wishing to undertake an honors thesis should consult with their adviser in the fall semester of their junior year and declare their intentions and their thesis topic in the spring semester of their junior year.

Minor in Religious Studies

The **minor** in Religious Studies consists of four courses that must include RELI 100 Introduction to Religion (any section) and at least one 300-level seminar.

The **learning goals** of the religious studies major include:

1. Majors have general competence in key approaches and concepts in the academic study of religion.
2. Majors have the written and oral communication skills necessary to articulate ideas effectively and persuasively in religious studies.
3. Majors have the information literacy and critical thinking skills necessary to conduct independent research in religious studies.
4. Students gain a critical foundation for religious literacy.

Residential College (RESC)

Faculty

Academic Co-coordinators: Stephen D. Jordan, Janet T. Knoedler

This program seeks to enrich students' learning experience by integrating academic life into the residence halls. There are eight residential colleges:

- Arts
- Discovery
- Environmental
- Global
- Humanities
- Languages and Cultures
- Social Justice
- Society and Technology

Each college is organized around a common theme. All students enrolled in a residential college take a common course, called a foundation seminar, in the fall semester. They also live on the same residence hall floor for both fall and spring semesters of their first year. Students organize a variety of extracurricular programs related to the college themes. Upperclass students who wish to continue their affiliation with a college may continue to live together and may take additional courses.

All of the courses offered in the Residential Colleges fulfill the Foundation Seminar and W1 requirement for Arts and Sciences students, and fulfill a general education course and the W1 requirement for engineering students. Residential College Foundation Seminars that have been taught recently include:

Arts College: Pop & Protest; Making Something From Nothing; Masks and Meaning

Discovery College: The Universal Machine; World-Changing Discoveries; Extreme Discoveries

Environmental College: Discovering Nature; Christianity & Sustainability

Global College: The Globalization Debate; Contentious Waters; Revolution! A Global History

Humanities College: Myth, Reason, Faith; The Posthuman Humanities; Love and Sex on the Silk Road

Languages and Cultures College: How We Do Things With Words; Travel Culture: Art, Food and Politics; Place, Identity, and Culture

Social Justice College: Change the World; Gandhi: Man, Myth, Legacy

Society and Technology College: The Future is Now; Say it with Statistics; The Grand Challenges

More information at bucknell.edu/ResColleges

School of Management (MGMT)

Faculty

Professors: Mark S. Bettner, William R. Gruver, Tammy B. Hiller, Elton G. McGoun (GLBM Program Chair), Wesley Wang

Associate Professors: Douglas E. Allen (MIDE Program Chair), Matthew D. Bailey, Mihai Banciu, Neil Boyd, Jamie R. Hendry (MSUS Program Chair), David E. Jensen, Michael E. Johnson-Cramer (Director), Eric C. Martin, Stacy Mastrolia, Robert A. Needham (adjunct), Eric L. Santanen, Janice M. Traflet, Stephen D. Willits (ACFM Program Chair)

Assistant Professors: Jonathan Bean, Jimmy Chen, Jordi Comas, Cynthia Guthrie, Richard Kedzior, Curtis Nicholls, Seth Orsborn, Kristy Schenck, Alia C. Stanciu

Visiting Professor: Timothy Sweeney (emeritus)

Visiting Assistant Professor: Cathy Chen

Lecturers: Paul W. Brann, Mary F. Leshinskie, Dianne McDonald

- Accounting and Financial Management (p. 168)
- Global Management (p. 170)
- Managing for Sustainability (p. 172)
- Markets, Innovation and Design (p. 174)
- Bachelor of Management for Engineers (p. 175)

Studying management teaches students to understand organizations and their management in relation to society's needs, the forces of history, the bounds of responsible practice, and the nature of the human condition. The habits of thought associated with liberal education – free inquiry, moral reasoning, engagement with traditions of knowledge and culture, and critical thinking – are precisely the qualities most required of truly professional managers and are developed in management coursework. Management education not only prepares students to become managers but also, more importantly, fits them to be citizens in a society circumscribed, in no small part, by the actions of complex organizations.

As organizations wrestle with the turbulence of the 21st century, they must confront four equally important challenges. They must be financially viable, despite the increasing complexity of financial markets. They must be innovative, as only those products and services that satisfy consumer and client needs in a distinctive way can compete in the marketplace. They must be capable of operating on a global scale, as resources, capital, labor, and (above all) competition can come from anywhere in the world. Finally, they must be environmentally and socially sustainable. The knowledge and skills involved in addressing these challenges are not the province of one domain of thought. Instead, they require complex reasoning, imagination, and interdisciplinary study. The BSBA core curriculum cultivates these habits of thought and teaches students to address each of these challenges competently, while the four specialized programs of study allow students to concentrate in great depth on one of these four challenges.

The School of Management is accredited by the Association to Advance Collegiate Schools of Business (AACSB) and provides curricula leading to the Bachelor of Science in Business Administration (BSBA) degree, with majors in Accounting and Financial Management (ACFM), Global Management (GLBM), Managing for Sustainability (MSUS), and Markets, Innovation and Design (MIDE). In addition, the School of Management offers a Bachelor of Management for Engineers (BME) degree and elective courses to students across the University to fill a pressing need for otherwise well-educated college graduates to understand the basic structures, operating mechanisms, and management principles governing businesses and other organizations.

The School of Management's graduates are actively recruited by leading organizations. The ACFM program maintains strong ties with many of the foremost CPA and financial services firms. Its curriculum provides a solid foundation for students who wish to qualify as Certified Public Accountants (CPAs), Certified Management Accountants (CMAs) or Chartered Financial Analysts (CFAs). The School also frequently places graduates in well-known consumer products, pharmaceutical, and fashion companies. Other BSBA graduates undertake a diverse range of positions in businesses, government and not-for-profit organizations. Some start their own firms or become teachers, lawyers, museum curators, non-profit executives and more. All of them are prepared to make significant contributions to their organizations and their communities, of whatever scale. Many BSBA graduates, after working several years, complete MBA programs at major universities such as Chicago, Columbia, Harvard, Northwestern, Stanford, or Virginia or go on to pursue Ph.D.s, law degrees, and other advanced programs of study.

Applying to the BSBA Degree Program

Students who wish to seek the BSBA degree and who were not directly admitted to that degree program when admitted to the University must apply for internal transfer into the School of Management. Typically, the internal transfer process is highly competitive. The number of students admitted to the BSBA degree program is limited by an enrollment cap determined by the School and the Dean of Arts and Sciences. An Information Session is held in early April each year for first-year students to learn more about the application process. Immediately following the information session an online application portal becomes available for first-year students to submit a completed internal transfer application to the School prior to the last day of classes in the spring semester of their first year of study at Bucknell. The specific application deadline is widely publicized each year via the Message Center. Students are informed of the decision in July and are able to adjust their fall schedules accordingly.

Criteria for acceptance include academic achievement and supplemental materials submitted as part of the application process. Students planning to apply to the School should actively consider their contingency plans, in the event that they are not accepted into the program. Students not in the School of Management can take up to seven courses in the School of Management. Questions regarding the application process should be addressed to the Assistant Director of the School of Management.

All BSBA candidates ordinarily will have completed at least three of the four foundational literacy core courses by the end of the first year. While admission to the BSBA degree program is possible without having completed these courses, students seeking internal transfer admissions are strongly encouraged to complete some core course(s) by the end of the first year wherever possible. Where this is not possible, students should plan to complete all four *foundational* literacy and at least two *managerial* literacy core courses by the end of their sophomore year. Prospective applicants are encouraged to meet with School of Management faculty during their first year of study to discuss important advising issues.

Requirements

All candidates for the BSBA degree must fulfill all University degree requirements including the College Core Curriculum, the BSBA Core Curriculum and all major program requirements.

BSBA Core Curriculum Requirements

The BSBA Core Curriculum comprises those courses that all candidates for the BSBA degree must complete. It is designed to cultivate three forms of literacy relevant to managerial thought: foundational, integrative, and managerial. All BSBA graduates must acquire these literacies, as they are the fundamental knowledge and skills necessary for managers, regardless of organization, industry, function, or sector.

Foundational Literacy Requirement

MGMT 100	Management Past, Present and Future	.5
MGMT 101	Introduction to Organization and Management	1
MGMT 102	Quantitative Reasoning for Managers	1
ECON 103	Economic Principles and Problems	1

Integrative Literacy Requirement

MGMT 302	The Stakeholder Organization	1
MGMT 303	The Technological Organization	1
MGMT 304	The Strategic Organization ¹	1

¹ ACFM majors pursuing the CPA/CMA track may choose to take ACFM 359 Advanced Seminar in Accounting rather than MGMT 304 The Strategic Organization.

Managerial Literacy Requirement

Unlike foundational and integrative literacy requirements, the managerial literacy requirements vary by major. The list below indicates each major's required managerial literacy courses.

MGMT 200	Foundations Accounting and Financial Management I (required for ACFM, GLBM, MSUS, and MIDE majors)	1
MGMT 201	Marketing (required for ACFM, GLBM, MSUS, and MIDE majors)	1
MGMT 202	Operations (required for MSUS majors)	1
MGMT 203	Managerial Finance (required for GLBM and MIDE majors) ²	1

² ACFM majors must take two accounting and financial management courses - ACFM 261 Foundations of Accounting and Financial Management II and ACFM 370 Corporate Finance - in lieu of MGMT 203 Managerial Finance.

All BSBA majors must satisfy the Culminating Experience component of the College Core Curriculum. BSBA majors typically fulfill this requirement by taking one of the following courses:

ACFM 357 Auditing and Assurance,

ACFM 359 Advanced Seminar in Accounting,

ACFM 372 Advanced Corporate Finance,

GLBM 400 Global Manager Abroad,

MGMT 304 The Strategic Organization,

MIDE 304 Marketing Management,

MSUS 400 Sustainability Action Learning Project.

In most cases, students will take more than one of these courses to satisfy major/degree requirements. In addition, all majors will take core curriculum coursework that address the instruction in writing, speaking, and information literacy goals of the College Core Curriculum.

In the spring of their sophomore year, all BSBA students will, in consultation with their advisers, select a major from among the four specialized programs and will complete the specific major requirements in addition to the BSBA core curriculum requirements. Transferring between programs is possible as long as the student will be able to meet all degree requirements of the new program and still graduate on schedule. Students cannot double major in two different BSBA programs.

Other Information About the BSBA Major

BSBA majors are encouraged to pursue off-campus study, either abroad or in approved domestic programs. Many off-campus programs also include internship opportunities. BSBA students may take a maximum of two required BSBA core or major courses in non-Bucknell programs.

The School may assist students in arranging special programs to include study abroad, independent work, field projects and internships, and acceleration in the fulfillment of BSBA requirements. Well-qualified juniors and seniors are invited by the faculty to participate in the school honors programs, consisting of participation in advanced seminars and the preparation of honors theses.

Interdepartmental Minors

Although no general or program-specific minors are currently available in the School of Management, the school contributes courses to four University interdepartmental minors: Arts Entrepreneurship, Legal Studies, Public Policy, and Social Justice. In addition, non-majors may discuss sequences of courses appropriate to their academic goals with any member of the school.

Accounting and Financial Management (ACFM)

Major Requirements

Accounting and financial management are becoming progressively more complicated. Thus accounting and financial management require sophisticated thinking as international differences, regulatory requirements, and the turbulent business environment all place new demands on those who are responsible for the efficient use of capital. We believe that a program to train professionals for this kind of world will look somewhat different from traditional programs. To succeed in this uncertain environment, financial services professionals need more than just a basic grasp of analytical tools and conventions. They need to be able to look at the broader economic and political contexts in which financial decisions are made. They must be able to make decisions under conditions of varying uncertainty. That's why we have chosen to blur the lines between accounting and finance. That's why the courses that we teach focus on decision-making and judgment. That's why we spend time exploring the political dynamics that produce accounting standards. Our goal is to ground students in concepts and principles that will ensure their ability to grow professionally.

Graduates of Bucknell's Accounting and Financial Management program (ACFM) should embrace the values of responsible citizenship and possess the technical proficiencies necessary to account for financial resources and to allocate them efficiently. The ACFM program fosters critical thinking, emphasizes interdisciplinary competence, encourages intellectual curiosity, and promotes professional ethics. ACFM students are exposed to technical financial rigor, and they are challenged to consider the historical, political, economic, and social tensions that exist among diverse stakeholder groups as students must understand the personal and social impacts of their professional behaviors and evaluate their moral underpinnings.

BSBA Core Curriculum Requirements

Foundational Literacy Requirements

MGMT 100	Management Past, Present and Future (half credit course)	.5
MGMT 101	Introduction to Organization and Management	1
MGMT 102	Quantitative Reasoning for Managers	1
ECON 103	Economic Principles and Problems	1

Managerial Literacy Requirements

MGMT 200	Foundations Accounting and Financial Management I	1
MGMT 201	Marketing	1
MGMT 202	Operations	1
MGMT 203	Managerial Finance ¹	1

¹ ACFM majors must take two accounting and financial management courses -- ACFM 261 Foundations of Accounting and Financial Management II and ACFM 370 Corporate Finance -- in lieu of MGMT 203 Managerial Finance.

Integrative Literacy Requirements

MGMT 302	The Stakeholder Organization	1
MGMT 303	The Technological Organization	1

MGMT 304 The Strategic Organization ² 1

² ACFM majors pursuing the CPA/CMA track may choose to take ACFM 359 Advanced Seminar in Accounting rather than MGMT 304 The Strategic Organization.

Culminating Experience - All BSBA majors must satisfy the Culminating Experience component of the College Core Curriculum by taking a course designated as such *on campus* no earlier than the second semester of the junior year. ACFM majors on the CPA/CMA track typically fulfill this requirement by successfully completing ACFM 357 Auditing and Assurance or ACFM 359 Advanced Seminar in Accounting or MGMT 304 The Strategic Organization. ACFM majors on the CFA track typically fulfill this requirement by successfully completing ACFM 372 Advanced Corporate Finance or MGMT 304 The Strategic Organization. In most cases, students will take more than one of these courses to satisfy major/degree requirements. In addition, all majors will take core curriculum coursework that addresses the instruction in writing, speaking, and information literacy goals of the College Core Curriculum.

In the spring of their sophomore year, all BSBA students will, in consultation with their advisers, select a major from among the four specialized programs and will complete the specific major requirements in addition to the BSBA core curriculum requirements. Transferring between programs is possible as long as the student will be able to meet all degree requirements of the new program and still graduate on schedule. Students cannot double major in two different BSBA programs.

ACFM Requirements

ACFM Core Requirements

ACFM 220	Business Law I	1
ACFM 261	Foundations of Accounting and Financial Management II	1
ACFM 340	Business Analytics and Financial Modeling	1
ACFM 351	Intermediate Accounting and Financial Management I	1
ACFM 370	Corporate Finance	1
ECON 256	Intermediate Microeconomic	1
or ECON 259	Intermediate Mathematical Microeconomics	

ACFM majors must, by the end of the fall of their junior year, declare their intent to pursue one of two distinctive tracks. The CPA/CMA track focuses on accounting and provides necessary training for certified public and management accountants. The CFA track focuses on finance and provides necessary training for chartered financial analysts.

CPA/CMA Track

ACFM majors pursuing the CPA/CMA track must take the following four courses:

ACFM 352	Intermediate Accounting and Financial Management II	1
ACFM 354	Tax Accounting I	1
ACFM 357	Auditing and Assurance	1
or MGMT 202	Operations	
ACFM 365	Advanced Managerial and Cost Accounting	1

CFA Track

ACFM majors pursuing the CFA track must take the following four courses:

ACFM 372	Advanced Corporate Finance	1
ACFM 377	Investments	1
GLBM 302	The Global Flow of Capital	1
ACFM 378	Investment Banking	1

Uniform Certified Public Accountant Examination

The flexibility of Bucknell's ACFM program enables students to satisfy the educational requirements established by many states to sit for the CPA exam, including the 150-hour requirement. (Students interested in a particular state should contact its State Board of Accountancy to determine its specific rules and regulations.) Although the ACFM degree program requires only 128 semester-hours, students may earn up to 150 semester-hours in four calendar years by supplementing degree requirements with a combination of Advanced Placement (AP) credits, course overloads, summer classes, College Level Examination Program (CLEP) exams, online coursework and/or internships. Flexibility exists in how students may earn the semester hours required to accommodate state-specific variations in licensing requirements. For example, students may take 4.5 courses each semester at no additional tuition and without requesting approval of the dean (a 5-course load also is permissible in any semester, with the approval of the dean). Thus, a student who opts to take 4.5 courses each semester earns 144 semester-hours over the course of four years, leaving only 6 hours to be completed via AP credits, summer classes, online coursework, and/or those internships approved for academic credit. Although members of the

School of Management will advise students concerning course selection, the student is responsible for choosing those courses and experiences that meet specific states' requirements to sit for the CPA exam.

Please see School of Management main page for all management faculty and program chair. Inquiries regarding this program can be directed to the program chair.

Graduates of the Accounting and Financial Management program will complete a curriculum designed to develop the critical thinking, technical, problem-solving, communication, and interpersonal skills necessary to achieve the highest level of success in accounting and financial management careers. Specific educational objectives of our program of study include:

- Enhance students' communication skills.
- Facilitate development of effective interpersonal and leadership skills.
- Adequately prepare students seeking professional certification.
- Exercise and hone students' analytical skills.
- Enhance students' awareness and use of information technology and systems.
- Heighten each student's understanding of the global infrastructure of today's business operations.
- Raise student awareness of the ethical ramifications of business transactions.
- Impress upon students that a market-based economic system cannot function without citizens' ability to understand accounting and financial information.

To accomplish our goals, we moved the curriculum away from a traditional rules-based financial statement preparation approach and focus more on the concepts underlying financial reporting and financial management. This move improves financial literacy and provides an opportunity for our students to investigate specialized fields of accounting and finance (e.g., public accounting, corporate accounting and finance, investments, investment and commercial banking, etc.). Our approach emphasizes activities that require students to analyze information and communicate their conclusions, thus developing their decision-making abilities and professional judgment.

Global Management (GLBM)

Major Requirements

All management has become global management. No organization can flourish without managers who can understand the importance of developments beyond the borders of their home country, devise effective strategies to respond to the challenges of global competition, and understand the intricacies endemic to the global flow of capital and goods. The Global Management (GLBM) program offers students an opportunity to learn more about the international dimension of business and to prepare for careers in various sectors of the global economy. Courses in the GLBM program will sensitize students to the changing institutional landscape, the increasingly complex flows of goods, talent, and capital, and the international differences that influence organizational and managerial success. Students will also take relevant courses in other parts of the University, gaining insights into the political and economic dynamics of the global system and acquiring the linguistic and cultural understanding necessary to function in other countries. Graduates of this program will have the necessary skills, knowledge, and judgment to adapt to and manage effectively in an increasingly global business environment.

Graduates of the Global Management program will complete a curriculum designed to help them achieve the following specific learning objectives.

1. *Understanding Organizations as Global Phenomena.* Students of global management will learn how to adapt their understanding of the core disciplines of management (studied in the BSBA core) to a global context. This will entail taking advanced courses in global finance, strategy, and operations, in order to develop the analytical and technical skills requisite to global management.
2. *Considering the Manager as a Global Actor.* Students will acquire the leadership skills – negotiation, communication, cross-cultural management, adaptation, decision-making, etc. – that individuals need to succeed in a complex, foreign landscape. Real-world projects on international management will enable them to develop these skills.
3. *Awareness of the Global System.* Global management students will become aware of the political, economic, social, and cultural forces that define and shape the emerging global system and think deeply about how they shape the practice of management and how, in turn, organizations – particularly multinational corporations – shape the contexts in which they operate.
4. *Ability to Access a Region or Country.* National differences remain a powerful force, shaping markets, consumption patterns, business strategies, and organizational life. Students will develop the ability to access or 'get to know' a region or country by focusing on its political, economic, and/or cultural features.

BSBA Core Curriculum Requirements

Foundational Literacy Requirements

MGMT 100	Management Past, Present and Future	.5
MGMT 101	Introduction to Organization and Management	1
MGMT 102	Quantitative Reasoning for Managers	1

ECON 103	Economic Principles and Problems	1
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Managerial Literacy Requirements

MGMT 200	Foundations Accounting and Financial Management I	1
MGMT 201	Marketing	1
MGMT 203	Managerial Finance	1

Integrative Literacy Requirements

MGMT 302	The Stakeholder Organization	1
MGMT 303	The Technological Organization	1
MGMT 304	The Strategic Organization	1

All BSBA majors must satisfy the Culminating Experience component of the College Core Curriculum. GLBM majors typically fulfill this requirement by successfully completing GLBM 400 Global Manager Abroad. In addition, all majors will take core curriculum coursework that address the instruction in writing, speaking, and information literacy goals of the College Core Curriculum.

In the spring of their sophomore year, all BSBA students will, in consultation with their advisers, select a major from among the four specialized programs and will complete the specific major requirements in addition to the BSBA core curriculum requirements. Transferring between programs is possible as long as the student will be able to meet all degree requirements of the new program and still graduate on schedule.

Global Management Requirements

Beyond completion of the BSBA core curriculum requirements, all GLBM majors must take the following courses:

GLBM 300	Global Manager as Diplomat	1
GLBM 301	Global Supply Chain Management	1
GLBM 302	The Global Flow of Capital	1
GLBM 400	Global Manager Abroad (may be offered as two half-credit courses)	1

Global Environment Electives

GLBM majors must take ONE of the following *Global Environment Electives*. With permission of their adviser, students may substitute other courses appropriate to this category and satisfying learning objective #3, as long as such courses are taught by faculty outside the School of Management.

Select one of the following:		1
ECON 227	International Economics	
GEOG 209	Economic Geography	
GEOG 211	Political Geography	
IREL 252	Political Economy of Global Resources	
IREL 390	American Global Strategy	
POLS 170	International Politics	
POLS 205	Comparative Politics	
POLS 275	Global Governance	
POLS 277	International Political Economy	

Area Studies Electives

GLBM majors must take TWO Area Studies Electives. The two courses should focus on the same region (such as East Asia, Africa, Europe, Middle East, Latin America and the Caribbean, etc.) and must be taught by faculty outside the School of Management. Courses appropriate to this category and satisfying learning objective #4 will be chosen by the students in consultation with their advisers.

Language and Cultural Skills

GLBM majors must demonstrate intermediate proficiency in at least one foreign language or elementary proficiency in two. They may do so by passing the fourth course or higher (intermediate) or the second course or higher (elementary) in a language sequence at Bucknell. Alternatively, students may demonstrate intermediate proficiency by passing a one-credit 200-level language course on the culture or society of a country or region. Students may achieve proficiency in other ways, including abroad experiences and courses taken elsewhere. Students whose native language is not English are exempt from this requirement. Moreover, students are strongly encouraged to acquire some experience abroad through one of the many international programs available to Bucknell students.

Please see School of Management main page for all management faculty and program chair. Inquiries regarding this program can be directed to the program chair.

School of Management students will take core courses and courses within their specific major that incorporate learning goals:

QUANTITATIVE [1, 6]

- Understand and demonstrate how to analyze and use data to model and improve organizational processes.

TECHNOLOGICAL SKILLS [4, 8]

- Understand technology's impact on organizations and the interplay between technology and the organization.

ORAL COMMUNICATION SKILLS [7]

- Students will demonstrate the ability to deliver effective oral presentations in a team environment.

WRITTEN COMMUNICATION SKILLS [7, 9]

- Students' written work will demonstrate ability to learn from their own performances through reflective writing.

MORAL REASONING [3, 5]

- Students will demonstrate the ability to articulate a moral argument, drawing on and applying insights from ethical theory.

FOUNDATIONAL KNOWLEDGE: FINANCE [1, 6]

- Students will demonstrate the mastery of key concepts in financial literacy.

FOUNDATIONAL KNOWLEDGE: MARKETING [1, 4, 6]

- Students will demonstrate mastery of key Marketing concepts.

INTEGRATIVE/SYNTHESIS SKILLS [1, 2]

- Students will demonstrate the ability to evaluate, identify, and understand different organizational perspectives and be able to integrate and synthesize diverse information.

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Managing for Sustainability (MSUS)

Major Requirements

Sustainability has emerged as one of the foremost challenges facing humanity in the 21st century. All organizations, from businesses to governments to civic organizations, seek to generate value with finite resources. We have a deep need to recognize that economic sustainability can be achieved in the long term only by realigning business models and strategies to become ecologically and socially sustainable. MSUS graduates should not only understand the managerial challenges to realizing sustainability but also possess the courage and passion for achieving sustainable environmental, social, and economic goals. Students' knowledge and managerial competence should grow through studying theories and concepts from a range of relevant disciplines, engaging in experiential learning, dissecting key organizational successes and failures, crafting oral and written reflections, and honing analytical abilities with multiple types of data. By building our students' awareness of sustainability issues on all levels – from local to global – our program strives to develop the managers that organizations need to meet the sustainability challenge.

Graduates of the Managing for Sustainability program will complete a curriculum designed to help them achieve four specific learning objectives.

1. They will understand sustainability as an interdisciplinary phenomenon that includes science, technology, history, ethics, socio-cultural circumstances, legal aspects, political conditions, and economic factors.
2. They will understand organizational roles in sustaining our world, including how the various functions of an organization – such as finance, marketing, operations, and others – can contribute to meeting sustainability challenges.
3. They will be stimulated to reflect regularly on the knowledge they have acquired and on their particular experiences in order to determine additional areas to explore, and they will use this reflection to foster innovative ways to address sustainability challenges.
4. In senior-level Sustainability Action Learning Projects, MSUS students will have opportunities to manage actual efforts to foster change and to grapple with potential barriers to success.

BSBA Core Curriculum Requirements

Foundational Literacy Requirements

MGMT 100	Management Past, Present and Future	.5
MGMT 101	Introduction to Organization and Management	1
MGMT 102	Quantitative Reasoning for Managers	1
ECON 103	Economic Principles and Problems	1

Managerial Literacy Requirements

MGMT 200	Foundations Accounting and Financial Management I	1
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MGMT 201	Marketing	1
MGMT 202	Operations	1
Integrative Literacy Requirements		
MGMT 302	The Stakeholder Organization	1
MGMT 303	The Technological Organization	1
MGMT 304	The Strategic Organization	1

All BSBA majors must satisfy the Culminating Experience component of the College Core Curriculum. MSUS majors typically fulfill this requirement by successfully completing MSUS 400 Sustainability Action Learning Project. In addition, all majors will take core curriculum coursework that addresses the instruction in writing, speaking, and information literacy goals of the College Core Curriculum.

In the spring of their sophomore year, all BSBA students will, in consultation with their advisers, select a major from among the four specialized programs and will complete the specific major requirements in addition to the BSBA core curriculum requirements. Transferring between programs is possible as long as the student will be able to meet all degree requirements of the new program and still graduate on schedule. Students cannot double major in two different BSBA programs.

Managing for Sustainability Requirements

All MSUS majors must take the following two courses:

MSUS 200	Managing for Sustainability I (MSUS 200 previously known as MSUS 300)	1
MSUS 400	Sustainability Action Learning Project	1

All MSUS majors must also take one 300-level MSUS course credit.

In addition, all MSUS majors must work with their MSUS adviser to determine FIVE elective courses that create a coherent course of study in sustainability, broadly defined, that can be applied to the management of organizations. The following restrictions and guidance apply to the selection of these electives:

- At least four of these electives must come from outside the School of Management; one may come from within the School of Management.
- At least one of the electives must be a course that provides significant background in science associated with the environmental challenges of sustainability.
- At least one of the electives must be a course that provides significant background in social or cultural challenges associated with sustainability.

For the use of MSUS majors, the MSUS Program will maintain a list of courses approved as MSUS electives; students may request Program approval for courses not on the pre-approved list.

Please see School of Management main page for all management faculty and program chair. Inquiries regarding this program can be directed to the program chair.

School of Management students will take core courses and courses within their specific major that incorporate learning goals:

QUANTITATIVE [1, 6]

- Understand and demonstrate how to analyze and use data to model and improve organizational processes.

TECHNOLOGICAL SKILLS [4, 8]

- Understand technology's impact on organizations and the interplay between technology and the organization.

ORAL COMMUNICATION SKILLS [7]

- Students will demonstrate the ability to deliver effective oral presentations in a team environment.

WRITTEN COMMUNICATION SKILLS [7, 9]

- Students' written work will demonstrate ability to learn from their own performances through reflective writing.

MORAL REASONING [3, 5]

- Students will demonstrate the ability to articulate a moral argument, drawing on and applying insights from ethical theory.

FOUNDATIONAL KNOWLEDGE: FINANCE [1, 6]

- Students will demonstrate the mastery of key concepts in financial literacy.

FOUNDATIONAL KNOWLEDGE: MARKETING [1, 4, 6]

- Students will demonstrate mastery of key Marketing concepts.

INTEGRATIVE/SYNTHESIS SKILLS [1, 2]

- Students will demonstrate the ability to evaluate, identify, and understand different organizational perspectives and be able to integrate and synthesize diverse information.

Numbers in parentheses reflect related Educational Goals.

Markets, Innovation and Design (MIDE)

Major Requirements

The Markets, Innovation, and Design (MIDE) program will expose students to the orchestration, design, logic and strategy underlying organizations' key marketing practices. The MIDE program will highlight the complex interplay that takes place between market research/analysis of consumer-product relationships and the strategic management of the marketing mix or brands. Students pursuing the MIDE program will augment their core understanding of management functions with an interdisciplinary examination of some of the creative, analytical, and technical processes that combine to generate ideas and transform them into images, products, and services which powerfully shape our culture.

The MIDE program will foster students developing a deep appreciation for the interdisciplinary roots and connections among creative and technical design, marketing, and innovation. Moreover, the program will enhance creative thinking and acting. In addition to gaining a better understanding of how their surroundings are constructed, students will cultivate a habit of trying to envision how their world can be improved. Students will also learn quantitative, empathic, interpretive, and visual methods in order to assess the relationships between consumers/users and their environments, with a particular focus on remedying unmet needs and filling gaps between current and ideal circumstances. As they learn more about the overall design process, students also will have the opportunity to practice techniques such as role playing, sketching, creative narrative, prototyping, and simulation, which will help them to transform ideas into reality.

BSBA Core Curriculum Requirements

Foundational Literacy Requirements

MGMT 100	Management Past, Present and Future	.5
MGMT 101	Introduction to Organization and Management	1
MGMT 102	Quantitative Reasoning for Managers	1
ECON 103	Economic Principles and Problems	1

Managerial Literacy Requirements

MGMT 200	Foundations Accounting and Financial Management I	1
MGMT 201	Marketing	1
MGMT 203	Managerial Finance	1

Integrative Literacy Requirements

MGMT 302	The Stakeholder Organization	1
MGMT 303	The Technological Organization	1
MGMT 304	The Strategic Organization	1

All BSBA majors must satisfy the Culminating Experience component of the College Core Curriculum. MIDE majors typically fulfill this requirement by successfully completing MIDE 304 Marketing Management. In addition, all majors will take core curriculum coursework that address the instruction in writing, speaking, and information literacy goals of the College Core Curriculum.

In the spring of their sophomore year, all BSBA students will, in consultation with their advisers, select a major from among the four specialized programs and will complete the specific major requirements in addition to the BSBA core curriculum requirements. Transferring between programs is possible as long as the student will be able to meet all degree requirements of the new program and still graduate on schedule.

Markets, Innovation, and Design Requirements

Beyond completion of the BSBA core curriculum requirements, all MIDE majors must take the following courses:

MIDE 300	Markets, Innovation, and Design	1
MIDE 301	Understanding Consumers	1
MIDE 302	Design Realization	1
MIDE 303	Entrepreneurship	1
or MIDE 304	Marketing Management	

Beyond these core MIDE courses, **all MIDE majors** must choose FOUR program-related electives. The MIDE program is designed to be sufficiently flexible to enable students to pursue a wide range of interests and career scenarios, such as work in market research, brand management, marketing management, public relations, communications, product design, global consumer culture, and issues of innovation. Therefore, besides taking

the MIDE core (the four courses noted above), students are required to choose, with consultation and approval from their advisers, four program-related electives from courses available elsewhere at the University, outside the School of Management. These choices will depend on what makes most sense given the students' underlying interests. For example, a student contemplating a career in advertising might select four electives from courses such as Introduction to Visual Culture, Film Production, Popular Culture, Political Economy of Media and Advertising, Digital Photography, or Introduction to Creative Writing. The essential idea behind this loose elective structure is to give students the latitude to delve further into their own intellectual interests in relation to the program's learning objectives. These program-related electives enable students (with the help of their advisers) to apply a more specialized and individualized signature to their program of study. This feature, too, is part of the creativity and innovation embedded in the MIDE program.

Please see School of Management main page for all management faculty and program chair. Inquiries regarding this program can be directed to the program chair.

1. They will understand the basic principles of Marketing, Innovation, and Design and how these academic disciplines and fields of practice are related.
2. They will be able to analyze problems and think strategically from a Marketing point of view.
3. They will cultivate innovative habits that enable them to detect problems and provide them with the impetus and confidence to solve them.
4. They will develop a Design mindset that enables them to creatively recast problems in various ways and design novel and effective solutions.

Bachelor of Management for Engineers (BME)

Major Requirements

The Bachelor of Management for Engineers (BME) degree is open to students admitted to the five-year joint degree program in engineering and management. The program leads to a joint degree comprising the Bachelor of Management for Engineers degree and the Bachelor of Science degree in one of the specific engineering disciplines.

All BME majors must fulfill all University degree requirements, including the College of Arts and Sciences College Core Curriculum and must take the following six required MGMT courses:

MGMT 101	Introduction to Organization and Management	1
MGMT 200	Foundations Accounting and Financial Management I	1
MGMT 201	Marketing	1
MGMT 203 or ACFM 370	Managerial Finance Corporate Finance	1
MGMT 302	The Stakeholder Organization	1
MGMT 304	The Strategic Organization	1

In addition, **all BME majors** must take TWO School of Management electives courses, chosen from MGMT, ACFM, GLBM, MIDE and/or MSUS course offerings – one at the 200- or 300-level and the other at the 300-level.

Students in this program may satisfy one of their eight School of Management courses through transfer of credit from a non-Bucknell program, with prior approval of the School of Management. Suggested course sequences for the program and detailed information on the degree requirements are available from the School of Management or the Office of the Dean of Engineering.

Social Justice Minor

The minor consists of five credits: a core course, three electives, and an integrative experience course. At least one of the five courses must be a community-based research/service learning course (See footnote¹).

Core Courses

The core courses are intended to provide students with the ability to assess contrasting views of what constitutes social justice and include both self-reflection and critical thinking. In addition, core courses may also give historical background on an issue or issues of social injustice and/or provide an introduction to concepts such as oppression and privilege.

PHIL 214	Social and Political Philosophy	1
POLS 210	Political Theory	1
ENST 255	Environmental Injustice	1

Electives

To ensure interdisciplinary study and to encourage students to develop knowledge of a number of different social justice issues, electives are divided into five categories. A student must take their three elective courses from at least two of the five categories and from at least two different disciplines or departments. No more than two courses may be at the 100-level.

A. Gender and Sexuality

WMST 150	Introduction to Women's and Gender Studies	1
WMST 225	Modernism on the Margins: Race, Class and Sexuality	1
WMST 226	Prince-Pimp/Princess-Pornstar	1
HIST 100	Thinking about History	1
HIST 222	U.S. History from the 1940s to the Present	1
HIST 214	Topics in American History	1
GEOG 324	Geographies of Identity	1
SOCI 100	Introduction to Sociology	1
PHIL 230	Feminist Philosophy	1
EDUC 290	Gender Issues in Education	1
PSYC 303	Critical Psychologies ¹	1
ANTH 290	Medical Anthropology	1
ENLS 228	Gender and Sexuality in America	1
SOCI 239	Deviance and Identity	1
HUMN 320	History of Sexuality	1
PSYC 232	Psychology of Women	1
GEOG 323	Gender and Geography	1
SOCI/WMST 328	Mating and Marrying in America	1
WMST/POLS 254	Sex and Social Order	1
POLS/WMST 238	Women and Politics	1

B. Race and Ethnicity

POLS 263	Race and Ethnicity in American Legal Thought	1
MUSC 257	Music and Culture: Jazz, Rock, and Race	1
ENLS 211	Southern Exposure	1
POLS 371	Minority Politics	1
POLS 219	Latin American Politics	1
ANTH 256	Anthropology of Native North America	1
HIST 290	Europe Imperialism and Colonialism	1
RELI 209	Israel: Land, People, and Tradition	1
POLS 246	Race Ethnicity and American Politics	1
HIST 223	Twentieth-century African-American History: Eyes on the Prize	1
HIST 219	Antebellum America	1
POLS 211	Third World Politics	1
GEOG 324	Geographies of Identity	1
HIST 100	Thinking about History	1
HIST 214	Topics in American History	1
HIST 220	American Civil War and Reconstruction	1
SOCI 280	Twentieth-century Afro-Caribbean and African-American Thought	1
ENLS 315	Unsettling Memories	1
IREL 215	Cultural Dimensions of International Relations	1
SOCI 243	Sociology of Race and Ethnicity	1
ECON 270	South Africa: Social Entrepreneurship	1
SOCI 327	Race, Citizenship and Human Rights	1

C. Poverty, Inequality and Class

ECON/WMST 236	Unemployment and Poverty ²	1
ECON/GEOG 350	Classical Marxism ²	1
ECON/MGMT/PSYC 270	South Africa: Social Entrepreneurship ^{1,2}	1
GEOG 209	Economic Geography ²	1
ECON 258	Intermediate Political Economy	1
ECON 458	Marxian Economics	1
EDUC 318	Multiculturalism and Education	1
ECON 309	Globalization and Its Implications	1
HIST 290	Europe Imperialism and Colonialism	1
IREL 252	Political Economy of Global Resources	1
SOCI 322	Sociology of Medicine	1-1.5
GEOG 237	Grassroots Development: Nicaragua ¹	1
PSYC 307	Culture and Child Development	1
GEOG/IREL/LAMS 292	Service-Learning in Nicaragua	1
EDUC 101	Social Foundation of Education	1
SOCI 130	Medicine and Society	1
SOCI 215	Human Service Systems ²	1
PSYC 320	Children's Studies ¹	1
SOCI 311	Globalization, Technology, and Cultural Change	1
SOCI 219	Culture and Power	1
SOCI 329	Millennials in the Workplace	1
SOCI 242	Rural Communities	1
GEOG 101	Globalization, People, and Place	1
GEOG 324	Geographies of Identity	1
ECON 251	Logic Limits Economic Justice	1
WMST 251	Women and Development	1

D. Environmental Justice

ENST 245	Environmental Policy and Politics	1
ENST 325	Nature, Wealth and Power	1
ANTH 260	Environmental Anthropology	1
IREL 270	Global Governance of Climate Change	1
ENST 211	Environmental Pollution and Control	1
UNIV 200	Integrated Perspectives Course (04: Food Justice/Food Insecurity) ^{1,2}	1
UNIV 200	Integrated Perspectives Course (01: Climate Change Science and Ethics)	1
SOCI 220	Environmental Sociology	1
ENST 221	Hazardous Waste and Society	1
ENST 205	Green Utopias	1
ENST/ENLS 225/HUMN 290	Susquehanna Country ¹	1
ENST 255	Environmental Injustice	1
ENST 246	Environmental Activism	1
ENST 236	Environmental Ethics	1
GEOG 101	Globalization, People, and Place	1

E. Law, Religion, and Human Rights

RELI 280	Religion and Constitutional Law	1
RELI 281	Religion and American Politics	1
SOCI 251	Violence and Society	1
SOCI 327	Race, Citizenship and Human Rights	1
IREL 255	International Law	1

POLS 219	Latin American Politics	1
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Integrative Experience

Integrative experience courses provide students with the opportunity to apply their knowledge of social justice toward the development of a project or toward extensive participation in community-based research.

UNIV 335	Practicing Democracy: Active Citizenship, Community Engagement, and Social Change	1
SOCI 322	Sociology of Medicine	1-1.5
SOCI 351	Field Research	.5-2
MSUS 400	Sustainability Action Learning Project	1

Poverty Studies Concentration

Students may choose a concentration in Poverty Studies by choosing a core course, integrative experience course, and at least two electives that focus significantly on issues of poverty. These courses (See footnote²) allow students to combine their coursework with a poverty studies internship offered each year through the Shepherd Consortium.

¹ Community-based research/service learning course.

² Poverty studies course.

Sociology (SOCI)

Faculty

Chair: Michelle C. Johnson

Professors: Deborah A. Abowitz, Linden F. Lewis (Associate Dean of Social Sciences), Carl Milofsky, Alexander Tristan Riley

Associate Professor: Elizabeth Durden

Assistant Professor: Jennifer Silva

Visiting Assistant Professors: Karen Altendorf, Ahrum Lee, Stephen C. Rea

The department encompasses two disciplines, sociology and anthropology, and offers separate majors in each.

Sociology is the study of human social action. It emphasizes an appreciation of human diversity, social inequality, and the processes that govern groups, organizations, communities, cultures, and nation states. Because these areas of study are integral to a liberal arts education, the department encourages students with diverse majors to take courses at all levels.

Among other things, a major in sociology may assist those interested in graduate work. It also offers a background for careers in law, journalism, government and international affairs, teaching, social work, and public service.

Honors

The department strongly encourages qualified majors to consider working for honors in sociology. Such students should consult in their junior year with one or more members of the faculty of the department to begin defining a research topic and writing a proposal. Normally, during the senior year, an honors student will enroll in SOCI 319 Honors Course in Sociology and, if agreed to by the academic adviser, a second semester in SOCI 320 Honors Course in Sociology. The honors proposal is to be approved by the department chairperson and submitted to the Honors Council by mid-October of the senior year. Further information can be obtained from the student's academic adviser, the department chairperson, and from the Honors Council.

Sociology Major

The major in sociology requires nine courses. Students may count a total of two anthropology courses (one elective course and one theory/methods course) toward the sociology major. No more than two 100-level courses may be counted toward the sociology major. Requirements are as follows:

1 100-level SOCI course		1
4 SOCI Electives (one must be at the 300-level)		4
SOCI 365	Advanced Seminar in Sociology (Culminating Experience)	1

Students must take ONE of the following Methods Courses:

SOCI 208	Methods of Social Research	1
SOCI 209	Analyzing the Social World	1

Students must take ONE of the following Theory Courses:

SOCI 211	Classical Sociological Theory	1
SOCI 212	Contemporary Sociological Theory	1

Students must take ONE ADDITIONAL theory/methods courses from the following list:

SOCI 201	Field Research in Local Communities	1
SOCI 208	Methods of Social Research	1
SOCI 209	Analyzing the Social World	1
SOCI 210	Urban Condition	1
SOCI 211	Classical Sociological Theory	1
SOCI 212	Contemporary Sociological Theory	1
ANTH 283	Theory in Anthropology	1

The major in sociology provides students with an overview of the discipline, broad exposure to social issues and sociological concerns, and a variety of specialty areas in the field, reading and writing skills, and information literacy. Courses emphasize careful reading and analysis of sociological and theoretical texts, qualitative and quantitative methods, writing as part of both research process and presentation of results, presentation to multiple audiences, and how to find and use information from multiple sources. Students will graduate prepared for the workforce or graduate/professional study.

The department strongly recommends that core courses be taken as early as possible in a student's career (preferably during the sophomore or junior year). Students should take at least one anthropology course at the 100 or 200-level before taking the methods courses (SOCI 201, SOCI 208, or SOCI 209). Methods courses are not intended for first-year students.

Courses that are crosslisted as anthropology and sociology courses count as sociology courses and still allow sociology majors to take one elective designated solely as an anthropology course.

Up to two off-campus courses may be counted toward 200-level electives in the major. The department chair may allow off-campus courses to count toward other major requirements if these courses adequately substitute for material that is taught in our department.

Minor in Sociology

The minor in sociology requires five courses in sociology. Students may count no more than two 100-level courses toward the five courses required. Courses in anthropology may not be counted toward the sociology minor unless courses are listed as satisfying both sociology and anthropology major credit. No more than one off-campus course ordinarily counts toward the minor.

Sociology Learning Goals

Majors in Sociology will be able to:

Demonstrate knowledge of the core concepts of sociology (social structure; culture; social stratification and inequality; race, ethnicity, and gender; and globalization). (1, 6, 8, 9)

Demonstrate knowledge of the methods of sociological research. (1, 6, 7, 8, 9)

Develop knowledge of diversity within and/or between societies. (2, 3, 4, 5, 9)

Non-majors in Sociology will be able to:

Demonstrate knowledge of how sociologists define culture and/or society. (1, 3, 4, 5, 6, 8, 9)

Demonstrate knowledge of sociological principles. (4, 6, 8, 9)

Apply sociological concepts and/or principles to individual experiences and/or the social world. (1, 4, 5, 6, 9)

Numbers in parentheses reflect related Educational Goals of Bucknell University.

Spanish (SPAN)

Faculty

Associate Professors: M. Isabel Cuñado (Chair), Elisabeth Guerrero, Jason Aaron McCloskey, Collin McKinney, Ana M. Patiño

Assistant Professors: Fernando Blanco, Nicholas Jones, Hiram L. Smith

Lecturer: Michael Dock

The Department of Spanish at Bucknell University is committed to providing excellent instruction and learning opportunities that challenge majors and minors, and other interested students to develop their language proficiency in Spanish to the maximum, as well as to know and understand the literature and culture of the Spanish-speaking peoples of the world. We encourage our students to think critically, to question their cultural assumptions about the Hispanic world, and to seek to immerse themselves, as much as possible, in a Spanish-speaking community.

The academic program in Spanish offers coursework in the areas of language, literature, culture, and linguistics of the Hispanic world, including Spain, Latin America, and the United States. The curriculum takes into account a wide variety of student needs and interests, including those of heritage students, students who plan to pursue graduate study and a career in Spanish/Hispanic studies, and those who hope to apply their language skills and cultural understanding to their chosen profession. The curriculum in Spanish encompasses three levels:

1. Courses focusing primarily on language acquisition, with a secondary focus on cultural competency (SPAN 101 through SPAN 208).
2. At the next level, courses introduce students with early advanced language proficiency to the breadth and diversity of the literature, culture and linguistics of the Spanish-speaking world.

SPAN 220	Introduction to Spanish Literature	1
SPAN 222	Introduction to Latin American Literature	1
SPAN 239	Hispanic Linguistics	1
SPAN 270	Spanish Cultural Tradition	1
SPAN 280	Latin American Cultural Traditions	1
SPAN 285	Latino Literature in the U.S.	1
SPAN 295	Topics in Spanish	1
3. At the highest level, our courses provide an in-depth study of an author, period, genre, or issue in Hispanic literature, culture or linguistics (300-level courses).

Students are strongly encouraged to continue their study of Spanish as early in their undergraduate career as possible. Doing so will ensure that they may complete the major or minor, will make them eligible for the best study abroad programs in the Hispanic world, and will help them to reach a high level of language proficiency. By achieving an advanced degree of language proficiency and cultural awareness, students may improve their chances for a Fulbright or other international fellowships after graduation.

Online Placement Test

Students who have studied Spanish in secondary school or who are heritage speakers of the language must take the online placement test to determine the level at which they may register for a Spanish course. Information on accessing the test is included in the first-year student registration information. Current students may access the placement test from the Spanish department webpage. Any questions regarding placement should be directed to the Spanish department chairperson.

The major in Spanish is designed to cultivate our students' understanding and appreciation of the rich literary and cultural traditions of Spanish-speaking peoples; to provide a sound foundation for graduate study related to the Hispanic worlds; and to develop our students' ability to analyze critically literary and cultural works in Spanish. Coursework in the Spanish major will help students meet the goals of the College of Arts and Sciences, and of the University as a whole, with regard to writing, information literacy and public presentation.

Through their coursework in the major, students are introduced to the discipline of Hispanic letters and also explore connections between Spanish and other disciplines in the humanities or in the social sciences. The on-campus curriculum, combined with a semester or year of study abroad on Bucknell *en España* in Spain or on a program approved by the department for Latin America, will enable students to reach an advanced level of proficiency in listening comprehension, speaking, reading, and writing in Spanish. The language proficiency attained by our students, along with the cultural understanding they gain through their studies at Bucknell and abroad, will allow them to interact effectively with Spanish-speaking peoples throughout the world. By relating to Hispanic cultures, our students increase their own self-awareness and their sense of connectedness to a diverse world.

Spanish Major

Students may set out to accomplish the goals outlined for the major by taking language courses beyond SPAN 105 Intermediate Spanish: SPAN 207 Toward Advanced Spanish, and/or SPAN 208 Advanced Conversation and Composition, according to their language placement. SPAN 208 Advanced Conversation and Composition is a prerequisite for courses numbered SPAN 220 Introduction to Spanish Literature through SPAN 295 Topics in Spanish.

After reaching an early-advanced level of language proficiency, students gain an understanding of Hispanic literary and cultural traditions through their work in courses providing an overview of literature and culture:

SPAN 220	Introduction to Spanish Literature ¹	1
or SPAN 222	Introduction to Latin American Literature	
SPAN 270	Spanish Cultural Tradition ¹	1

or SPAN 280	Latin American Cultural Traditions	
Select one of the following:		1
One of two courses not yet taken from first two rows		
SPAN 285	Latino Literature in the U.S.	
SPAN 295	Topics in Spanish	
SPAN 245	Vida y Cultura en Espana	
Approved study abroad program course ²		
Select one of the following: ³		1
Hispanic literature/culture course ⁴		
Hispanic linguistics course ⁴		

¹ One of these four courses must be taken on the Bucknell campus, preferably before studying abroad.

² With permission of the Spanish department.

³ A student may request permission to count an Integrated Perspectives course toward this major requirement, provided that the course is co-taught by a Spanish department faculty member and that the subject relates to Hispanic cultures. While a student may apply a 300-level Spanish course toward this requirement, with the approval of her/his academic adviser in Spanish, the student must still take two additional 300-level courses to complete the major.

⁴ On campus or on an approved study abroad program.

Students must take at least two courses numbered SPAN 220 Introduction to Spanish Literature through SPAN 295 Topics in Spanish before enrolling in a 300-level course.

In order to achieve a high level of language proficiency and cultural understanding, it is strongly recommended that students majoring in Spanish spend at least one semester of their junior year on Bucknell *en España* in Spain, or one of the approved programs in Argentina, Chile, Costa Rica, the Dominican Republic or Ecuador.

After gaining an understanding of Hispanic literary and cultural traditions in coursework at the 200-level, students complete the major with at least two 300-level courses or seminars, offering an in-depth study of particular aspects of Hispanic literature, culture or linguistics. These courses, numbered in the 300s, are often related to the professor's area of expertise and normally require that students participate actively in class discussion, make formal presentations in class, and that they write a research paper in Spanish. One of these seminars must be designated as Culminating Experience for the Spanish major. As part of the learning activities in this seminar, students will carry out a research project related to Hispanic literature, culture, or linguistics under the supervision of the course instructor, and will present the critical essay in its final written form at the end of the semester, as evidence of their fulfillment of the Spanish department's learning objectives for writing and information literacy. In addition, senior Spanish majors will present a scholarly paper based on their research at a symposium organized by the Spanish department on campus, as evidence of their fulfillment of the department's objectives regarding public presentation.

A **major** in Spanish requires at least eight credits above SPAN 105 Intermediate Spanish. At least four credits required for the major must be taken at Bucknell, including:

SPAN 220	Introduction to Spanish Literature	1
or SPAN 222	Introduction to Latin American Literature	
or SPAN 270	Spanish Cultural Tradition	
or SPAN 280	Latin American Cultural Traditions	
Two 300-level SPAN courses ⁵		2

⁵ One must be designated a Culminating Experience.

At least one of the four required 200-level course must focus on Latin America, and at least one on Spain. Students must take two 200-level courses after SPAN 208 Advanced Conversation and Composition before enrolling in a 300-level course. Only one course from Spanish department offerings taught in English may be counted toward the major. The distribution of courses counting toward the major is as follows:

Spanish Language ⁶

SPAN 207	Toward Advanced Spanish	1
SPAN 208	Advanced Conversation and Composition	1
Literature and Culture Core Courses ^{7,8}		
SPAN 220	Introduction to Spanish Literature	1
or SPAN 222	Introduction to Latin American Literature	
SPAN 270	Spanish Cultural Tradition	1
or SPAN 280	Latin American Cultural Traditions	

Literature or Culture/Civilization Course

Select one of the following: ⁷		1
SPAN 245	Vida y Cultura en Espana (Spain)	
SPAN 285	Latino Literature in the U.S. (may count as Latin American focus)	
SPAN 295	Topics in Spanish (topic and region may vary)	

⁶ Students whose language proficiency places them higher than one or both of these courses may substitute another course in advanced language, literature, or culture to reach the total number of eight required courses. (See Advanced Language, Literature, or Culture Courses list.)

⁷ In choosing courses, students should keep in mind the need to take at least one course at the 200-level on Spain and one on Latin America.

⁸ At least one of these courses must be taken on the Bucknell campus.

Advanced Language, Literature, or Culture Courses

SPAN 220	Introduction to Spanish Literature	1
SPAN 222	Introduction to Latin American Literature	1
SPAN 239	Hispanic Linguistics	1
SPAN 270	Spanish Cultural Tradition	1
SPAN 280	Latin American Cultural Traditions	1
SPAN 285	Latino Literature in the U.S.	1
SPAN 2TR with previous approval of Spanish department chair		

One 200-level elective on any of the following topics: Advanced Spanish Language (beyond SPAN 208 Advanced Conversation and Composition), Hispanic Linguistics, Spanish/Latin American/Latino Literatures and Cultures, an Integrated Perspectives course related to Hispanic culture and co-taught by a Spanish department faculty member, or Spanish-English translation, taken at Bucknell or on study abroad, with Spanish department approval.⁹ (In choosing courses, students should be mindful of the need to take at least one course at the 200-level on Spain and one on Latin America.)

Two courses on topics in literature, culture or Hispanic linguistics at the 300-level, taken at Bucknell. One of these courses must be designated as a Culminating Experience for the Spanish major. At least one 300-level course must focus on Hispanic literature or culture.

A student seeking certification to teach Spanish in elementary or secondary school must complete the major in Spanish, as well as the requirements formulated by Bucknell's education department, in accordance with the guidelines of the Commonwealth of Pennsylvania. Students who wish to be certified to teach Spanish should consult with the Spanish department chair early in their University career. Students who are considering a Spanish major should plan to take at least one course in Spanish each semester at Bucknell, if possible. This will ensure that their gains in language proficiency, in particular, will be sustained during their four-year program.

⁹ While students may apply a 300-level course toward this requirement, with the approval of their academic adviser in Spanish, they must still take two additional courses at the 300-level.

Study Abroad

Residence abroad in a Spanish-speaking country is the best way to gain the language proficiency and the knowledge of Hispanic literature and cultures expected for the major. Students are strongly urged to study abroad on a program approved by the Spanish department for its majors and minors. Only courses taken on these programs may be counted toward the major and minor. **At least one of the courses taken abroad for credit toward the Spanish major must deal with literature.** Students who have taken two courses in Hispanic literature at Bucknell may present to the Spanish department chairperson a petition to have this requirement waived. Approved study abroad programs may change from year to year.

Study in Spain

The University's Bucknell *en España* provides a study abroad experience designed to meet the educational needs of Spanish majors, minors, and other Bucknell students who have taken SPAN 207 Toward Advanced Spanish, or can demonstrate the equivalent level, and who wish to study in Spain. The program is centered at the *Universidad de Granada* in Granada, Spain. Students who wish to study in Spain but who are not sufficiently advanced for Bucknell *en España* may go on the CIEE program at the *Universidad de Alicante*.

Study in Latin America

For majors and minors, the Spanish department has approved study abroad programs in Argentina, Chile, Costa Rica, the Dominican Republic, and Ecuador. Students should consult with their advisers in Spanish, the Spanish department chair, or the Office of International Education regarding these programs.

Honors

Majors who are interested in writing an Honors Thesis and who meet the requirements established by the Honors Council should speak with a faculty member in Spanish during the junior year to discuss this possibility.

Minor in Spanish

The **minor** in Spanish consists of five courses beyond SPAN 103 Toward Intermediate Spanish. At least two of the courses for the minor must deal with literature or civilization and at least three of the courses counted for the minor must be taken at Bucknell. Students who go on the Bucknell *en España* program and plan to minor in Spanish need to take two courses on campus.

All courses are taught in Spanish, unless otherwise indicated. SPAN 208 Advanced Conversation and Composition is a prerequisite for courses numbered 220 through 295. Two 200-level courses beyond SPAN 208 Advanced Conversation and Composition are prerequisites for courses at the 300-level.

- Students develop the ability to communicate and interact effectively with Spanish-speaking peoples.
- Students gain insights into the literary and cultural traditions of Spanish-speaking peoples and nations.
- Students develop interpretive, critical thinking and research skills through their study of literatures, cultures and linguistics of the Spanish-speaking people, in keeping with the goals of a liberal arts tradition.
- Students perceive the diverse ethnic and cultural traditions that exist within the Spanish-speaking world, as well as appreciate the Hispanic/Latino participation in the diversity within the United States.
- Students demonstrate their ability to synthesize their skills in communication, critical thinking and research in a public presentation given in Spanish.

Theatre and Dance (THDN)

Faculty

Professors: Gary M. Grant, Er-dong Hu, F. Elaine Williams

Associate Professors: Paula D. Davis, Anjalee Deshpande Hutchinson (Chair), Kelly Knox (Director, Dance), Dustyn Martincich

Visiting Assistant Professor: Jenny Kenyon

Lecturers: Heath J. Hansum (Co-Director, Theatre), Samantha JP Norton, Karen Schatten-Lock, Biliana Stoytcheva-Horissian

Professional Staff: Mark Hutchinson (Co-Director, Theatre), Pam Miller

Introduction to the Department of Theatre and Dance:

We believe in creating opportunities for our students to become strong impactful leaders, engaging and innovative artists, and compassionate members of a global community. Our aim is for students to develop deeper understandings of different cultures and diverse perspectives through the eyes of artists. We train our students to express these understandings through the powerful mediums of theatre and dance. Our graduates are future artists and leaders uniting, inspiring, and embracing the goal of collaborative performance. Our students embody this goal as they strive to discover and reveal the meaning in the world around us.

Major Requirements

The **major** in theatre offers opportunities in all phases of theatre arts and consists of a minimum of eight and one-half course credits.

History and Theory

2

THEA 256	Rituals, Festivals, Institutions
THEA 260	Theatre and Revolution

Performance

Select one of the following:

1

THEA 110	Acting I
THEA 220	Acting Methods (Acting Methods)
THEA 230	Acting Styles
THEA 240	Directing the Play
THEA 249	Mask and Makeup Design

Design

Select one of the following:

1

THEA 245	Entertainment Technology
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THEA 246	Scene Design	
THEA 248	Theatrical Lighting Design	
THEA 249	Mask and Makeup Design	
THEA 250	Costume and Fashion	
THEA 251	Costume Design	
THEA 252	Sound Design	
THEA 255	The Art of Costume Craft	
Dramatic Literature and Criticism		
Select one of the following:		1
THEA 258	Modernism in Performance	
THEA 261	Inner Journey: Sam Shepard and American Theatre	
CLAS 222	Greek Tragedy	
CLAS 223	Ancient Laughter	
ENLS 217	Studies in Dramatic Literature	
ENLS 257	Shakespeare	
300-level Seminars and Projects		
Select two of the following (one must be taken in the senior year):		2
THEA 314	Seminar in Contemporary Scenography	
THEA 319	Individual Projects	
THEA 342	Devising Performance	
THEA 347	Visual Style	
THEA 357	Performance Opus	
THEA 390	Applied and Interactive Theatre	
THEA 393	Seminar in Avant-Garde Performance	
THEA 397	Seminar in Special Topics	
Additional Requirements		
One additional THEA or DANC course in performance, design, or dramatic literature and criticism		1
THEA 101	Technical Theatre Practicum	.5
& 101	and Technical Theatre Practicum (two sections for two quarter credits)	
or THEA 101	Technical Theatre Practicum	
& THEA 102	and Theatrical Rehearsal and Performance	
Total Credits		8.5

Students pursuing an emphasis in acting, directing, design, or dramaturgy/playwriting will be advised to select additional courses in related areas (dance, art, music, philosophy, etc.) as electives in addition to the advanced performance, design, or theory courses. A suggested guideline for each emphasis is available from your adviser. Faculty advisers will carefully develop a course of study with students to meet their individual needs and educational goals. Students majoring in theatre are expected to participate in the work of the department of theatre and dance production program. Students may register for .25 credit in THEA 101 Technical Theatre Practicum and/or THEA 102 Theatrical Rehearsal and Performance for active participation in designated areas of design and technology and/or performance. A maximum of one-half credit is permitted per semester and there is a limit of two full course credits in all. Faculty will supervise student participation, provide instruction, and approve the awarding of credit.

Writing Within the Major

The goals of the theatre major include demonstration of knowledge of Western dramatic literature and artistic media and performance styles from both Western and non-Western traditions. Students majoring in theatre will learn to formulate critical/analytical responses to theatre through written and oral communication.

Formal Presentation Experience

In the practice of theatre, successful collaboration and communication is key to successful work. Students majoring in theatre will gain extensive experience in formal presentation through presentation of topics in history and dramatic literature, acting projects, scene studies, design project presentations, and presentation of applied projects in performance, directing, and design.

Information Literacy

Information and visual literacy play a significant role in the study, understanding, and practice of theatre. Students in theatre will learn to conduct research using a variety of sources including primary and secondary materials; field specific and multidisciplinary databases; and a variety of media including print, film/video, and digital. Students will learn to effectively evaluate and analyze these sources through in-class discussion and synthesis.

Students will study and become familiar with legal and ethical considerations in the use of sources. Theatre students will become proficient in the use of technology in the presentation of applied theatre projects.

Senior Year Culminating Experience

Theatre students will take two 300-level courses, one of which will be in the senior year, which will serve as the Culminating Experience for the major. The Culminating Experience will provide for students studying theatre the opportunity to further refine their ability to formulate creative interpretations from conceptual discussions to the completed stage presentation, deepen their understanding of the performance process, and practice the collaborative process.

Honors in Theatre

A program leading to a major with honors in theatre may be proposed by the student by their junior year in consultation with the department chair and under the guidance of a faculty member. The student generally undertakes a specifically designed sequence of courses, independent research, and a creative project culminating in the stage direction or design of a mainstage production, a performance project, or a research paper in the area of theatre history, criticism, or dramatic literature. Students writing theses should enroll in THEA 319 Individual Projects during the semester in which they plan to complete the thesis. Guidelines for Creative Honors Theses are available from the department chair.

The Minors in Theatre

The minor in theatre is for liberal arts students who wish to broaden their experience with the theatre arts.

Three **minors** are offered by the department:

Acting and Directing Minor

The Acting and Directing minor requires a minimum of five and one-half credits including:

THEA 256	Rituals, Festivals, Institutions	1
or THEA 260	Theatre and Revolution	
Three electives in performance (one of which may be THEA 240 or THEA 249)		3
One 300-level theatre course		1
THEA 101	Technical Theatre Practicum (one section)	.25
THEA 101	Technical Theatre Practicum (one section of either)	.25
or THEA 102	Theatrical Rehearsal and Performance	
Total Credits		5.5

Design and Technology Minor

The Design and Technology minor requires a minimum of five and one-half credits including:

THEA 256	Rituals, Festivals, Institutions	1
or THEA 260	Theatre and Revolution	
Three electives in design and technology (one of which may be THEA 250)		3
One 300-level theatre course		1
THEA 101	Technical Theatre Practicum	.5
& 101	and Technical Theatre Practicum (two sections)	

General Theatre Minor

The General Theatre minor requires a minimum of five and one-half credits including:

THEA 256	Rituals, Festivals, Institutions	1
or THEA 260	Theatre and Revolution	
One performance course		1
One design or technology course		1
One 200-level elective		1
One 300-level theatre course		1
THEA 101	Technical Theatre Practicum (one section)	.25
THEA 101	Technical Theatre Practicum (one section of either)	.25
or THEA 102	Theatrical Rehearsal and Performance	
Total Credits		5.5

Minor in Dance

The six-credit curriculum for a minor in dance is designed to provide a broad perspective and solid foundation in the technical, theoretical, and practical experience necessary for the development of intelligent dance artists. The minor is intended to enable liberal arts students who are pursuing other challenging academic disciplines the opportunity to explore high quality dance, performance, and research throughout their college career. The curriculum acknowledges studio training as paramount to the field of study, offering classes in a variety of dance styles, with an emphasis on proficiency in both ballet and modern techniques. Many technique and performance courses are repeatable for credit in recognition of the importance of consistent and ongoing training at the appropriate level. Dance history and composition form the core of the theoretical requirements and are enhanced by cross-disciplinary course work in costume, lighting, scenic, sound design, or another complimentary discipline.

Students minoring in dance are expected to participate in dance productions throughout their Bucknell career. Performance and choreographic opportunities include mainstage and showcase concerts in the Harvey M. Powers Theatre, Weis Center for the Performing Arts, Tustin Studio Theatre, and alternative spaces. Weekly, semester-long rehearsals and guest artist residencies for dancers of every level provide opportunities to learn original choreographies, classic reconstructions, and cultural forms.

Students interested in a minor in dance should contact the Director of Dance for guidance on the curriculum.

The minor in dance is structured as follows:

Theory Requirements

Three course credits.

DANC 250	History of Dance	1
DANC 262	Dance Composition	1
An additional course focusing on a related element of dance including:		1
THEA 246	Scene Design	
THEA 248	Theatrical Lighting Design	
THEA 251	Costume Design	

Additional classes are subject to approval.

Total Credits		3
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Technique Requirements

Three course credits total.

Students are required to complete the following advanced technique courses:

DANC 220	Modern Dance Technique II	.5
DANC 240	Ballet Technique II	.5
Additionally, students must complete two of the following advanced technique courses:		1

DANC 205	Jazz Dance Technique II	
DANC 220	Modern Dance Technique II	
DANC 240	Ballet Technique II	
DANC 320	Modern Dance Technique III	
DANC 340	Ballet Technique III	

Students may also choose up to two alternative dance techniques including: 1

DANC 105	Jazz Dance Technique I	
DANC 120	Modern Dance Technique I	
DANC 140	Ballet Technique I	
DANC 200	Art of Chinese Watersleeve	
DANC 205	Jazz Dance Technique II	
DANC 220	Modern Dance Technique II	
DANC 240	Ballet Technique II	
DANC 263	World Dance and Culture	
DANC 273	American Social Dance	
DANC 320	Modern Dance Technique III	
DANC 335	Advanced Training and Technique	
DANC 340	Ballet Technique III	

DANC 355

Pointe and Variations

Total Credits

3

Departmental Learning Goals:

- Learning Goal A - Develop an understanding of Western dramatic literature and performance styles as a part of humanistic and cultural studies.
- Learning Goal B - Integrate knowledge of defining elements of performance style and methodology of approach into performance practice.
- Learning Goal C - Develop knowledge of visual literacy in the relation of artistic media to theatre styles.
- Learning Goal D - Synthesize the critical, analytical and creative aspects of theatre through writing or oral presentation.
- Learning Goal E - Integrate elements of design and principles of composition with technology into production practice.
- Learning Goal F - Create effective production laboratory projects through research, interpretation, conceptual discussion and practice.
- Learning Goal G - Create effective production laboratory projects through strong collaborative practice.

Translation Studies Minor

Faculty

Co-coordinators: Elizabeth L. Armstrong, Katherine M. Faull

Translation Studies is an interdisciplinary area within the humanities that incorporates the study of the theory of translation with the practice of translation from one language to another. Translation (distinct from interpretation) refers to written work encompassing a full spectrum of genres, from literary translation of prose and poetry, to translation of what is referred to as informational texts such as manuals, legal briefs, and other commercial documentation.

Students in the Translation Studies minor will engage in an examination of translation from multiple perspectives that provide them with an educational pathway toward the acquisition of general and specific knowledge about the field of Translation Studies, its history, evolution, and theories. Further, they will be trained in the practice of critical thinking about language use and translation; and broaden and deepen their understanding of translation as it relates to power relations, politics, ethics, cultural issues, gender, post-colonialism, etc. Additionally, the minor in Translation Studies provides students with an opportunity to acquire important skills in their respective target language(s); skills such as conducting research in preparation for translation, sound writing skills in one's source language, learning proper analytical processes and appropriate use of current technological resources in the field.

A minor in Translation Studies consists of four courses.

Two courses in Translation Studies:

HUMN 260/EAST 205	Introduction to Translation Studies	1
HUMN 340	Seminar in Translation Studies	1

One course in Linguistics:

LING 105	Linguistic Analysis: Sounds and Words	1
or LING 110	Linguistic Analysis: Sentences and Dialects	
or SPAN 239	Hispanic Linguistics	

One elective chosen from:

any course in LING		
any 300-level course, beyond that required for a language major, in a language other than English (if not offered in that program, a 200-level or independent study)		
PHIL 227	Philosophy of Language	1

In addition to course work, a student wishing to declare a Translation Studies minor must also demonstrate high intermediate level language proficiency in the most commonly taught languages (ACTFL Category 1, 2- French, Italian, Spanish, German); or low intermediate for less commonly taught languages (ACTFL Categories 3, 4 - Greek, Latin, Hebrew, Russian, Arabic, Chinese and Japanese).

Students who are native speakers of a language other than English and who wish to declare a Translation Studies minor are exempt from the language proficiency requirement.

University Courses (UNIV)

Faculty

Coordinator: Robert M. Midkiff Jr.

These are intended to provide an opportunity to examine problems, programs of research, plans of study, and methods of learning that may not be wholly appropriate in existing departmental curricula. Thus, University Courses are interdisciplinary and cross-departmental in character. Normally University Courses are open as to size, as well as method of instruction, and meeting times.

University Courses may be limited to first-year or upperclass students. Prerequisites for admission may or may not be designated depending upon the objectives of the particular course. The courses may be taught by one or more instructors.

Women's and Gender Studies (WMST)

Faculty

Associate Professors: Coralynn V. Davis, Susan A. Reed (Chair)

Assistant Professor: Thelathia Nikotris Young

Visiting Assistant Professor: Erica Delsandro

Coordinating Committee: Thomas H. Beasley (Classics and Ancient Mediterranean Studies), Logan J. Connors (Languages, Cultures & Linguistics-French), Coralynn V. Davis (Women's and Gender Studies), Erica Delsandro (Women's and Gender Studies), William F. Flack (Psychology), Sheila M. Lintott (Philosophy), Collin McKinney (Spanish), Anna Paparcone (Languages, Cultures & Linguistics-Italian), Susan A. Reed (Women's and Gender Studies), James Mark Shields (Comparative Humanities), B. Ann Tlusty (History), Thelathia Nikotris Young (Women's and Gender Studies)

Women's and Gender Studies is distinguished by its interdisciplinary nature. The two central goals of Women's and Gender Studies at Bucknell University are the examination of history, society, science, and culture from feminist theoretical perspectives, and the strengthening of analytical thinking and inquiry through special attention to women's experiences, the construction of femininity and masculinity, the relations between women and men, and the differential power structures that create these social categories. The major and minor in Women's and Gender Studies are designed to provide the breadth of exposure, critical perspective, and research tools necessary for understanding the social construction of gender in its relation to race, ethnicity, class, sexuality, disability, and age both in the past and present. The program of study frames questions of gender and feminisms in ways that connect the local to the global and promote an understanding of the relations of power among nations and cultural constituencies.

A major in Women's and Gender Studies at Bucknell University may provide the first stage for graduate work in a number of disciplines. (Some departments at Bucknell offer courses at the graduate level in Women's and Gender Studies.) It also offers a background for careers in local and state agencies addressing the needs of girls and women, and in fields such as journalism, law, medicine, international affairs, teaching, and personnel management, as well as in public and private corporations.

Major in Women's and Gender Studies

The minimum requirement for a **major** in Women's and Gender Studies is eight courses. No more than two 100-level courses can count toward the major. Students majoring in Women's and Gender Studies must distribute their courses as follows:

WMST 150	Introduction to Women's and Gender Studies ¹	
Select one of the following:		1
WMST 220	Introduction to Feminist Theory in Practice ²	
WMST/PHIL 230	Feminist Philosophy ²	
Select one of the following with a global focus:		1
WMST 221/EAST 222	Passion/Perversion: Japan Film	
WMST/ANTH 232	Gender and Sexuality in South Asia	
WMST/RELI 233	Global Feminism and Religion	
WMST/RELI 248	Religions of the African Diaspora	
WMST 251	Women and Development	
WMST/ANTH 271	Dance and Culture	
GEOG 323	Gender and Geography	
SPAN 295	Topics in Spanish	
Select one of the following courses with a focus on the United States:		1
WMST 212/ENLS 211	Southern Exposure	
WMST/RELI 219	Contemporary Religion: Race, Gender, and Sexuality	
WMST 222	Queer Studies	
WMST/ECON 236	Unemployment and Poverty	
WMST/RELI 239	Queering (Christian) Theology	
WMST/ENLS 315	Unsettling Memories	
WMST 318/ECON 319	Economic History of Women in the United States	

WMST/SOCI 328	Mating and Marrying in America	
WMST/SOCI 332	Women and the Penal System	
WMST 333	Black Feminism	
Three courses from the Women's and Gender Studies approved course list selected in consultation with a Women's and Gender Studies adviser		3
WMST 400	Advanced Seminar in Women's and Gender Studies ³	

¹ The Department of Women's and Gender Studies urges majors to take WMST 150 Introduction to Women's and Gender Studies as early as possible in their major coursework, as this requirement is designed to introduce students to a number of important subject areas that may be studied in greater depth in subsequent courses. This course includes formal instruction in information literacy within the major.

² The Department of Women's and Gender Studies urges majors to take WMST 220 Introduction to Feminist Theory in Practice or WMST 230 Feminist Philosophy/PHIL 230 Feminist Philosophy relatively early in their major coursework, as this requirement is designed to introduce students to a number of theoretical developments in the field that will be explored further in subsequent courses. These courses include formal instruction in writing within the major.

³ WMST 400 Advanced Seminar in Women's and Gender Studies serves as the Culminating Experience (CE) for majors. Organized on a "workshop" model, the seminar will focus on the production of an independent research project by each student, with common readings on the practice of feminist scholarship. The seminar will take students through the steps of defining a question, producing an extensive bibliography and literature review on the topic, constructing an argument of their own that is grounded in feminist theory, and supporting it with evidence drawn from primary or secondary materials. Students will develop and give formal presentations of their projects.

Women's and Gender Studies majors may participate in the honors program, subject to the general guidelines of the University Honors Council. Applications should be made to the Women's and Gender Studies Coordinating Committee, after selecting an honors adviser from among the Women's and Gender Studies faculty.

Women's and Gender Studies Course List

The following courses are approved for the Women's and Gender Studies major and minor.

WMST 150	Introduction to Women's and Gender Studies	1
WMST/RELI 211	Women In Judaism	1
WMST 212/ENLS 211	Southern Exposure	1
WMST/RELI 219	Contemporary Religion: Race, Gender, and Sexuality	1
WMST 220	Introduction to Feminist Theory in Practice	1
WMST 221/EAST 222	Passion/Perversion: Japan Film	1
WMST 222	Queer Studies	1
WMST/ECON 224	African Political Economy	1
WMST/ENLS 225	Modernism on the Margins: Race, Class and Sexuality	1
WMST/ENLS 226	Prince-Pimp/Princess-Pornstar	1
WMST 227	Race and Sexuality	1
WMST/PHIL 230	Feminist Philosophy	1
WMST 231/PSYC 232	Psychology of Women	1
WMST/ANTH 232	Gender and Sexuality in South Asia	1
WMST/RELI 233	Global Feminism and Religion	1
WMST/UNIV 234	Transformative Dialogue and Social Justice	1
WMST/ECON 236	Unemployment and Poverty	1
WMST/CLAS 237	Ethnicity, Gender, and Identity in Antiquity	1
WMST/POLS 238	Women and Politics	1
WMST/RELI 239	Queering (Christian) Theology	1
WMST 242	Sex, Gender and Family during the Age of Empire	1
WMST/RELI 248	Religions of the African Diaspora	1
WMST 251	Women and Development	1
WMST/ECON 253	Gender and Migration	1
WMST/POLS 254	Sex and Social Order	1
WMST/ENLS 263	Sex and the Single Heroine	1
WMST 270	Special Topics in Women's and Gender Studies	1
WMST/ANTH 271	Dance and Culture	1
WMST/UNIV 274/RELI 275	BU in Cape Town, South Africa. Addressing the Legacy of Apartheid through Social Justice Initiatives	1

WMST/EDUC 290	Gender Issues in Education	1
WMST/ENLS 315	Unsettling Memories	1
WMST 318/ECON 319	Economic History of Women in the United States	1
WMST 319	Independent Studies	1
WMST 320	Independent Studies	1
WMST/GEOG 324	Geographies of Identity	1
WMST 325/HUMN 320	History of Sexuality	1
WMST/SOCI 328	Mating and Marrying in America	1
WMST/SOCI 332	Women and the Penal System	1
WMST 333	Black Feminism	1
WMST/CLAS 334	Women in Antiquity	1
WMST/ENLS 370	Special Topics in Women's and Gender Studies	1
WMST/UNIV 371	Dance, Culture and Politics	1
WMST 390	Honors in Women's and Gender Studies	1
WMST 400	Advanced Seminar in Women's and Gender Studies	1
ANTH 270	Sexuality and Culture	1
ARTH 201	Renaissance Women	1
CLAS 250	Topic in Classics (Sexuality and Eros in Antiquity)	1
CLAS 350	Seminar on a Classical Topic (Women in the Ancient World)	1
ENLS 211	Southern Exposure	1
ENLS 228	Gender and Sexuality in America	1
ENLS 370	Seminar in 19th-century English Literature (Nineteenth-century Women Writers)	1
ENLS 393	Seminar in Contemporary Drama (Feminism and Theatre)	1
FREN 220	Women in the Middle Ages and Renaissance (Pre-Revolutionary Women)	1
FREN 395	Seminar in French Studies (Women's Cinema)	1
FREN 395	Seminar in French Studies (Ecrivaines Francophones)	1
GEOG 323	Gender and Geography	1
GRMN 318	Contemporary German Cinema	1
HIST 238	Witchcraft and Magic in Europe	1
HIST 246	Medieval Heresies and Heretics	1
HIST 247	Topics in European History (Witches, Wenches, and Wives)	1
HIST 258	Topics in Women's and Gender History (Notions of Gender in Early Modern Europe)	1
HIST 279	Topics in the History of Science and Medicine (Sex, Race, Science)	1
HIST 330	European History (Fairy Tales as Historical Documents)	1
HIST 370	History of Science and Medicine (Early Modern Body)	1
HUMN 330	Studies in Autobiography	1
IREL 200	International Relations: Topics/Issues (Sex, Lies, and Capitalism)	1
MUSC 213	Women in Music	1
POLS 290	Topics in Politics (Gendering International Relations)	1
PSYC 306	Trauma Psychology	1
PSYC 373	Psychology of Race and Gender	1
SPAN 295	Topics in Spanish (Escritoras Hispanoamericanas)	1
SPAN 322	Modern Spanish Literature (Spanish Women Writers)	1
SPAN 326	Spanish Literature and Society of the 19th Century (Gender and Sexuality in Modern Spain)	1

Minor in Women's and Gender Studies

The **minor** in Women's and Gender Studies requires five courses:

WMST 150	Introduction to Women's and Gender Studies	
Select one of the following courses with a global focus:		1
WMST 220	Introduction to Feminist Theory in Practice	
WMST 221/EAST 222	Passion/Perversion: Japan Film	
WMST/PHIL 230	Feminist Philosophy	

WMST/ANTH 232	Gender and Sexuality in South Asia	
WMST/RELI 233	Global Feminism and Religion	
WMST/RELI 248	Religions of the African Diaspora	
WMST 251	Women and Development	
WMST/ANTH 271	Dance and Culture	
ENLS 315	Unsettling Memories	
GEOG 323	Gender and Geography	
SPAN 295	Topics in Spanish	
Select one of the following courses with a focus on the United States:		1
WMST 212/ENLS 211	Southern Exposure	
WMST/RELI 219	Contemporary Religion: Race, Gender, and Sexuality	
WMST 222	Queer Studies	
WMST/ECON 236	Unemployment and Poverty	
WMST/RELI 239	Queering (Christian) Theology	
WMST/ENLS 315	Unsettling Memories	
WMST 318/ECON 319	Economic History of Women in the United States	
WMST/SOCI 328	Mating and Marrying in America	
WMST/SOCI 332	Women and the Penal System	
WMST 333	Black Feminism	
Two courses from the Women's and Gender Studies approved list		2

No more than two of the five courses for the minor may share a departmental designation other than WMST.

Study off campus and/or abroad is strongly encouraged for both majors and minors in Women's and Gender Studies. Internships and field experience also are possible for course credit but should be planned and approved at least six months in advance of the semester in which they are to be taken.

Students wishing to declare a Women's and Gender Studies major or minor should contact a Women's and Gender Studies adviser.

Women's and Gender Studies Course List

The following courses are approved for the Women's and Gender Studies major and minor.

WMST 150	Introduction to Women's and Gender Studies	1
WMST/RELI 211	Women In Judaism	1
WMST 212/ENLS 211	Southern Exposure	1
WMST/RELI 219	Contemporary Religion: Race, Gender, and Sexuality	1
WMST 220	Introduction to Feminist Theory in Practice	1
WMST 221/EAST 222	Passion/Perversion: Japan Film	1
WMST 222	Queer Studies	1
WMST/ECON 224	African Political Economy	1
WMST 225/ENLS 224	Modernism on the Margins: Race, Class and Sexuality	1
WMST 226	Prince-Pimp/Princess-Pornstar	1
WMST 227	Race and Sexuality	1
WMST/PHIL 230	Feminist Philosophy	1
WMST 231/PSYC 232	Psychology of Women	1
WMST/ANTH 232	Gender and Sexuality in South Asia	1
WMST/RELI 233	Global Feminism and Religion	1
WMST/ECON 236	Unemployment and Poverty	1
WMST/CLAS 237	Ethnicity, Gender, and Identity in Antiquity	1
WMST/POLS 238	Women and Politics	1
WMST/RELI 239	Queering (Christian) Theology	1
WMST 242	Sex, Gender and Family during the Age of Empire	1
WMST/RELI 248	Religions of the African Diaspora	1
WMST 251	Women and Development	1
WMST/ECON 253	Gender and Migration	1
WMST/POLS 254	Sex and Social Order	1

WMST/ENLS 263	Sex and the Single Heroine	1
WMST 270	Special Topics in Women's and Gender Studies	1
WMST/ANTH 271	Dance and Culture	1
WMST 274/RELI 275	BU in Cape Town, South Africa. Addressing the Legacy of Apartheid through Social Justice Initiatives	1
WMST/EDUC 290	Gender Issues in Education	1
WMST/ENLS 315	Unsettling Memories	1
WMST 318/ECON 319	Economic History of Women in the United States	1
WMST 319	Independent Studies	1
WMST 320	Independent Studies	1
WMST/GEOG 324	Geographies of Identity	1
WMST 325/HUMN 320/ENLS 394	History of Sexuality	1
WMST/SOCI 328	Mating and Marrying in America	1
WMST/SOCI 332	Women and the Penal System	1
WMST 333	Black Feminism	1
WMST/CLAS 334	Women in Antiquity	1
WMST/ENLS 370	Special Topics in Women's and Gender Studies (Nineteenth-century Women Writers)	1
WMST/UNIV 371	Dance, Culture and Politics	1
WMST 390	Honors in Women's and Gender Studies	1
WMST 400	Advanced Seminar in Women's and Gender Studies	1
ANTH 270	Sexuality and Culture	1
ARTH 201	Renaissance Women	1
CLAS 250	Topic in Classics (Sexuality and Eros in Antiquity)	1
CLAS 350	Seminar on a Classical Topic (Women in the Ancient World)	1
ENLS 228	Gender and Sexuality in America	1
ENLS 370	Seminar in 19th-century English Literature (Nineteenth-century Women Writers)	1
ENLS 393	Seminar in Contemporary Drama (Feminism and Theatre)	1
FREN 220	Women in the Middle Ages and Renaissance (Pre-Revolutionary Women)	1
FREN 395	Seminar in French Studies (Ecrivaines Francophones)	1
FREN 395	Seminar in French Studies (Women's Cinema)	1
GRMN 318	Contemporary German Cinema (Contemporary German Cinema)	1
GEOG 323	Gender and Geography	1
HIST 238	Witchcraft and Magic in Europe	1
HIST 246	Medieval Heresies and Heretics	1
HIST 247	Topics in European History (Witches, Wenches, and Wives)	1
HIST 258	Topics in Women's and Gender History (Notions of Gender in Early Modern Europe)	1
HIST 279	Topics in the History of Science and Medicine (Sex, Race, Science)	1
HIST 330	European History (Fairy Tales as Historical Documents)	1
HIST 370	History of Science and Medicine (Early Modern Body)	1
HUMN 330	Studies in Autobiography	1
IREL 200	International Relations: Topics/Issues (Sex, Lies and Capitalism)	1
MUSC 213	Women in Music	1
POLS 290	Topics in Politics (Gendering International Relations)	1
PSYC 306	Trauma Psychology	1
PSYC 373	Psychology of Race and Gender	1
SOCI 241	Marriages and Families in the 21st Century	1
SOCI 309	How Holocausts Happen	1
SOCI 328	Mating and Marrying in America	1
SPAN 295	Topics in Spanish (Escritoras Hispanoamericanas)	1
SPAN 322	Modern Spanish Literature (Spanish Women Writers)	1
SPAN 326	Spanish Literature and Society of the 19th Century (Gender and Sexuality in Modern Spain)	1

Upon graduation, Women's and Gender Studies majors will:

1. Cultivate knowledge of women's lives, historically and in the present, in the U.S. and in other cultural contexts.
2. Develop analytical facility with key Women's and Gender Studies concepts, including gender, sexuality, sexism, patriarchy, intersectionality, privilege and oppression.
3. Cultivate knowledge of the range of, and key debates in, feminist theory.

COLLEGE OF ENGINEERING

The College of Engineering is dedicated to providing outstanding educational opportunities in engineering to a predominantly undergraduate student body. In accord with the University's Mission Statement, the College nurtures the intellectual, professional, and personal development of its students. The College strives to prepare them for entry into the engineering profession, related fields, and graduate programs, and for continuing development as highly competent professionals and responsible members of society.

A Bucknell University engineering education is distinguished by frequent interaction between students and faculty, a strong laboratory component in the curricula, and an emphasis on learning within a liberal arts university environment. The faculty are dedicated to teaching excellence and are actively engaged in scholarship in support of the educational mission, the discipline, or the profession.

Curricula Overview (EG)

Curricula in the College of Engineering lead to the degrees of Bachelor of Science in the disciplines of biomedical, chemical, civil, computer, electrical, environmental, and mechanical engineering, as well as the Bachelor of Science in computer science and engineering. Integrated five-year liberal arts/engineering programs, leading to Bachelor of Science and Bachelor of Arts degrees or a Bachelor of Science and Bachelor of Management for Engineers degree, are also offered. In addition, students may choose to integrate their studies by concentrating their electives to pursue interests in a particular area such as biomedical or environmental engineering. The cross-disciplinary nature of these studies allows students from several disciplines to participate in available courses.

Each of the engineering programs emphasizes the fundamentals of mathematics, natural sciences, and engineering science, combined with specialized study in a particular discipline and broadening studies in the humanities and social sciences. Students interested in pursuing computer science as a major may do so as an option under the Bachelor of Science in computer science and engineering curriculum or under the Bachelor of Science degree program or the Bachelor of Arts degree program.

Programs in Engineering

The programs leading to the degrees of Bachelor of Science in biomedical, computer science and engineering, chemical, civil, electrical, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET (ABET.org (<http://www.ABET.org>)). The Bachelor of Science in computer science and engineering degree program is also accredited by the Computing Accreditation Commission of ABET (ABET.org (<http://www.ABET.org>)). All of the programs, including computer engineering and environmental engineering, are designed to develop in students a broad understanding of engineering disciplines, an appreciation of the engineer's individual and professional role in society, and a capacity for lifelong learning.

The undergraduate engineering programs cover four years, but in five years a student may complete a joint degree in liberal arts and engineering with a major in each college. First-year engineering students may select a specific engineering major when they enroll or remain undecided during the first semester. Engineering students may apply to change from one engineering program to another at the end of one or two semesters; later changes are more difficult but may be possible. Changes from one major program to another may be limited due to enrollment restrictions in the program. Students in the College of Arts and Sciences who apply to transfer to the College of Engineering will be subject to a review of their academic performance at Bucknell for entrance into any engineering program, and subject to enrollment limitations that may be in place in specific degree programs. Specific information may be obtained from the associate dean, College of Engineering. During the fall term, all first-year engineering students take calculus, physics, an elective, and an introductory engineering course, ENGR 100 Exploring Engineering (unless they have earned AP or other credit or have a special educational need). In the spring term, they take the first course in their engineering major. The sophomore year continues the emphasis on science and mathematics, and introduces courses in the engineering sciences, such as mechanics, thermodynamics, fluids, and materials. During the junior and senior years, most of the work is concerned with the principles of the student's major engineering discipline.

Each program contains courses in mathematics and natural sciences, a general education component, courses in engineering sciences, and courses in design, systems, and synthesis. The remaining courses, depending upon the specific program, may be in the student's engineering discipline or in electives.

Engineering as a profession strives to benefit society through the application of technology and science. Meaningful contributions from engineering graduates are achieved by balancing technical proficiency with a wider understanding of society. The General Education component provides engineering graduates with contextual sensitivity that will enable them to make impactful contributions throughout their careers given complex and global drivers of societal change. Exploring disciplinary perspectives, views, methodologies, and ways of knowing beyond the major are not only important aspects of a liberal arts experience, and a hallmark of a Bucknell education as stated in the University learning goals, but also a critical component of being an impactful engineer.

Students should develop a plan, in concert with their academic advisers, and then carry out that plan to use the courses that fulfill the General Education requirement, free electives, and in-major electives to achieve these wider goals. Possible paths include: exploring topics directly related to their engineering major, exploring a diverse set of courses, pursuing courses within a specific nontechnical area, or to pursue a minor.

To fulfill the General Education requirement, engineering students must complete five courses. One of the five courses must be a social science course and one must be an arts and humanities course. Of these two courses, one may be further specified by the student's degree program. The

remaining three courses may be fulfilled by any combination of social science, arts and humanities, university courses, residential college courses, or foundation seminars.

In the course of fulfilling a student's degree program, two additional requirements must also be met. All engineering students must fulfill the University writing requirement and must complete the college global perspectives requirement. The college global perspectives requirement is met through a Global Connections course or a Foreign Language course. The writing and the global perspectives requirements can be fulfilled by any course so designated in the student's degree program.

In addition, the engineering curricula reflect the increased importance of design in the education of today's students by an integration of design instruction from ENGR 100 Exploring Engineering through all four years to the senior design courses. The emphasis of all programs is on the development of a broad foundation in engineering and on the initiation of specialized study in a specific engineering discipline.

Whenever appropriate, students may engage in special projects in creative design or in independent study, or they may participate with a faculty member in a research project. Such projects may start in or be carried forward into the summer.

Several engineering departments offer a program of departmental honors in which selected majors may undertake special studies or investigations leading to graduation with honors.

Students are encouraged to work with their faculty advisers and department chairs to take full advantage of the flexibility of the engineering programs that makes possible special plans of study appropriate to their individual career objectives. Furthermore, with the approval of the department chair and the dean of the College of Engineering, degree requirements may be altered slightly to accommodate special needs of students with different academic backgrounds, and those who have transferred from other degree programs or from other institutions.

All engineering degree programs require the completion of 34 courses (42 in the combined liberal arts-engineering program and the engineering-management program) with a cumulative grade point average (GPA) of at least 2.00 overall and in engineering.

To satisfy the **University writing requirement**, a student must successfully complete three writing courses: one course designated W1 (which must be taken during the first year and which must be taken before the W2 courses), and two W2 courses (usually taken after the first year, but, in any case, at least one of which must be taken after the first year.) Lists of W1 and W2 courses are available on the Registrar's home page (bucknell.edu/Registrar) under Course Information.

Writing courses are designed to enhance the student's understanding of the writing process and to emphasize that writing is a way of learning as well as a communication skill. They may be taken in any department.

Students in the College of Engineering, through judicious choice of electives, may choose a departmental or interdepartmental minor.

Those students who wish to apply the principles, concepts, and methods from their prospective majors to define, understand, and solve problems in the life sciences and medical technology have several options.

1. Students may major in one of the eight Bachelor of Science programs in engineering and use their elective courses to concentrate on biology, chemistry, and biomedical engineering. (Biology students may elect to use their unrestricted electives to take engineering courses.)
2. Second, through a judicious choice of electives, engineering students may complete the **chemical and biological studies minor** or the **biomedical engineering minor**. The **chemical and biological studies minor** allows students to enhance their study of the basic chemical and biological sciences. Alternatively, students may elect the **biomedical engineering minor** that combines study of the basic biological sciences with their technological application.

Students majoring in chemical engineering or biomedical engineering are not eligible for the chemical and biological studies minor. Faculty advisers in these disciplines will advise students on the appropriateness of the various options in light of their particular career goals. Information on specific faculty advisers may be obtained from the Office of the Dean of Engineering. Students wishing to complete the premedical requirement should consult the pre-health professions adviser.

To complete the **chemical and biological studies minor**, students must successfully complete at least five courses as indicated below:

CHEM 211	Organic Chemistry I	1
CHEM 212	Organic Chemistry II	1
CHEM 351	Biochemistry I (CHEM 201 or CHEM 221 are prerequisites for these)	1
or CHEM 231	Analytical Chemistry	
or CHEM 202	General Chemistry II	
BIOL 205	Introduction to Molecules and Cells	1
BIOL 206	Organismal Biology	1

In order to declare a minor, a student should obtain a Declaration of Minor card from the Office of the Registrar and have it signed by the department chair offering the minor or by the coordinator for the particular interdepartmental minor. The completed and signed card should be returned to the Office of the Registrar before the end of the first two weeks of the last semester of the senior year (by September 9 for first semester graduates

and February 9 for second semester graduates). Students planning on summer graduation must have the card filed by the preceding March 1. Late declarations will not be recorded on the student's permanent record.

Program in Liberal Arts and Engineering

The five-year programs in liberal arts and engineering offer students the opportunity to obtain a broader education in the arts or sciences while completing the requirements for a major in engineering. Students may combine any Bachelor of Science degree program in engineering with any Bachelor of Arts degree. Upon successful completion of this program, the single degree, Bachelor of Science in the engineering major and Bachelor of Arts in the second major is awarded.

Students may enter these joint programs at any time during the first five semesters of one of the engineering B.S. programs. Students also may apply to enter this program from one of the programs in the College of Arts and Sciences. The timing for this change is critical because of the sequential nature of the courses in the engineering programs. Students interested in making this academic change should consult the associate dean of the College of Engineering as early as possible and not later than the third semester of study.

Students in this program must fulfill the distribution requirements and the major requirements for the degrees of Bachelor of Arts and either the Bachelor of Science in biomedical, chemical, civil, computer, electrical, environmental, or mechanical engineering, or Bachelor of Science in computer science and engineering. Suggested course sequences for each five-year program are available from the Office of the Dean of Engineering.

Program in Engineering and Management

The five-year program in engineering and management offers students the opportunity to combine the study of engineering in any of the engineering degree programs with a selected sequence of courses in management. Upon successful completion of this program, the joint degree, the Bachelor of Science in engineering degree (within a specific engineering discipline), and the Bachelor of Management for Engineers degree, is awarded. The degree has the same accreditation status as the four-year Bachelor of Science degree in the engineering program selected. See Bachelor of Management for Engineers (p. 175) for specific course requirements.

Prospective students interested in pursuing this five-year degree program are encouraged to apply for admission directly into the program. Students also may enter this joint degree program during the first four semesters of one of the engineering B.S. programs, and should consult with the associate dean of engineering as early as possible and not later than the third semester of study. Admission to this joint degree program may be limited by enrollment.

Suggested course sequences for the program and detailed information on the degree requirements are available from the Office of the Dean of Engineering and the Department of Management.

Graduate Studies

Bucknell University's graduate program leads to the degrees of Master of Science in chemical, civil, electrical, environmental, or mechanical engineering. Each graduate program is individually tailored to meet the needs, preparation, and goals of the student.

Undergraduate students who have completed three years in the chemical, civil, electrical, environmental, or mechanical engineering program at Bucknell, earned a cumulative grade point average of at least 3.0, and who show aptitude for graduate study, may apply for admission to the integrated 3-2 program. This program permits selected students to complete all requirements for both a Bachelor of Science degree and a Master of Science degree in five years. Those students who are selected receive a full tuition scholarship for the fifth year.

Traditional master's degree programs are offered in addition to the special 3-2 program. Assistantships are available. Information can be obtained from the Dean of Engineering or the Dean of Graduate Studies.

In addition to formal master's degree programs, any undergraduate student who has arranged to complete all undergraduate degree requirements may, with prior approval, take up to two courses for graduate credit. An application for graduate credit by undergraduate students may be obtained from the Office of Graduate Studies or the Office of the Registrar.

Areas of Study

- Areas of Study (p. 196)
 - Biomedical Engineering (BMEG) (p. 197)
 - Chemical Engineering (CHEG) (p. 199)
 - Civil Engineering (CENG) (p. 202)
 - Computer Engineering (CPEG) (p. 204)
 - Computer Science and Engineering (CSEG) (p. 205)
 - Electrical Engineering (ELEC) (p. 208)
 - Engineering (ENGR) (p. 210)
 - Environmental Engineering (EVEG) (p. 210)
 - Mechanical Engineering (MECH) (p. 212)

Biomedical Engineering (BMEG)

Faculty

Professors: James W. Baish (Chair), William E. King

Associate Professors: Daniel P. Cavanagh, Donna M. Ebenstein, Eric A. Kennedy, Joseph V. Tranquillo

Assistant Professor: Kathleen A. Bieryla

Affiliated Faculty: Mitchell I. Chernin, Margot Vigeant

Visiting Associate Professor: Susan R. Baish

Adjunct: Jove Graham

Mission Statement

The biomedical engineering department is dedicated to providing the best possible undergraduate biomedical curricula to meet the full range of needs of a highly selective undergraduate student body. The program is designed to ensure that our students are qualified to enter and succeed in the biomedical engineering profession through direct entry to the industrial workplace or further professional study. The department strives to achieve a process of continuous improvement of the curricula, provide a faculty that is professionally current in their field, and to maintain state-of-the-art facilities.

To do this, the department offers the following:

- A Bachelor of Science in biomedical engineering degree for students seeking a comprehensive education in biomedical engineering.
- A minor in biomedical engineering for students in other engineering disciplines seeking a basic competency in the discipline and enhanced background in the life sciences.
- Elective courses to support the needs of students outside of the major and minor programs.

Program Educational Objectives

The following Program Educational Objectives of the Department of Biomedical Engineering at Bucknell University are broad statements that describe what graduates are expected to attain within a few years of graduation. As graduates will pursue diverse career paths, these objectives are intended to apply to those who pursue technical and professional careers.

- Alumni will experience success in a variety of biomedical engineering-related postgraduate environments or other diverse areas that require technical and/or professional skills.
- Alumni will contribute to their fields or professions.
- Alumni will pursue professional development, including continuing or advanced education, relevant to their career path.

Bachelor of Science in Biomedical Engineering

The **Bachelor of Science** in biomedical engineering requirements are:

First Year

First Semester	Credits	Second Semester	Credits
ENGR 100	1	BMEG 210	1
MATH 201	1	BMEG 226	.5
PHYS 211	1	MATH 202	1
Elective	1	PHYS 212	1
		Elective	1
	4		4.5

Sophomore

First Semester	Credits	Second Semester	Credits
BMEG 250	1	BMEG 205	1
CHEM 211	1	BMEG 220	.5
MATH 211	1	CHEM 212	1
BMEG 409	.5	ENGR 240	1
Elective	1	MATH 212	1
	4.5		4.5

Junior

First Semester	Credits	Second Semester	Credits
BIOL 205	1	BMEG 300	1
CHEM 221	1	BMEG 408	.5
BMEG 350	1	CHEM 231	1
Elective	1	BIOL 221	1
		Elective	1
	4		4.5

Senior

First Semester	Credits	Second Semester	Credits
BMEG 400	1	BMEG 402	1
BMEG 401	1	Three electives	3
CHEM 343	1		
Elective	1		
	4		4

Total Credits: 34

The nine electives courses are distributed as follows:

- Five courses selected from any of the following: social science courses, arts and humanities courses, university courses, residential college courses, or foundation seminars. These five courses must include one course in arts and humanities and one course in social sciences.
- One approved 200+ level engineering, math, or science course from the list published by the department.
- One approved 300+ level engineering course from the list published by the department.
- One BMEG engineering elective course from the list published by the department.
- One course in any department or program of the University provided that the prerequisites are satisfied.

Of all courses in the student's degree program (required and elective courses):

- Three courses must fulfill the University writing requirement.
- One course must fulfill the college global perspectives requirement.

Minor in Biomedical Engineering

Engineering students not pursuing the Bachelor of Science in biomedical engineering may choose to pursue a **minor** in biomedical engineering. This minor is attained through a judicious use of electives that combine the study of the basic biological sciences with their area of technological interest. To complete the biomedical engineering minor, engineering students must successfully complete at least five credits from approved courses as follows. Additional courses may be approved by the Biomedical Engineering Department on a case-by-case basis.

At least two credits from the following list with at least one having a ¹ designation:

BMEG 421	Light-activated Therapy ¹	1
BMEG 431	Biomimetic Materials ¹	1
BMEG 441/ECEG 411	Neural Signals and Systems ¹	1
BMEG 451	Biomechanics and Injury Prevention ¹	1
BMEG 452	Human Factors ¹	1
BMEG 461	Brain, Mind and Culture ¹	1
BMEG 465	Biomedical Modeling ¹	1
BMEG 471/472	Advanced Topics in Biomedical Engineering ¹	1
BMEG 480/481	Biomedical Engineering Project	.5
BMEG 490/491	Biomedical Engineering Research	1
CHEG 452	Bioprocess Engineering	1
CHEG 454	Pharmaceutical Engineering	1
CHEG 460	Biomaterials: Materials in Medicine	1
MECH 476	Biomechanics	1

Select remaining credits from the above list or the following:

BIOL 205	Introduction to Molecules and Cells	1
BIOL 206	Organismal Biology	1

BIOL 207	Genetics	1
BIOL 221	Human Physiology	1
BIOL 312	Comparative Vertebrate Anatomy	1
BIOL 318	Principles of Physiology	1
BIOL 324	Neurophysiology	1
BIOL 326	Cytogenetics	1
BIOL 327	Molecular Biology	1
BIOL 328	Endocrinology	1
BIOL 340/CHEM 358	Biochemical Methods	1
BIOL 348	Immunology	1
BIOL 352	Cell Biology	1
BIOL 365	Introduction to Microscopy	1
CHEM 340	Biological Physical Chemistry	1
CHEM 351	Biochemistry I	1
CHEM 352	Biochemistry II	1
CHEM 358/BIOL 340	Biochemical Methods	1

Graduates of the program shall demonstrate the following learning outcomes which reflect ABET accreditation requirements:

- a. An ability to apply knowledge of mathematics, science, and engineering.
- b. An ability to design and conduct experiments, as well as analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d. An ability to function on multidisciplinary teams.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- i. A recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Chemical Engineering (CHEG)

Faculty

Professors: Jeffrey Csernica, William E. King, James E. Maneval, Michael J. Prince, William J. Snyder, Margot Vigeant (Associate Dean of Engineering)

Associate Professors: Daniel P. Cavanagh, Michael D. Gross, Erin L. Jablonski, Timothy M. Raymond (Chair), Brandon M. Vogel, Katsuyuki Wakabayashi, Wendelin J. Wright

Assistant Professor: Ryan Snyder

Visiting Assistant Professors: Dabrina Dutcher, Elif Eda Miskioglu

Mission Statement

The chemical engineering department is dedicated to providing educational opportunities in chemical engineering to a highly select, predominantly undergraduate student body of talented individuals. The department encourages close interactions between students and the faculty, who are dedicated to education and are actively engaged in scholarship that enriches the educational program. The program emphasizes active learning with a strong laboratory component. The department nurtures the intellectual, professional, and personal development of its students and faculty in order to prepare and encourage them to be highly competent professionals and responsible members of society.

Program Educational Objectives

Following the definition presented by ABET, the department's educational objective statement broadly reflects the career accomplishments and expectations of alumni who graduate from the program:

Alumni will experience success in a variety of postgraduate environments, including but not limited to, chemical engineering professional practice and advanced study.

Student Outcome Categories

The statements above are supported by a number of student outcomes, the attainment of which is regularly evaluated. In particular, these are designed to guide student growth and achievement in the four broad categories of:

- Technical Competency
- Intellectual Development
- Societal Responsibility
- Professional Development

For a complete listing of all individual student outcomes, please visit the department webpage bucknell.edu/ChemicalEngineering

Bachelor of Science in Chemical Engineering

The Bachelor of Science in chemical engineering requirements are:

First Year

First Semester	Credits	Second Semester	Credits
ENGR 100		1 CHEM 222	1
MATH 201		1 CHEG 200	1
PHYS 211		1 ENGR 215	.5
Elective		1 MATH 202	1
		CHEG 101	0
		Elective	1
	4		4.5

Sophomore

First Semester	Credits	Second Semester	Credits
CHEM 211		1 CHEM 212	1
ENGR 240		1 CHEM 231	1
MATH 211		1 ENGR 233	1
ENGR 211		.5 CHEG 210	1
Elective		1 CHEG 102	0
	4.5		4

Junior

First Semester	Credits	Second Semester	Credits
CHEM 343		1 CHEG 310	1
CHEG 300		1 CHEG 315	.5
CHEG 302		.5 CHEG 103	0
Two electives		2 Three electives	3
	4.5		4.5

Senior

First Semester	Credits	Second Semester	Credits
CHEG 320		1 CHEG 330	1
CHEG 400		1 CHEG 410	1
Two electives		2 CHEG 104	0
		Two electives	2
	4		4

Total Credits: 34

The following sequence of courses emphasizes design across the curriculum and develops the professional skills of communication, problem-solving, teamwork, and independent learning:

CHEG 200	Chemical Engineering Principles	1
ENGR 233	Chemical Engineering Fluid Mechanics	1
CHEG 300	Heat and Mass Transfer	1
CHEG 315	Unit Operations Laboratory	.5
CHEG 400	Process Engineering	1
CHEG 410	Project Engineering	1

The 12 elective courses shown above are distributed as follows:

- Five courses selected from any of the following: social science courses, arts and humanities courses, university courses, residential college courses, or foundation seminars. These five courses must include
 - *One course in arts and humanities*
 - *One course in social sciences*
- Three courses in each student's program must also fulfill the University's writing requirement. One course in each student's program must also fulfill the college's global perspectives requirement.
- Two courses selected from the list of approved technical electives published by the department that may be found on the department webpage bucknell.edu/ChemicalEngineering.
- Two additional courses in chemical engineering.
- Three unrestricted electives in any department or program of the University.

Three courses in each student's program must fulfill the University writing requirement that includes a W1 course taken in the first year and two subsequent W2 courses.

Through judicious choice and curricular planning, students may be able to select a concentration – a series of electives that will allow development of expertise in a particular sub-discipline of chemical engineering. The following concentrations are available: biological, environmental, materials, and process. Declaration of a concentration is optional. Up-to-date listings of courses that can be used toward a concentration, and other associated requirements, are maintained on the department webpage bucknell.edu/ChemicalEngineering.

The attainment of Student Outcomes is regularly evaluated. In particular, these are designed to guide student growth and achievement in four broad categories:

Technical Competency

- Students will display basic competency in each of the technical areas identified as essential to chemical engineers.
- Students will be able to apply knowledge of technical concepts beyond the specific course where material is first taught.
- Students can apply material beyond simple recall of facts.
- Students will have familiarity with, and ability to operate, modern laboratory equipment.
- Students gain an appreciation of health and safety concerns in the laboratory.
- Students will have the ability to apply appropriate software tools to help them solve problems.

Intellectual Development

- Students learn to solve realistic engineering problems that may not be fully specified and do not have a single answer.
- Students will exhibit skills for planning, designing, and conducting experiments or research, and analyzing information.

Societal Responsibility

- Students will be exposed to a balanced and broad-based curriculum, and will enhance their awareness of global and societal issues.
- Students will learn to analyze problems that include ethical, regulatory, and/or political issues.
- Students can identify and assess potential hazards throughout the design and operation of chemical processes.

Professional Development

- Students will achieve a satisfactory level of mastery of oral and written communication.
- Students will experience presenting their work to peers and/or professionals.
- Students will demonstrate a mastery of skills for effectively leading and participating in team activities.
- Students will demonstrate independent learning skills, particularly in the capstone design and laboratory courses.

- Students will recognize the importance of continual professional development.

Civil Engineering (CENG)

Faculty

Professors: Richard Crago, Thomas D. DiStefano (Chair), Jeffrey C. Evans, Matthew J. Higgins, James G. Orbison (Dean, College of Engineering, emeritus), T. Michael Toole (Associate Dean of Engineering), Ronald D. Ziemian

Associate Professors: Stephen G. Buonopane, Douglas Gabauer, Michael A. Malusis, Kelly A. Salyards

Assistant Professors: Michelle R. Beiler, Kevin Gilmore, Jessica Newlin, Deborah L. Sills, Corrie Walton-Macaulay

Visiting Assistant Professor: Jean Batista Abreu

Mission Statement

Bucknell University's civil engineering program strives to provide the best undergraduate civil engineering education possible within a four-year curriculum. The civil engineering degree program seeks to prepare our students to become responsible, contributing members of society, and to continue to develop personally and professionally after graduation. The program is designed to ensure that our students are qualified to enter, and succeed in, the civil engineering profession, enroll in graduate programs in civil engineering, or enter related industrial and business professions. Primary emphasis is placed on educational excellence achieved through a coherent and comprehensive curriculum, outstanding teaching, extensive student-faculty interaction, small class sizes, substantial laboratory and field trip experiences, and faculty scholarship that often directly involves students.

Program Goals

The civil engineering program seeks to prepare students to be successful professionals recognized for their:

1. critical thinking and problem solving based on a fundamental knowledge of humanities, social sciences, mathematics, science, engineering sciences, and a broad range of civil engineering technical areas;
2. consideration of global and societal concerns, ethics, and sustainability when making engineering decisions;
3. leadership and effective communication;
4. civil engagement and contributions to society; and
5. pursuit of lifelong learning and professional development.

Program Educational Objectives

- Graduates will attain a record of engagement in civil engineering, or other fields that require analytical and/or professional abilities.
- Graduates will attain a record of continuing professional development.
- Graduates will attain a record of contribution to their fields, professions, or society.

Bachelor of Science in Civil Engineering

The **Bachelor of Science** in civil engineering requirements are:

First Year

First Semester	Credits	Second Semester	Credits
ENGR 100		1 ENGR 101	.5
MATH 201		1 ENGR 229	1
PHYS 211		1 MATH 202	1
Elective: Recommended - an English course or foundation seminar that fulfills the W1 Writing Requirement		1 GEOL 250	1
		Elective	1
	4		4.5

Sophomore

First Semester	Credits	Second Semester	Credits
CHEM 201		1 ENGR 222	1
ENGR 230		1 ENGR 242	1
MATH 211		1 MATH 222	.5
MATH 226	.5	Elective	1

Elective	1 Science or Math elective	1
	4.5	4.5
Junior		
First Semester	Credits	Second Semester Credits
CEEG 300	1 ENGR 212	.5
CEEG 320	1 CEEG 330	1
CEEG 340	1 CEEG UL Course	1
CEEG 350	1 Elective	1
	Technical Elective	1
	4	4.5
Senior		
First Semester	Credits	Second Semester Credits
Elective	1 Two CEEG UL courses	2
CEEG UL Course	1 Elective	1
Technical Elective	1 CEEG 491	1
CEEG 490	1	
	4	4

Total Credits: 34

The four required CEEG upper-level (UL) courses shown above must be 400-level CEEG courses.

The 10 elective courses shown above are distributed as follows:

- One science or math elective: biology, chemistry, geology, physics, or math (200-level or higher) approved by the department.
- Five elective courses selected from any of the following: social science courses, arts and humanities courses, university courses, residential college courses, or foundation seminars. Of these five courses, one must be a course in arts and humanities and one must be ECON 103. At a minimum, one course must also fulfill the college's global perspectives requirement.
- Two unrestricted electives.
- Two technical electives: one must be either ENGR 200 Thermodynamics or ECEG 205 Electrical and Computer Engineering Fundamentals. The other must be selected from a preapproved list of courses.

Fulfillment of the MATH requirement may be achieved by completion of the five specified MATH courses at Bucknell University (see above), Advanced Placement credit, credit by examination at Bucknell, or approved transfer credit from another institution. Other MATH courses may fulfill this requirement, subject to approval by the Department of Civil and Environmental Engineering.

Each student must fulfill the University writing requirement by completing one W1 course in the first year, followed by at least two W2 courses in subsequent years.

Graduates of the program are expected to demonstrate the following learning outcomes, which reflect ABET accreditation criteria.

- a. An ability to apply knowledge of mathematics, science, and engineering
- b. An ability to design and conduct experiments, as well as analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d. An ability to function on multidisciplinary teams.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- i. A recognition of the need for, and an ability to engage in lifelong learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Computer Engineering (CPEG)

Faculty

Professors: Maurice F. Aburdene, John C. Bravman (President), R. Alan Cheville (Chair), Richard J. Kozick

Associate Professors: Peter M. Jansson, David F. Kelley, Robert M. Nickel, Michael S. Thompson, Joseph V. Tranquillo

Assistant Professors: Philip Asare, Amal Kabalan

Visiting Associate Professor: Meriel Huggard

Visiting Assistant Professor: Salem Ali A. Elsaiah

Mission Statement

The rapidly changing field of electrical and computer engineering has great impact on human well-being. To meet the trust placed in our profession, students and faculty in the Electrical and Computer Engineering Department continually strive to be:

- Aware - we recognize the social and ethical dimensions of engineering.
- Engaged - we seek transformative experiences and intellectual challenges.
- Skillful - we merge knowledge with application in our professional identity.
- Articulate - we are agile communicators who effectively reach diverse audiences.
- Collaborative - we compassionately support each other to reach our full potential.
- Contemporary - we create new opportunities by designing solutions to meaningful problems.

Program Educational Objectives

Bucknell's broad, liberal education allows graduates to choose from many possible career pathways. The Electrical and Computer Engineering programs supplement this liberal education with quantitative reasoning skills and the ability to address complex, abstract problems so that in the years following graduation Bucknell alumni...

- can utilize and adapt engineering analysis and design knowledge and skills to successfully address professional challenges across a diverse spectrum of career paths.
- are respected in their chosen field due to their professionalism, ethical grounding, effective communication skills, ability to work with others, and understanding of the broader societal contexts of engineering.
- apply their problem solving skills and passion for lifelong learning to their chosen endeavors.
- are actively engaged with their profession and community and continue to develop professionally, socially, and personally.

The first year requirements for the **Bachelor of Science** in computer engineering and **Bachelor of Science** in electrical engineering are identical:

Bachelor of Science in Computer Engineering

The **Bachelor of Science** in computer engineering requirements are:

First Year

First Semester	Credits	Second Semester	Credits
ENGR 100		1 CSCI 203	1
MATH 201		1 ECEG 120	1
PHYS 211		1 MATH 202	1
Elective		1 PHYS 212	1
	4		4

Sophomore

First Semester	Credits	Second Semester	Credits
CHEM 201		1 CSCI 206	1
CSCI 204		1 ECEG 226	.5
ECEG 225	.5	ECEG 240	1
MATH 211		1 MATH 212	1
Elective		1 Elective	1
	4.5		4.5

Junior

First Semester	Credits	Second Semester	Credits
CSCI 315	1	ECEG 301	.5
ECEG 320	1	ECEG 347	1
ECEG 350	1	MATH 241	1
Elective	1	Two electives	2
		4	4.5

Senior

First Semester	Credits	Second Semester	Credits
CSCI 320	1	CSCI 311	1
ECEG 400	.5	ECEG 401	1
ECEG 471	1	Two electives	2
Two electives	2		
		4.5	4

Total Credits: 34

The 10 elective courses shown above must be distributed as follows:

- Five courses that will fulfill the General Education requirement, selected from any of the following: social science courses, arts and humanities courses, university courses, residential college courses, or foundation seminars. These five courses must include one course in arts and humanities and one course in social sciences.
- Two courses chosen from the 300-level computer science or 400-level electrical engineering course offerings, except ECEG 495 Advanced Topics in Engineering Mathematics and independent study courses.
- Three unrestricted courses in any department or program in the University.

Three courses in each student's program must also fulfill the University writing requirement, and one course in each student's program must also fulfill the college global perspectives requirement. Note that ECEG 400 Project Planning and Engineering Design and ECEG 401 Electrical and Computer Engineering Design satisfy the W2 requirement.

At graduation a Bucknell electrical or computer engineer:

- 1) Knows the foundational principles of engineering and the context needed to use them by demonstrating...
 - an ability to apply knowledge of mathematics, science, and engineering
 - the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
 - a knowledge of contemporary issues
- 2) Possesses the skills and abilities needed to practice electrical or computer engineering by demonstrating...
 - an ability to design and conduct experiments, as well as to analyze and interpret data.
 - an ability to identify, formulate, and solve engineering problems

that, through the engineering design process, leads to

- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
 - an ability to communicate effectively
 - an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- 3) Possesses the professionalism and attitudes needed to be an electrical or computer engineer by demonstrating...
 - an ability to function on multi-disciplinary teams
 - an understanding of professional and ethical responsibility
 - a recognition of the need for, and an ability to engage in life-long learning

Computer Science and Engineering (CSEG)

Faculty

Professor: Xiannong Meng

Associate Professors: Stephen M. Guattery (Chair), Daniel C. Hyde, Luiz Felipe Perrone, Lea D. Wittie, Richard J. Zaccone

Assistant Professors: Christopher L. Dancy II, Brian R. King, Alan Marchiori, Darakhshan Mir, Evan M. Peck, Benoit Razet

Mission Statement

The mission of the computer science department at Bucknell University is to provide degree programs and courses, consistent with the missions of the University, the College of Arts and Sciences, and the College of Engineering, which meet the full range of needs of the talented, primarily undergraduate student body. To do this, the department provides the following:

- A Bachelor of Science in computer science and engineering degree program in the College of Engineering for students seeking a rigorous engineering education in computer software and hardware systems with an emphasis on computer software (students interested in more of a focus on hardware should consider the computer engineering program).
- A Bachelor of Science degree program in the College of Arts and Sciences for students seeking a solid foundation in the sciences while gaining an in-depth preparation in computer science.
- A Bachelor of Arts degree program in the College of Arts and Sciences for students seeking a broad understanding of the liberal arts while gaining an in-depth preparation in computer science.
- A minor in computer science for students seeking basic competency in the discipline.
- Support for the interdisciplinary computer engineering program offered by the electrical and computer engineering department.
- Basic courses to support the general educational needs of students outside of the degree programs and minor.

The department's philosophy has the following four principles:

- Departmental programs are based on a common core curriculum that supports the breadth of the discipline.
- Computer science courses focus on principles; where appropriate, specific systems are studied to illuminate the principles.
- Courses in the core curriculum typically have a substantial faculty-directed, hands-on component in the form of a regularly scheduled laboratory.
- Departmental degree programs provide the background and experiences appropriate for entering the workplace at the entry level or a variety of graduate programs.

Program Educational Objectives

Computer Science and Engineering degree graduates will be successful professionals in the computer science or other fields, and will be recognized for qualities associated with their Bucknell education. Such qualities include critical thinking, problem solving, and effective communication. Graduates will be prepared to pursue lifelong learning such as professional or advanced education.

Bachelor of Science in Computer Science and Engineering

The **Bachelor of Science** in computer science and engineering curriculum requires 12 course credits in computer science as specified below (computer science electives must be at the 300-level, and no more than one credit from any combination of CSCI 376 Computer Science Honors Thesis and CSCI 378 Individual Study in Computer Science may count toward the computer science elective requirement):

First Year

First Semester	Credits	Second Semester	Credits
ENGR 100	1	CSCI 203	1
MATH 201	1	MATH 202	1
PHYS 211	1	PHYS 212	1
W1 Course	1	Elective	1
	4		4

Sophomore

First Semester	Credits	Second Semester	Credits
CSCI 204	1	CSCI 205	1
CHEM 201 ¹	1	CSCI 206	1
MATH 211	1	MATH 222	.5
Elective	1	MATH 241 ²	1
		Elective	1
	4		4.5

Junior

First Semester	Credits	Second Semester	Credits
CSCI 208	1	CSCI 240	.5
CSCI 315	1	CSCI 311	1

ECEG 101	1 One Computer Science Elective	1
MATH 226	.5 ECEG 245	1
Elective	1 Elective	1
4.5		4.5

Senior

First Semester	Credits	Second Semester	Credits
CSCI 320	1	CSCI 476	1
CSCI 475	.5	One Computer Science Elective	1
MATH 343	1	Two Electives	2
Two Electives	2		
4.5			4

Total Credits: 34

¹ See department policy for use of AP credit in chemistry.

² Students, particularly those interested in a mathematics double major, may substitute the 1.5-credit combination of MATH 280 Logic, Sets, and Proofs and MATH 240 Combinatorics and Graph Theory for MATH 241 Discrete Structures.

The nine elective courses shown are distributed as follows:

- One laboratory course in the natural sciences.
- Five courses selected from any of the following: social science courses, arts and humanities courses, university courses, residential college courses, or foundation seminars. These five courses must include:
 - One course in arts and humanities
 - One course in social sciences
- Three courses in any department or program of the University, provided the prerequisites are satisfied.

Three courses in each student's program must also fulfill the University writing requirement and one course in each student's program must also fulfill the college's global perspectives requirement.

As an alternative to the Bachelor of Science in computer science and engineering curriculum, students may wish to consider the major in computer science offered in the Bachelor of Science curriculum or in the Bachelor of Arts curriculum. See the College of Arts and Sciences Course Descriptions for Computer Science (p. 53).

Graduates of the program are expected to demonstrate the following learning outcomes, which reflect ABET engineering and computing accreditation criteria:

Engineering:

- E-a. An ability to apply knowledge of mathematics, science, and engineering.
- E-b. An ability to design and conduct experiments, as well as analyze and interpret data.
- E-c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- E-d. An ability to function on multidisciplinary teams.
- E-e. An ability to identify, formulate, and solve engineering problems.
- E-f. An understanding of professional and ethical responsibility.
- E-g. An ability to communicate effectively.
- E-h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- E-i. A recognition of the need for, and an ability to engage in life-long learning.
- E-j. A knowledge of contemporary issues.
- E-k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Computing:

- C-a. An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline.
- C-b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- C-c. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- C-d. An ability to function effectively on teams to accomplish a common goal.
- C-e. An understanding of professional, ethical, legal, security and social issues and responsibilities.
- C-f. An ability to communicate effectively with a range of audiences.
- C-g. An ability to analyze the local and global impact of computing on individuals, organizations, and society.
- C-h. Recognition of the need for and an ability to engage in continuing professional development.
- C-i. An ability to use current techniques, skills, and tools necessary for computing practice.
- C-j. An ability to apply mathematical foundations, algorithmic principles, and computer science theory at the modeling, and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- C-k. An ability to apply design and development principles in the construction of software systems of varying complexity.

Electrical Engineering (ELEC)

Faculty

Professors: Maurice F. Aburdene, John C. Bravman (President), R. Alan Cheville (Chair), Richard J. Kozick

Associate Professors: Peter M. Jansson, David F. Kelley, Robert M. Nickel, Michael S. Thompson, Joseph V. Tranquillo

Assistant Professors: Philip Asare, Amal Kabalan

Visiting Associate Professor: Meriel Huggard

Visiting Assistant Professor: Salem Ali A. Elsaiah

Mission Statement

The rapidly changing field of electrical and computer engineering has great impact on human well-being. To meet the trust placed in our profession, students and faculty in the Electrical and Computer Engineering Department continually strive to be:

- Aware - we recognize the social and ethical dimensions of engineering.
- Engaged - we seek transformative experiences and intellectual challenges.
- Skillful - we merge knowledge with application in our professional identity.
- Articulate - we are agile communicators who effectively reach diverse audiences.
- Collaborative - we compassionately support each other to reach our full potential.
- Contemporary - we create new opportunities by designing solutions to meaningful problems.

Program Educational Objectives

Bucknell's broad, liberal education allows graduates to choose from many possible career pathways. The Electrical and Computer Engineering programs supplement this liberal education with quantitative reasoning skills and the ability to address complex, abstract problems so that in the years following graduation Bucknell alumni...

- can utilize and adapt engineering analysis and design knowledge and skills to successfully address professional challenges across a diverse spectrum of career paths.
- are respected in their chosen field due to their professionalism, ethical grounding, effective communication skills, ability to work with others, and understanding of the broader societal contexts of engineering.
- apply their problem-solving skills and passion for lifelong learning to their chosen endeavors.
- are actively engaged with their profession and community and continue to develop professionally, socially, and personally.

The first year requirements for the **Bachelor of Science** in electrical engineering and **Bachelor of Science** in computer engineering are identical:

Bachelor of Science in Electrical Engineering

The **Bachelor of Science** in electrical engineering requirements are:

First Year

First Semester	Credits	Second Semester	Credits
ENGR 100		1 CSCI 203	1
MATH 201		1 ECEG 120	1
PHYS 211		1 MATH 202	1
Elective		1 PHYS 212	1
		4	4

Sophomore

First Semester	Credits	Second Semester	Credits
CHEM 201		1 ECEG 226	.5
ECEG 225	.5	ECEG 240	1
MATH 211		1 ENGR 221	1
Elective (Science/Math Recommended)		1 MATH 212	1
Elective		1 Elective	1
		4.5	4.5

Junior

First Semester	Credits	Second Semester	Credits
ECEG 320		1 ECEG 301	.5
ECEG 350		1 ECEG 347	1
ENGR 240		1 ECEG 351	1
Elective		1 ECEG 390	1
		Elective	1
		4	4.5

Senior

First Semester	Credits	Second Semester	Credits
ECEG 400	.5	ECEG 401	1
ECEG 471		1 ECEG 480	1
ECEG 491		1 Two electives	2
Two electives	2		
		4.5	4

Total Credits: 34

The 10 elective courses shown above must be distributed as follows:

- Five courses that will fulfill the General Education requirement, selected from any of the following: social science courses, arts and humanities courses, university courses, residential college courses, or foundation seminars. These five courses must include one course in arts and humanities and one course in social sciences.

- One course at the 200-level or above in the natural sciences (physics and astronomy, chemistry, or biology) or the following:

MATH 241	Discrete Structures	1
MATH 245	Linear Algebra	1
GEOL 203	Physical/Environmental Geology	1
GEOL 250	Geology for Engineers	1
GEOL 334	Geophysics	1

- At least one 400-level elective course in electrical engineering, not including ECEG 495 Advanced Topics in Engineering Mathematics and independent study courses.
- Three unrestricted elective courses in any department or program of the University.

Three courses in each student's program must also fulfill the University writing requirement, and one course in each student's program must also fulfill the college global perspectives requirement. Note that ECEG 400 Project Planning and Engineering Design and ECEG 401 Electrical and Computer Engineering Design satisfy the W2 requirement.

At graduation a Bucknell electrical or computer engineer:

- 1) Knows the foundational principles of engineering and the context needed to use them by demonstrating...

- an ability to apply knowledge of mathematics, science, and engineering
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a knowledge of contemporary issues

2) Possesses the skills and abilities needed to practice electrical or computer engineering by demonstrating...

- an ability to design and conduct experiments, as well as to analyze and interpret data.
- an ability to identify, formulate, and solve engineering problems

that, through the engineering design process, leads to

- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- an ability to communicate effectively
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

3) Possesses the professionalism and attitudes needed to be an electrical or computer engineer by demonstrating...

- an ability to function on multi-disciplinary teams
- an understanding of professional and ethical responsibility
- a recognition of the need for, and an ability to engage in life-long learning

Engineering (ENGR)

Courses that include an engineering component and are relevant to more than one engineering discipline. An engineering component includes elements of engineering sciences, mathematics, exploration, historical or modern practice, or design.

Environmental Engineering (EVEG)

Faculty

Professors: Richard Crago, Thomas D. DiStefano (Chair), Jeffrey C. Evans, Matthew J. Higgins

Associate Professor: Michael A. Malusis

Assistant Professors: Kevin Gilmore, Jessica Newlin, Deborah L. Sills, Corrie Walton-Macaulay

Mission Statement

Bucknell University's environmental engineering program strives to provide the best undergraduate environmental engineering education possible within a four-year curriculum. The environmental engineering degree program seeks to prepare our students to become responsible, contributing members of society, and to continue to develop personally and professionally after graduation. The program is designed to ensure that our students are qualified to enter, and succeed in, the environmental engineering profession, enroll in graduate programs in environmental engineering, or enter related industrial and business professions. Primary emphasis is placed on educational excellence achieved through a coherent and comprehensive curriculum, outstanding teaching, extensive student-faculty interaction, small class sizes, substantial laboratory and field trip experiences, and faculty scholarship that often directly involves students.

Program Goals

The environmental engineering programs seek to prepare students to be successful professionals recognized for their:

1. critical thinking and problem solving based on a fundamental knowledge of humanities, social sciences, mathematics, science, engineering sciences, and a broad range of environmental engineering technical areas;
2. consideration of global and societal concerns, ethics, and sustainability when making engineering decisions;
3. leadership and effective communication;
4. civil engagement and contributions to society; and
5. pursuit of lifelong learning and professional development.

Program Educational Objectives

- Graduates will attain a record of engagement in environmental engineering, or other fields that require analytical and/or professional abilities.
- Graduates will attain a record of continuing professional development.
- Graduates will attain a record of contribution to their fields, professions, or society.

Bachelor of Science in Environmental Engineering

The **Bachelor of Science** in environmental engineering requirements are:

First Year

First Semester	Credits	Second Semester	Credits
ENGR 100		1 ENGR 101	.5
MATH 201		1 ENGR 229	1
PHYS 211		1 MATH 202	1
Elective: Recommended - English course or foundation seminar that fulfills the W1 Writing Program requirement		1 GEOL 250	1
		Sustainability Perspectives 1	1
	4		4.5

Sophomore

First Semester	Credits	Second Semester	Credits
CEEG 340		1 BIOL 208	1
CHEM 201		1 CEEG 442	1
ECON 103		1 ENGR 200	1
MATH 211		1 ENGR 222	1
MATH 226		.5 MATH 222	.5
	4.5		4.5

Junior

First Semester	Credits	Second Semester	Credits
CEEG 320		1 ENGR 212	.5
CEEG 350		1 CEEG 440	1
CEEG 445		1 Technical elective	1
Unrestricted elective		1 Unrestricted elective	1
		Sustainability Perspectives 2	1
	4		4.5

Senior

First Semester	Credits	Second Semester	Credits
CEEG 490		1 CEEG 491	1
CEEG 441		1 CEEG 444	1
Technical elective		1 CEEG 443	1
Sustainability Perspectives 3		1 Unrestricted elective	1
	4		4

Total Credits: 34

- Sustainability perspectives: four required (One course from each group on approved list, plus ECON 103 Economic Principles and Problems).
- Three unrestricted electives. These can be used to pursue additional interests or further develop expertise in a specific area.
- Two technical electives, selected from a pre-approved list of courses.
- Each student must meet the General Education Component, including the requirement for global and societal perspectives, through the selection of courses within the sustainability perspectives lists and the three unrestricted electives.
- Each student must fulfill the University writing requirement by completing one W1 course in the first year, followed by at least two W2 courses in subsequent years.
- Fulfillment of the MATH requirement may be achieved by completion of the five specified MATH courses at Bucknell University, Advanced Placement credit, credit by examination at Bucknell, or approved transfer credit from another institution. Other MATH courses may fulfill this requirement, subject to approval by the Department of Civil and Environmental Engineering.

Graduates of the program are expected to demonstrate the following learning outcomes, which reflect ABET accreditation criteria.

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as analyze and interpret data.

- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d. An ability to function on multidisciplinary teams.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- i. A recognition of the need for, and an ability to engage in lifelong learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Mechanical Engineering (MECH)

Faculty

Chair: Jeffrey C. Evans

Professors: Keith W. Buffinton (Dean, College of Engineering), Charles W. Knisely, Steven B. Shooter, Constance W. Ziemian

Associate Professors: M. Laura Beninati, Charles J. Kim, Mala M. Sharma, Peter C. Stryker, Wendelin J. Wright

Assistant Professors: Craig E. Beal, Indranil Brahma, Christine M. Buffinton, Emily M. Geist, Sarah J. Manoogian, Christopher J. Mordaunt, Nathan P. Siegel, Andrew R. Sloboda, Durul Ulutan

Visiting Assistant Professor: Stephen J. Covey

The discipline of mechanical engineering is the branch of engineering that deals predominantly with the conversion, transmission, and storage of mechanical and thermal energy; the generation, transmission, and control of forces; the production and regulation of mechanical motion; and the optimal use of materials in the design and fabrication of the requisite machines and mechanisms.

Mission Statement

The Department of Mechanical Engineering is committed to providing the best undergraduate mechanical engineering education possible within the constraints of a four-year curriculum. In accord with the College of Engineering Mission Statement, the mechanical engineering department strives to nurture the intellectual, professional, and personal development of its students. The mechanism for achieving the department's educational mission is the curriculum in mechanical engineering designed to satisfy its Program Educational Objectives. The department strives to achieve a process of continuous improvement of the curricula, to provide a faculty who are professionally current in their field, and to maintain state-of-the-art facilities.

Program Educational Objectives

The Department of Mechanical Engineering seeks to prepare students to be successful in engineering or other careers and to be recognized for qualities associated with their Bucknell University educational experiences. These qualities include, for example, critical thinking and problem solving, consideration of global and societal concerns, leadership and effective communication, civic engagement and contributions to society, and pursuit of lifelong learning.

Concentrations within Mechanical Engineering

Students may elect to pursue a concentration within the Mechanical Engineering program. A concentration consists of three courses from the following lists for concentration in Mechanics-Materials-Design (MMD) or in Thermo-Fluids-Energy (TFE).

Concentration in Mechanics-Materials-Design (MMD):

Any 400-level Mechanical Engineering elective with a course number from 450 to 480. Also, MECH 445 Engineering Acoustics and Noise Control, MECH 446 Flow-induced Noise and Vibration, MECH 485 Advanced Engineering Problems (with a MMD topic) .

Concentration in Thermo-Fluids-Energy (TFE):

Any 400-level Mechanical Engineering elective with a course number from 400 to 449. Also, MECH 485 Advanced Engineering Problems (with a TFE topic).

Bachelor of Science in Mechanical Engineering

The **Bachelor of Science** in mechanical engineering requirements are:

First Year

First Semester	Credits	Second Semester	Credits
First-year W-1 course		1 MECH 220	1
MATH 201		1 MATH 202	1
ENGR 100		1 ENGR 214	1
PHYS 211		1 MECH 202	.5
		Elective	1
	4		4.5

Sophomore

First Semester	Credits	Second Semester	Credits
MECH 222	.5	MATH 212	1
MATH 211		1 MECH 353	1
ECEG 205		1 ENGR 240	1
MECH 213		1 MECH 216 ¹	1
Elective	1		
	4.5		4

Junior

First Semester	Credits	Second Semester	Credits
MECH 313		1 MECH 302	1
MECH 355 ¹		1 MECH 312	1
MECH 252		1 MECH 392	1
MECH 151 ²		0 Elective	1
Elective	1		
	4		4

Senior

First Semester	Credits	Second Semester	Credits
MECH 401	.5	MECH 402	.5
MECH 403		1 Four electives	4
MECH 405	1		
Two electives	2		
	4.5		4.5

Total Credits: 34

¹ These two courses (MECH 216 Thermodynamics II and MECH 355 Manufacturing Processes) are required. Students seeking an optional concentration in the thermal fluids energy area (TFE) or in the mechanics materials design area (MMD), may replace one of these two courses with a second 400-level MECH elective.

² There is zero credit for the course MECH 151 Machining for Manufacturing Technology.

The 11 elective courses shown above are distributed as follows:

- One course in chemistry from the following list, to be taken during the first two years:

CHEM 201	General Chemistry I	1
CHEM 211	Organic Chemistry I	1
CHEM 221	Inorganic Chemistry I	1

- Select any TWO full-credit courses from the following:

1. any full-credit 200-level or 300-level course in astronomy, biology, chemistry, geology or physics for which prerequisites have been satisfied; or

2. any of the following courses:

BIOL 121	Biology for Non-majors	1
BIOL 122	Biology for Non-majors	1

GEOL 107	Global Change - Past and Present	1
GEOL 108	When Rocks Attack	1
GEOL 109	Energy and Natural Resources	1
GEOL 117	Environmental Geohazards (Any 100-level science course must be taken within the first three years)	1
Any 100-level science course must be taken within the first three years		

3. one science course may be replaced by MATH 245 Linear Algebra, MATH 280 Logic, Sets, and Proofs or any 300-level MATH course for which prerequisites have been met.

- The elective courses must include five courses selected from any of the following: social science courses, arts and humanities courses, university courses, residential college courses or foundation seminars. These courses must include one course in arts and humanities and one course in social sciences.
- Three courses in each student's program must also fulfill the University's writing requirement. One course in each student's program must also fulfill the college's global perspectives requirement.
- One 400-level or equivalent course in any department within the College of Engineering.
- One 400-level course in the Department of Mechanical Engineering or, with permission of the department, a course required for the expected fulfillment of a minor.
- One course in any department or program of the University.

Student Outcomes

Graduates of the program are expected to demonstrate the following learning outcomes which reflect ABET accreditation criteria:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in lifelong learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

ACADEMIC SUPPORT & CAMPUS LIFE

- The Writing Program (p. 215)
- The Office of Global and Off-campus Education (OGOE) (p. 215)
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Writing Program

As part of the undergraduate program, a student must successfully complete three writing-intensive courses (known as “W courses”), *i.e.*, a W1 course in the first year, followed by two W2 courses. These courses use writing to help students acquire both subject knowledge and writing proficiency. The W1 courses aim to teach expository skills and writing as a process and include Foundation Seminars and some introductory courses. The W2 courses are offered in most departments, and they may include courses required for a particular major, courses that help to fulfill a College Core Curriculum requirement, and courses that a student may choose as electives. A complete list of W1 and W2 courses is available through *myBucknell* at <https://my.bucknell.edu/x52976.html>.

Not every course that contains writing, even a great deal of writing, will be a W course. Courses approved as W courses have certain characteristics, as follows:

1. A W course provides explicit writing instruction. In writing and revising, students receive the help and advice of their instructor and/or peers. Writing instruction may take the form of written or oral responses to drafts and papers, and also may include reading about and discussing writing.
2. The W course instructors pay attention to and encourage the different stages of writing as a process: planning, drafting, revising, and editing. Writing is treated as a dynamic process of expressing one’s ideas in words and revising one’s ideas and words by reconsidering them in light of feedback from others. Writing is, therefore, not merely a written end-product, but a tool for learning and critical thinking.
3. The W course instructors will teach the conventions of writing needed by students. These conventions may vary from discipline to discipline and class to class. Students will be introduced to basic expository skills and the conventions appropriate to writing in the discipline of the course.
4. In a W course, students write frequently. Writing frequently does not necessarily mean numerous assignments. Students may write multiple drafts of a few assignments. The point is that to improve one’s writing, one must write. W courses provide the opportunity for the practice and feedback that are vital to writing effectively.
5. Students write to learn the subject matter of the course. “Writing to learn” may take many forms: notebooks, journals, laboratory reports, fieldwork reports, essays, and other formal and informal assignments. Students must think about the material in order to write about it, and understanding develops from opportunities to articulate the principles and ideas of the course.

Rules governing the University writing requirement are included in the introductory material for the College of Arts and Sciences and for the College of Engineering. This requirement is independent of the English requirement in some Engineering majors.

Global and Off-campus Education

The Office of Global and Off-campus Education (<https://www.bucknell.edu/about-bucknell/administrative-offices/international-education.html>) (OGOE) facilitates first-rate off-campus opportunities that accommodate a range of disciplines throughout diverse regions of the world. The Office works with students and faculty to identify and promote programs that support Bucknell University’s educational goals, combine outstanding academic coursework and experiential learning in a safe and supportive environment, and integrate into the students’ undergraduate plans of study to the fullest extent possible. Through this, the Office strives to enhance students’ cross-cultural competency through international programs that facilitate a deep understanding of the cultural, social, political, and historical conditions of the host country while highlighting the students’ unique positions as responsible actors in a global context.

The staff of The Office of Global and Off-campus Education (OGOE) advise and assist undergraduate students who wish to incorporate an off-campus study experience into their academic work. Bucknell University offers yearlong, semester, and summer off-campus study opportunities through third-party providers, Bucknell faculty-led programs, and university exchange programs.

Bucknell en España

Bucknell (<https://www.bucknell.edu/academics/majors-and-minors/spanish/bucknell-en-espa%C3%B1a.html>) *en España* offers a high quality academic and residential experience for Bucknell students who plan to study in Spain for a semester or a full academic year. Students choose from a wide variety of curricular options at the *Universidad de Granada's Centro de Lenguas Modernas* to advance their major or minor studies in Spanish or to complement other programs of study at Bucknell. Very advanced students may enroll directly in selected courses at the *Universidad de Granada*. A Bucknell faculty member, normally from the Department of Spanish, serves as Professor-in-Residence and teaches a required course that combines an orientation to life in contemporary Spain, the study of key elements of Spanish cultural history, and reflections on the cross-cultural experience. Students' immersion in the culture is facilitated by their residence with carefully selected Spanish families. Students are encouraged to participate in additional immersion activities provided by Bucknell *en España* and by the *Centro de Lenguas Modernas* to enhance their interaction with the Spanish-speaking community.

The program is centered in Granada, an Andalusian city of approximately 250,000 inhabitants, located at the foot of the perennially snowcapped Sierra Nevada mountains, one hour from the Mediterranean *Costa del Sol*. The *Universidad de Granada* is one of Spain's most prestigious universities and its *Centro de Lenguas Modernas* (CLM) is recognized as a leader in the area of Spanish and Hispanic Studies for non-native speakers. The Bucknell *en España* program is open to all Bucknell students in good standing who have completed SPAN 207 Toward Advanced Spanish or its equivalent. The Professor-in-Residence teaches a course that begins with an orientation for students with regard to the culture of Spain and Granada, in particular. This course begins upon the group's arrival in Spain and lasts until the end of the semester; it includes all of the group travel to cultural sites throughout Spain, and students' reflections on their experience of these sites, in addition to more traditional class discussion and interpretive essays. Upon arrival in Spain, students engage in intensive language instruction to assure their preparedness for their semester or year-long program of study.

Normally, students who have completed at least six semesters of language study at Bucknell (SPAN 208 Advanced Conversation and Composition) enroll in the advanced *Estudios Hispánicos* at the CLM, which includes courses in anthropology, art history, Spanish and Latin American cultures, dance, economics, geography, history, language and linguistics, literature and film, management, music, political science, sociology, translation, women's studies, and in the spring semester, health and environmental studies.

Most students who have completed only four or five semesters of Spanish, or the equivalent, normally enroll in *Lengua y Cultura Española*, which offers a slightly smaller selection of courses in anthropology, art history, Spanish and Latin American cultures, dance, economics, geography, history, language and linguistics, literature, management, political science, and sociology. Very advanced students who plan to stay for the full academic year or for the spring semester may register for one regular university course offered by the *Universidad de Granada*.

In order for students' coursework from the *Centro de Lenguas Modernas* or the *Universidad de Granada* to count toward their major at Bucknell, it must be approved by the department chair or program director of the major.

Bucknell en France

Founded in 1987, Bucknell (<https://www.bucknell.edu/academics/majors-and-minors/french-and-francophone-studies/bucknell-en-france.html>) *en France* provides an opportunity for all Bucknell University students, regardless of major or background in French, to enrich their Bucknell University education by studying in France for an academic year or a semester. The program is located in Tours, a prosperous and culturally rich city of 260,000 people situated in the very heart of France, 150 miles southwest of Paris in the Loire Valley. Bucknell *en France* is administered by the Bucknell University French and Francophone Studies program in cooperation with the *Université François Rabelais*, a French university of 29,000 students. Students are accompanied by a Bucknell Professor-in-Residence who is a member of the French and Francophone Studies program. They are also supported by a permanent program coordinator in Tours. Students live with host families, take courses in a variety of disciplines, go on excursions, and participate in cultural and athletic activities in the city.

Students remain officially enrolled at Bucknell University and at the same time are registered as students of the *Université François Rabelais*. Courses are taught in French, integrated into the Bucknell University curriculum and students receive Bucknell University grades and credit. Courses approved by a student's adviser count toward the major or minor. Our French host university offers courses from a wide variety of disciplines such as art, art history, biology, chemistry, economics, education, engineering, history, language, linguistics, literature, management, philosophy, political science, psychology, and translation. Student schedules are individually tailored to match their curricular needs, interests, and level of French proficiency. The first two weeks of study are spent in intensive language study at the *Institut de Touraine*. While a semester's stay in Tours is highly beneficial, students who remain for the year have significantly more time to increase their language proficiency, integrate more fully in the French culture, travel in France and Europe, and consolidate the benefits of their experience abroad.

Students who do not meet the minimum language requirement for participation in the regular Bucknell *en France* program can enroll in a semester of intensive French at the *Institut de Touraine*, where they can earn credit for the equivalent of three Bucknell University French courses. A fourth course is offered by the *Université François Rabelais*.

Some highlights of the Bucknell *en France* program include guided integration into a French university system with on-site academic support; individualized language assessment throughout the semester/year; preparation for the internationally recognized DELF exam (*Diplôme d'études*

de langue française); engagement in Service Learning consisting of English tutorial to French students providing students a “mirror” in which to contemplate their own linguistic and cultural assimilation; contextualized excursions to various regions in France (e.g., Normandy, Provence, or Dordogne in southwestern France), Loire Valley châteaux, and patrimony sites in Tours; visits to artisanal sites (e.g., winery, goat cheese farm, glass blowing studio, florist); workshops on French cooking; integration into experienced French host families; contact with French student mentors; drama workshops with professional coaching for pronunciation, speech, and body language; daylong internships (e.g., bakery, chocolate making, student teaching, archaeological digs); extracurricular opportunities (e.g., choir, rugby, fencing, archery, yoga, hip hop, soccer).

The academic calendar of Bucknell *en France* is similar to Bucknell University's with adjustments for the French academic year. The first semester begins in early September and ends in mid-December. The spring semester runs from early January until mid-May.

Students are placed with host families and so have an opportunity to experience life in French society, to make friends among the French people, and to speak French in all aspects of life. Students have a private room and typically take breakfast and the evening meal daily with their host family. They eat lunch on their own in town or in one of the student restaurants. Returning students consider their experience living with the French family to be one of the most valuable aspects of their study in Tours.

The fee for Bucknell *en France* is the same as tuition on campus and includes round-trip airfare between a New York-area airport and Paris, charter bus from Paris to Tours upon arrival, *Université François Rabelais* fees, and organized excursions and group activities. Room and board costs are based on the Bucknell University comprehensive fee for room and board. Payments for tuition, room and board will be billed by Bucknell University and will be due at the same time as for on-campus students.

Bucknell in Athens, Greece

The joint Bucknell/PSU Athens semester study-abroad program consists of an annual spring program, open to qualified juniors and seniors. The program is led by either a Bucknell or Penn State faculty member in Classics and Ancient Mediterranean Studies who directs a program of courses centered upon ancient Greek culture, history, mythology, and archaeology, including also his/her own fields of expertise.

Students will be enrolled in a Greek language course and four additional courses for a total of five Bucknell University credits.

All courses are designed to take full advantage of the program's location in beautiful Greece, offering numerous day and overnight field trips to sites around Greece, such as Crete, Sparta, Delphi, Olympia, and of course, Athens.

All courses receive Bucknell University grades and credit. Students are housed in flats in central Athens and pay Bucknell tuition plus room fees.

Bucknell in Ghana

Bucknell in Ghana is the only Bucknell University faculty-led semester program in Africa. Hosted by the Africana Studies Program, the program runs in the spring semester each year beginning in 2016. One or two Bucknell faculty develop a course with an African theme to be taught off campus at the University of Cape Coast in Ghana. While in Ghana, students take a required course to be taught by the Bucknell faculty director and four other courses from the University of Cape Coast offerings. Students on the program also have the opportunity for weekend home visits and specially planned field trips to enable them to engage and understand the African culture in Ghana.

The University of Cape Coast is a comprehensive university with both undergraduate and graduate programs so most students will find courses that satisfy their major/minor requirements while on this program. Bucknell in Ghana is thus open to and appropriate for qualified juniors and seniors of all majors.

Students are housed in University of Cape Coast international student housing and take classes and participate in other academic/social activities with Ghanaian and other international students from various countries within the very hospitable Ghanaian culture.

By Bucknell University policy, all credits earned on this program transfer to fulfill Bucknell requirements but only the Bucknell faculty-taught course will receive Bucknell University grades.

Bucknell in London

Bucknell in London (<https://www.bucknell.edu/about-bucknell/administrative-offices/international-education/semester-and-full-year-programs/bucknell-in-programs/bucknell-in-london.html>) consists of two separate fall and spring programs, open to qualified juniors and seniors. The fall program is directed by two Bucknell faculty who develop a program of courses around a theme based on the London setting and on their own fields of expertise. Recent programs have combined, for example, history and art history, economics and engineering, and English and geography. There is a required core course taught jointly by the two directors, plus an additional four or five courses to choose from, some taught by British faculty.

The spring program is directed by a member of the Bucknell faculty, who teaches a course in his or her field and supervises a broader program of courses taught by British instructors. These generally include a mix of courses in the social sciences and humanities, such as History of London, The London Stage, British Art and Architecture, and courses in political science, economics, and/or literature.

In both the spring and fall, all courses are designed to take full advantage of the program's British location, offering numerous day and overnight field trips to sites in London and outside of London. All courses receive Bucknell University grades and credit. Students are housed in flats in central London and pay Bucknell tuition plus room fees.

Bucknell in Washington, D.C.

Bucknell in Washington, D.C., is an internship program offered during the spring of each academic year, and is open to all qualified juniors. The program will be led by a Bucknell University faculty member, who will design and teach two courses based around a particular theme or their own field of expertise.

In addition to the two Bucknell University-taught courses, students will enroll in an internship and additional elective course administered by American University professors. As part of the internship course, American University will train students how to seek out and find relevant internships for the program.

Students will be housed on the campus of American University, will have access to all American University campus amenities, and will be allowed to participate in all campus social activities.

Credits earned on Bucknell in Washington, D.C., will transfer as Bucknell University credits, and may fulfill major/minor or College Core Curriculum requirements.

Summer Opportunities

In addition to semester and full-year programs, Bucknell University students may participate in Bucknell in Summer Programs (<https://www.bucknell.edu/about-bucknell/administrative-offices/international-education/summer-programs/bucknell-in-summer-programs.html>) led by Bucknell University faculty, or summer programs offered by third-party providers. (<https://www.bucknell.edu/about-bucknell/administrative-offices/international-education/summer-programs/provider-summer-programs.html>) Each summer, numerous Bucknell in Summer Programs (<https://www.bucknell.edu/about-bucknell/administrative-offices/international-education/summer-programs/bucknell-in-summer-programs.html>) are offered in various locations. Students interested in Bucknell in Summer Programs (<https://www.bucknell.edu/about-bucknell/administrative-offices/international-education/summer-programs/bucknell-in-summer-programs.html>) should contact the appropriate faculty directors prior to submitting an application. Students applying to programs offered by third parties (<https://www.bucknell.edu/about-bucknell/administrative-offices/international-education/summer-programs/provider-summer-programs.html>) must schedule an appointment with The Office of Global and Off-campus Education (OGOE) to discuss possible program options.

Summer study abroad is open to all students regardless of class status. Eligibility requirements and applications deadlines will differ for each program but all students who plan to study abroad in the summer must have a history of good conduct. Students taking part in summer programs will be responsible for tuition and all other expenses.

For additional information, please contact the appropriate Bucknell in Program director or appropriate staff member in The Office of Global and Off-campus Education (OGOE).

Graduate Studies

Bucknell grants master's degrees in animal behavior, biology, chemistry, education (college student personnel), engineering (chemical, civil, electrical, environmental, and mechanical), English, mathematics, and psychology. Five-year coordinated bachelor's and master's programs are provided in chemistry and engineering.

Students are admitted to graduate standing by the dean of graduate studies. The *Graduate Studies Catalog* and applications for admission and graduate financial aid are also located on the web at bucknell.edu/GraduateStudies.

A regular undergraduate student with a strong record of academic achievement who has arranged to complete all undergraduate degree requirements may, with prior approval, take up to two courses for graduate credit. An application for graduate credit by an undergraduate student may be obtained from the Office of Graduate Studies.

Non-degree students wishing to enroll in graduate courses must apply to the Office of Graduate Studies.

Summer Session

Bucknell University provides a six-week summer session offering regular full-credit Bucknell courses, off-campus study courses, and programs in professional education. The summer session serves both undergraduate and graduate students who choose to take summer courses in order to enrich their educational experience or to accelerate their degree progress at Bucknell or elsewhere.

Bucknell's summer session offers courses across the curriculum. Students who are working toward degrees or certification are advised to consult with their advisers to determine which summer courses most appropriately meet their needs. Students also are encouraged to explore new interests

and to develop new skills and areas of expertise that will serve them well in any career path or interest pursuit. One of Bucknell's goals is to provide the means for fostering the growth and development of a lifelong commitment to learning.

College of Arts and Sciences

The College of Arts and Sciences offers courses across its divisions: in the arts and humanities, social sciences, and natural sciences and mathematics. Courses are available at introductory and advanced levels. Many departments also will arrange independent study courses.

College of Engineering

The College of Engineering also offers a number of regular courses, including at least one general course in engineering science. Courses in independent projects and special problems can be arranged in all departments of the college: chemical, civil and environmental, electrical, and mechanical. Students with specific needs for work in engineering during the summer should consult with their advisers or chairs of the appropriate departments.

Independent Study

Most departments in both colleges offer independent study or special project courses that permit students, in consultation with members of the faculty, to develop a course of study tailored to their individual needs. Arrangements for such courses should be made as early as possible in order to ensure that a faculty member willing to direct the student's study will be available during the summer.

Campus Facilities

Academic Buildings

Academic West, opened in August 2013, is a 70,000 square foot building that provides nine state-of-the-art classrooms, 10 flexible project/conference room spaces, a GIS laboratory, 60 faculty offices, and two suites to support cross-disciplinary faculty initiatives, such as the Institute for Public Policy. The building has a vegetated roof and energy efficient design and is LEED Silver rated.

The Animal Behavior Laboratory consists of offices, seminar rooms, computer rooms, and areas for the housing of animals, including quarantine cages and two all-weather enclosures in which two species of nonhuman primates live. The main building was built in 1947 and rebuilt in 1964 to serve its current function. In 1990, a major renovation of the facility was completed.

The Art Building, erected in 1890, provides classrooms and studios for art students. The art curriculum is supported by more than 10,000 square feet of classrooms and workshops, most of which are located in the **Art Barn**, a converted dairy barn on the west campus.

The Ellen Clarke Bertrand Library (built in 1951 and named for a generous benefactress) is the center of information services for the campus. Located in one of the landmark buildings at Bucknell University, the library is a leader among peer institutions in providing access to both an outstanding traditional print collection as well as the increasingly important world of digital information. The Information Commons on the first floor of the library provides students with one location to get assistance with everything from how to find resources to write a paper, to how to troubleshoot a computer or network problem. The library offers a variety of study spaces, network connections, databases, media services, and computer workstations. The Office of Civic Engagement relocated to the library in 2010.

The Botany Building was renovated in 1992. The building houses the Career Development Center and The Office of Global and Off-campus Education (OGOE).

The Breakiron Engineering Building opened for classes in the summer of 2004. The building, which expanded the facilities available to the College of Engineering by 45 percent, is connected at each floor to Dana Engineering to provide continuity between the two buildings in support of the interdisciplinary curriculum. The structure provides state-of-the-art laboratories and classrooms, as well as office space. The building is named for Lauren '52 and Margit Breakiron, whose lead gift made the project possible.

Bucknell Hall, dedicated in 1886, was renovated in 1988 for use as a poetry center and recital hall. It houses the Stadler Center for Poetry, named for benefactors Jack Stadler '40 and his wife, Ralynn.

The Carnegie Building, constructed in 1905 under a grant from Andrew Carnegie, originally served as the library of the University. The building, which has been modified over the years, had a major renovation in 2015 to restore it to a condition similar to its original appearance and now houses the Teaching and Learning Center, the Writing Center and other academic support offices.

William H. Coleman Hall, dedicated in 1959, was a gift of the F.W. Olin Foundation, and is named in honor of the late Dr. Coleman, who served Bucknell for more than 30 years as professor of English, dean of the University, and vice president. Renovated in 2002, it houses classrooms, faculty offices, several lecture halls, a number of laboratories and seminar rooms, and a 500-seat theatre equipped for work in the dramatic arts. Renovated in 1996, the theatre was renamed the Harvey M. Powers Theatre in 1997.

The Charles A. Dana Engineering Building is named for a generous benefactor in recognition of his support of engineering and scientific education. Begun in 1921 and completed in 1940, it houses the College of Engineering and provides the many laboratories and classrooms essential to the University's engineering program. A \$4 million renovation and expansion of the building was completed in June 1985. An addition in 2001, called the

Collaborative Learning Space, incorporates the latest teaching/classroom design. In 2011, the Richard J. Mooney Innovative Design Laboratory, a gift to the University in honor of Richard Mooney '60, was constructed to expand the Product Development Lab.

Attached to the Dana Engineering Building is the **Computer Center**, (built in 1980) which serves as the network and telecommunications hub for the campus. Every student living on campus has easy access to a high-speed connection to the campus network and the internet. Laptops may connect to the wireless network that is available across much of the campus, creating an environment of "any time, any place access." While student ownership of computers is not required, most students find having one to be a valuable part of the Bucknell experience. A variety of electronic classrooms and labs, the Information Commons in the library, a strong set of network services, and access to the network from student housing provides the Bucknell student with almost ubiquitous access.

The Brungraber Civil Engineering Structural Test Laboratory, east of Dana Engineering, houses a 600,000-lb. Baldwin universal testing machine as well as civil engineering offices and other testing equipment.

Elizabeth Koons Freas Hall was given to Bucknell in 1965 by the late A. Guy Freas, a trustee of the University, in honor of his wife. Connecting Coleman Hall with Marts Hall, it houses the admissions offices. The prominent patio atop the building on the Malesardi Quad was renovated in 2002.

The Elaine Langone Center, which opened in 1971, contains the student post office; offices for student life and student government; study, game, and lounge rooms; facilities for lectures, performances, and meetings; the Samek Museum; and dining facilities, including a snack bar and the Refectory, a served dining room. The Roy Grier Bostwick Memorial Dining Room, serving students, is named in recognition of a gift to the University in his honor from the estate of his widow, Marie Leiser Bostwick. In 1990, Bucknell trustee Ken Langone '57 provided the naming gift for the student center in honor of his wife, Elaine. The Bostwick Dining Room and Servery were completely renovated in 2002. A major renovation to the snack bar was completed in 2006. A student hearth space was established in 2011 on the ground floor of the building.

The Observatory, constructed in 1963 to replace an earlier one that had been a gift of William Bucknell, includes labs and the Tressler Observing Laboratory (2014) with a retractable roof that houses telescopes.

The O'Leary Psychology and Geology Center opened for the fall semester 2002. The 40,000 square foot facility brings together the psychology department staff in one location and provides new office, classroom and lab space for both geology and psychology departments. This building completes the phased development of the science center project. It is named in honor of Brian '60 and Judith McAllister O'Leary '60.

Funds for the construction in 1955 of the **F.W. Olin Science Building** came from the F.W. Olin Foundation. Renovated in 1989-90, it houses the departments of physics, mathematics, and education.

The Charles M. and Olive S. Rooke Chapel seats 500 on the main floor and 250 in the balconies. In addition to the chaplain's offices, the south wing houses a reception room and a meditation chapel. The chapel was given to the University in 1964 by Robert L. Rooke, Class of 1913, secretary emeritus of the Board of Trustees, in memory of his parents. Rooke Chapel was renovated during the summer of 2005.

The **Robert L. Rooke Science Center**, named for Robert Rooke '13 in 2011, includes the Rooke Chemistry Building, completed in 1990, and the Biology Building, completed in 1991. The chemistry facility contains classrooms and seminar rooms, faculty offices, and modern laboratories for faculty and students. In addition, designated laboratories house special equipment, such as nuclear magnetic resonance spectrometers, a gas chromatograph-mass spectrometer, and an x-ray diffractometer.

The biology facility houses faculty offices and research laboratories as well as a variety of laboratories designed for use by both non-majors and majors and a rooftop greenhouse. Students enrolled in the biochemistry and cell biology majors share laboratories in the adjoining buildings. New animal study laboratories were constructed in the building in 2002.

Stephen W. Taylor Hall, named in honor of the author of the University's charter, was erected in 1849 as the first building on College Hill. In 1994, Taylor Hall was renovated and is home to the School of Management and the University Press.

The Leanne Freas Trout Auditorium in the Vaughan Literature Building was recently restored to its original grandeur. In 2003, it was dedicated in honor of Leanne Freas Trout, Class of 1950, for the years of loyalty, service, time, and leadership she and her family have devoted to Bucknell.

The Tustin Building, which was used for many years as a gymnasium, is named in honor of Francis W. Tustin, Class of 1856, who later became a member of the faculty. Dedicated in 1890, the building was completely remodeled and equipped in 1938, and in 1961 a wing was added. Tustin is used for academic and extracurricular programs. In 1986 the flexible black box Tustin Studio Theatre was opened.

The Charles P. Vaughan Literature Building and Arnaud C. Marts Hall correspond in design and size to Coleman Hall. A 450-seat auditorium, classrooms, and offices for faculty are provided in the Literature Building, completed in 1938 and named in honor of Charles P. Vaughan, a trustee who also served, in 1931, as acting president.

Marts Hall, built in 1960, houses administrative offices as well as departments of instruction. Arnaud C. Marts, for whom it is named, was the University's seventh president and a member of the Board of Trustees.

Completed in 1988, the **Sigmund and Claire Weis Center for the Performing Arts**, a concert hall with seating for 1,300, is located west of the Malesardi Quadrangle at the entrance to the campus, opposite Rooke Chapel.

The Sigfried Weis Music Building, located next to the Weis Center for the Performing Arts, was completed in fall 2000 and houses classrooms, faculty offices, a computerized keyboard lab, practice rooms, a music library, and a 176-seat recital hall named in honor of Natalie Davis Rooke. The building is named for Sigfried Weis, former chairman of the Bucknell Board of Trustees.

Athletic and Recreational Buildings

The University added substantially to the facilities available for recreation and athletics with the dedication of the **Kenneth Langone Athletics and Recreation Center** in 2003. Opened in the fall of 2002 are the Kinney Natatorium, housing an Olympic-size pool, and the Krebs Fitness Center, a 14,000 square foot fitness center. The Sojka Pavilion is a 4,000-seat multi-purpose gymnasium opened at the beginning of the second semester of the 2002-03 academic year. Renovations to existing facilities include a new training center in the Davis Annex and varsity locker rooms in the Fieldhouse, as well as new coaching offices in Davis Gym. In 2011, the unused tiered seating area for the old pool was converted into an ergometer training facility for the crew teams through a gift from a parent.

The Recreational Sports Complex includes the **Gerhard Fieldhouse**, completed in 1978, which provides greatly expanded facilities for intramural and recreational activities and sports, as well as indoor practice space for intercollegiate teams. It includes a 350-foot by 180-foot main playing floor that has been laid out to include a six-lane, 220-yard track oval that was resurfaced in 2008. There are five tennis courts, six volleyball courts, and seven basketball courts laid out on the floor. This playing area also can be used as a surface for any of the field sports and may be subdivided by a system of nets to permit a number of concurrent activities. An L-shaped building wrapped around the playing floor on two sides includes a dance studio, a wrestling room, five handball/racquetball courts, four squash courts, and a climbing wall.

The Fieldhouse is connected to **Davis Gymnasium**, named in honor of the late Warren Davis, Class of 1896, a member of the Board of Trustees. The main part of the gymnasium, completed in 1938, was the gift of 20 trustees.

Depew Field, an artificial surface baseball complex, and **Becker Field**, a natural grass softball facility, both underwent substantial renovations in 2012. The **Bachman Golf Facility**, an indoor/outdoor instructional golf facility, opened in fall 2011 for varsity and recreational use.

Holmes Stadium, completed in 2007, is a double-sided 1,200-seat covered grandstand facility that supports both **William A. Graham IV Field**, a lighted, artificial turf field hockey, women's lacrosse and recreation field completed in 2003, and **Emmitt Field**, a lighted, sand-based natural turf soccer field completed in 2005.

The Christy Mathewson-Memorial Stadium seats about 13,000 people and includes an eight-lane, all-weather track and grass-like artificial playing field for football and lacrosse. A gift of alumni and friends of the University, it was dedicated in 1924 to the memory of Bucknell men and women who served their country in times of war. After its renovation in 1989, it was renamed to honor Christy Mathewson, a member of the Class of 1902. At the main entrance to the stadium is the Christy Mathewson Gateway, erected in 1928 and presented to the University by organized baseball in memory of the Hall of Fame pitcher.

Other athletic facilities include: a jogging course, an 18-hole golf course, 10 lighted tennis courts, two lighted platform tennis courts, two lighted outdoor basketball courts, several outdoor lighted sand volleyball courts, and additional recreational playing fields.

Residence Halls

Occupying a prominent place on College Hill is a complex of three large residence halls: **Rush H. Kress Hall**, **Main College**, and **Harland A. Trax Hall**. The central section of Main College has been designated as Daniel C. Roberts Hall, in memory of the man who provided funds for its rebuilding in 1937. Nearby Kress Hall is named in honor of Rush H. Kress, Class of 1900, for 36 years a trustee of the University and a generous contributor to his alma mater. Trax Hall, built in 1907, is named for a trustee and benefactor, Harland A. Trax. Most rooms in these facilities, which together accommodate more than 350 students, are singles.

Gateway Residence Center. Completed in 1986, these five buildings – Kalman-Posner Hall, Malesardi Hall, Roser Hall, Silbermann Hall, and Vidinghoff Hall – accommodate a total of 250 upperclass students. Each floor contains four suites accommodating four students each. Each suite includes four private bedrooms, a living room, a kitchen, and full bathroom facilities. Common laundry facilities are available within the center. On-grade suites are available for students with disabilities.

Larison Hall, renovated in 1995, is a large residential building connected on the west with Bucknell Cottage, renovated in 2010, and on the south with John Howard Harris Hall. Together they accommodate 275 residents. Nearby **Hunt Hall**, built in 1928, which houses some 150 students, is named in honor of former President Emory W. Hunt, and provides private residence rooms and common facilities for Bucknell's sororities. The building was completely renovated in the spring semester 2003.

McDonnell Hall, with 300 beds, opened in fall 2000. Two four-story wings are connected by corridors to a two-story center unit containing lounge areas and seminar rooms. Each floor houses two "neighborhoods" with one single and nine double rooms surrounding a common lounge. McDonnell Hall is named in honor of Elizabeth and James McDonnell III and their daughter, Katherine '94.

Smith Hall. Completed in 1986, this modern residential unit houses approximately 220 students in a three-story building that contains a wide array of common facilities including seminar and study rooms, computer facilities, TV lounges, and common kitchen and laundry facilities. The building is named in honor of Robert '39 and Margaret Farrell Smith '41.

James S. Swartz Hall, near the Malesardi Quadrangle, is named for a longtime member and chairman of the Board of Trustees, and generous benefactor. Built in 1954, it houses 360 residents.

Vedder Hall, completed in 1965, is named in honor of Lee N. and Grace Q. Vedder, in recognition of the transfer to the University of the assets of the foundation which they endowed. It is home to more than 350 residents, most of whom live in double rooms.

Bucknell West, a complex of residential units on the western edge of the campus, provides accommodations for 272 upperclass students. Each H-shaped unit has two wings, each of which contains two bedrooms, a bath, and a combination living room-kitchen. The complex is accessible via a pedestrian underpass, completed in 1991.

South Campus Student Apartments, a complex of four apartment-style residence halls on the south part of campus that opened in the fall of 2015 and is expected to receive at least Leadership in Energy and Environmental Design (<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988>) (LEED) Silver certification. The four buildings, totaling 151,000 square feet, are comprised of 344 beds in 88 apartments and will house 340 juniors and seniors. Each apartment building has a first-floor "hearth space" to promote student interaction and living-learning opportunities, and recreational facilities include an outdoor basketball and two volleyball courts.

Other Facilities

In 2010, the University moved the bookstore operation from the Elaine Langone Center to a renovated historic building on Market Street in downtown Lewisburg, and partnered with Barnes & Noble to create the **Barnes & Noble Bookstore at Bucknell University** facility.

The Campus Theatre, a historic art deco-styled movie theatre constructed in 1941, was acquired by the University in 2010. The building was renovated and the original interior artwork restored. The facility continues to show movies to the general public as well as host special community events and academic-related films for specific classes.

In 2010, the University purchased the former **Federal Court House** building in Lewisburg, which was vacant except for the Post Office operation. The building has been renovated into offices for the University's development staff and continues to house the Post Office window service operation.

In 2012, the University renovated the **DeWitt Building** on Market Street. The Small Business Development Center and the Bucknell University Entrepreneurs Incubator are located on the upper floors, and the Downtown Gallery as well as two local businesses are located at street level.

The Walter C. Geiger Physical Plant Building, constructed in 1938 between Tustin and the Power Plant, was named for Walter C. Geiger '34, who served as superintendent of buildings from 1946-57 and physical plant director from 1957-78. It houses the facilities offices, garages for utility service vehicles, several trade shops, and a small storage area.

The Forrest D. Brown Conference Center, about seven miles from the campus, is used primarily for conferences and informal gatherings. It was named in 1966 in honor of the man who served for 30 years as secretary and adviser for the University's Christian Association. The center provides overnight accommodations for 60 people. Facilities include a kitchen, an outdoor covered picnic pavilion, and 40 acres of open areas for outdoor recreation. A 'Challenge Course,' consisting of low and high rope elements as well as a climbing and rappelling tower, was added in the fall of 2004.

The University also owns a **60-acre Nature Site** bordering Chillisquaque Creek a few miles from the campus. The property is used in laboratory work under the environmental science program, but also is open to all members of the University community for research or visiting.

One of the historic buildings on University Avenue, the **Robert Lowry House**, immediately opposite the President's House, was renovated to provide offices for the Counseling and Student Development Center. The home was built in 1856 by The Reverend Joseph P. Tustin, then secretary of the Board of Trustees. Robert Lowry wrote some of his most famous hymns during his residence in the house from 1869-75. The home was later acquired by William C. Bartol, a distinguished member of the faculty from 1881-1928, from whose heirs the University purchased the property in 1984.

The Seventh Street Café, built in 1948 as a student recreation center with a snack bar called the Bison, later served as a psychology lab, a biology lab, and a piano lab until 1993, when it was renovated and renamed. The building, which includes exterior and interior student lounge areas and a coffee bar, also contains a craft center called the Seventh Street Studio.

Bucknell Co-Generation Power Plant provides most of the electricity and all of the steam needed by the campus, as well as chilled water to support much of the campus's air-conditioning needs, in a fuel-efficient and environmentally responsible manner. In addition, Bucknell supports the development of renewable energy through the purchase of wind-produced electricity and student-operated solar photo-voltaic arrays that provide electricity to the Bucknell University Center for Sustainability and the Environment and one Bucknell West residential unit.

MacDonald Commons, the MacDonald Commons building, completed in 2015, contains a large multi-purpose space and several meeting rooms for use by students, as well as a small dining facility and convenience store. The building received LEED Gold certification and is the first building on campus to achieve that level.

Facilities for Students with Disabilities

Campus Accessibility

Bucknell University endeavors to create an environment throughout our campus that is barrier-free to the maximum extent possible. Buildings on campus vary in degrees of accessibility to people with physical disabilities. In compliance with the Americans with Disabilities Act Standards for Accessible Design and the Pennsylvania Code, new buildings and major renovations are designed as accessible facilities. Residential facilities include several barrier-free accommodations in a variety of housing options. For questions concerning accessibility issues, please contact the Director of the Office of Accessibility Resources, Heather Fowler, 570-577-1188.

Crime, Fire Safety and Campus Emergency Information

The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act or Clery Act requires that crime, fire safety, and emergency notification information is available to the campus community. Specifically, it requires schools to provide numerous statements and policies including:

1. an annual crime statistical report;
2. an annual fire safety and statistic report;
3. a daily campus crime and fire safety log;
4. timely reports regarding crimes that present a serious or continuing threat to the campus community; and
5. emergency notifications that alert campus to any dangerous situations that may threaten the health and safety of the campus community.

Bucknell University is in full compliance with this law and such information is available to you in writing, upon request, at the Department of Public Safety building or on the Bucknell University Public Safety website at bucknell.edu/CleryAct.

ACADEMIC STANDARDS & POLICIES

Awarding degrees is based on requirements established by the faculty. The faculty also has adopted additional rules and policies related to those requirements that support the standards and the integrity of Bucknell and its academic program.

Degree and Graduation Requirements

Quantitative

Every candidate for the degree of Bachelor of Arts, Bachelor of Science, Bachelor of Science in Business Administration, Bachelor of Science in Education, or Bachelor of Music must earn 32 credits, while every candidate for a degree in the College of Engineering must earn 34 credits. Every candidate for the combination degree of Bachelor of Science in one of the branches of engineering and Bachelor of Arts must earn 42 credits.

Curricular

Every candidate for any undergraduate degree must complete the curricular requirements as specified for the degree, including major requirements, major related requirements, general education requirements (i.e., the provisions of the College Core Curriculum for students in the College of Arts and Sciences), and the University writing requirement. Substitution for, or waiver of, any requirement must be approved in advance by the dean of the student's college.

Grade Point Average

Every candidate for a bachelor's degree must have a cumulative grade point average of 2.00. In addition, every candidate for an engineering degree or for the combination degree of Bachelor of Science in one of the branches of engineering and Bachelor of Arts must have a cumulative grade point average of 2.00 for all courses in the College of Engineering.

Academic Policies and Requirements

Degrees and Majors

It is possible to receive only one undergraduate degree from Bucknell at a time; that is, each degree requires the fulfillment of all requirements and the full 32 (for Arts and Sciences and School of Management), 34 (for Engineering), or 42 (for the combined Engineering/Arts degree) course credits. It is possible, however, to formally declare a second major, even if that major is from another degree program. If declared, the pursuit and successful completion of the second major, even if from another degree program, will be noted on the student's academic record (transcript). If the two majors are in different degree programs, the student may choose which degree to receive, but can receive only one degree.

Many classes at Bucknell University meet for three scheduled hours of instruction per week. A number of classes also have scheduled contact hours beyond three per week. Courses are equivalent to four semester hours or six quarter hours because they include scheduled, faculty-supervised activities (such as labs, service learning, common hours, etc.) and/or intensive, iterative faculty involvement in student performance and achievement with independent or small-group student work (such as writing assignments, problem sets and problem-solving activities, student performances in the arts, student creative work, etc.). Courses at Bucknell that receive one unit of academic credit have a minimum expectation of 12 hours per week of student academic engagement. Student academic engagement includes both the hours of direct faculty instruction (or its equivalent) and the hours spent on out-of-class student work. Half and quarter unit courses at Bucknell should have proportionate expectations for student engagement.

Second Degree

As noted above, normally only one undergraduate degree may be received. However, students who have received one baccalaureate degree, whether at Bucknell University or elsewhere, may seek a subsequent, second baccalaureate degree in a different curriculum by applying to the dean of admissions; acceptance requires the approval of the dean of the college and the dean of admissions. To be accepted as a candidate for a second baccalaureate degree, the new program must be fundamentally different from the first and must be judged by the University to be educationally necessary. The second degree program must require at least two years of academic work (16 course credits). All requirements for the second degree, including the major and general education requirements, must be fulfilled if the appropriate courses were not taken previously; coursework for the second degree must include the number of courses required by the major (which may include electives in the major if some of the requirements were taken previously); all additional course credits must be taken in residence. Second-degree applicants must follow the transfer application process described under Admissions Information elsewhere in this *catalog*. Bucknell aid is not available for second-degree students, but eligibility may remain for federal loans if the maximum has not already been borrowed. Inquiries regarding second-degree admission should be directed to the Office of Admissions.

Eight-Semester Requirement

Students are expected to meet all degree requirements within eight semesters (including semesters on approved programs off campus and semesters elsewhere for transfer students) and ensuing summers. Only in exceptional circumstances will the dean of the student's college approve an extension

to nine semesters of study. In some degree programs, a fifth year of full-time study may be required if a student fails to earn passing grades in all required courses and achieve the minimum GPA necessary for graduation at the end of his or her senior year.

Courseloads and Full-Time Status

The normal courseload is four course credits. Special permission from the associate dean of the student's college, or assistant director for students in the School of Management, is required for enrolling in less than 4.0 credits or more than 4.75 credits. Permission for underloading (less than 4.0 credits) is granted when the student provides a legitimate academic rationale. Permission to enroll in more than 4.75 credits, or overload, is granted when the student has demonstrated superior performance (typically a 3.5 GPA) in a normal courseload.

All degree candidates, including seniors, are expected to be enrolled each semester as full-time students, carrying a minimum of 3.0 credits, regardless of the number of course credits previously earned or planned for the future.

Exceptions for part-time status (less than 3.0 credits) are made only in most unusual circumstances, such as severe health difficulties or nontraditional status such as that of a regular full-time University employee. All underloads or overloads must be approved by the dean of the student's college, or assistant director for students in the School of Management.

Residence Requirement

All candidates for a degree are required to be in residence for a minimum of two semesters during the junior and senior years, including the final semester. Transfer students must be in residence for a minimum of three semesters, earning a minimum of 12 Bucknell course credits, regardless of the number of credits earned elsewhere previously.

"Double Counting" Courses Toward Requirements

In some limited instances, a course may be used to fulfill two College Core Curriculum requirements. (See the College Core Curriculum summary.)

Courses that fulfill general education requirements (the College Core Curriculum requirements in the College of Arts and Sciences) also may be used to fulfill major or minor requirements. However, courses cannot be counted in more than one major or minor; where one major or minor course satisfies the requirement in another major or minor, it must be replaced by an elective in the second major or minor. Major related requirements may be counted toward another major or minor.

Advising

Faculty advisers and administrative staff stand ready to consult with each student regarding the academic program. (The faculty adviser's signature is required for the initial course registration each semester and for most subsequent changes.) In addition, the registrar periodically provides the student with an Academic Progress Report. However, it remains each student's responsibility to fulfill all requirements for the major and the degree.

Academic Standing

All students are expected to earn and maintain good academic standing as has been defined for their class. To be in good academic standing (and to be eligible for continued enrollment) students normally must pass a minimum number of courses and earn a minimum cumulative grade point average as follows:

Arts and Sciences

Beginning of Semester 2

Minimum number of courses passed: 3

Cumulative Grade Point Average: 1.80

Beginning of Semester 3

Minimum number of courses passed: 7

Cumulative Grade Point Average: 1.80

Beginning of Semester 4

Minimum number of courses passed: 11

Cumulative Grade Point Average: 1.90

Beginning of Semester 5

Minimum number of courses passed: 15

Cumulative Grade Point Average: 1.90

Beginning of Semester 6

Minimum number of courses passed: 19

Cumulative Grade Point Average: 2.00

Beginning of Semester 7

Minimum number of courses passed: 24
 Cumulative Grade Point Average: 2.00

Beginning of Semester 8

Minimum number of courses passed: 28
 Cumulative Grade Point Average: 2.00

Engineering

Beginning of Semester 2

Minimum number of courses passed: 3
 Cumulative Grade Point Average: 1.80

Beginning of Semester 3

Minimum number of courses passed: 7
 Cumulative Grade Point Average: 1.80

Beginning of Semester 4

Minimum number of courses passed: ¹
 Cumulative Grade Point Average: 1.90

Beginning of Semester 5

Minimum number of courses passed: ¹
 Cumulative Grade Point Average: 1.90

Beginning of Semester 6

Minimum number of courses passed: ¹
 Cumulative Grade Point Average: 2.00

Beginning of Semester 7

Minimum number of courses passed: ¹
 Cumulative Grade Point Average: 2.00

Beginning of Semester 8

Minimum number of courses passed: 29.5
 Cumulative Grade Point Average: 2.00

¹ Students must have earned within one (1) course credit of the credits required for their curriculum.

1. Students who have earned the minimum grade point average required but who have not passed the minimum number of courses required are placed on **"credit warning."** Such students must make up their credit deficits either by attending the Bucknell summer session or by attending another accredited institution in the summer. In the latter case, prior approval of both the institution and the course(s) must be obtained from the student's adviser, the Bucknell department chair in which the course would most appropriately fit, and the registrar.
2. Students who have not earned the minimum grade point average required are either subject to dismissal from the University or, if the average is close to the minimum, are placed on University **"grade point warning."** Students on warning are required to attend the Bucknell summer session and to earn sufficiently high grades so as to reduce significantly their grade point deficits before the beginning of the next academic year.
3. Engineering students who have not met the minimum grade point average in all courses in the College of Engineering are placed on **"engineering grade point warning,"** and may be required to attend the Bucknell University summer session to earn sufficiently high grades so as to reduce significantly their engineering grade point average deficit or may be subject to dismissal from the engineering degree programs. Minimum engineering grade point averages are: 1.80 at the start of the third semester, 1.90 at the start of the fourth semester, and 2.00 at the start of the fifth and subsequent semesters.

The dean of the student's college also will review academic records at the conclusion of the fall semester.

1. Students who have a credit deficiency will be notified by the dean of the student's college that they are not in good academic standing, and will be placed on **"credit warning."** Such credit deficits will need to be made up during the following summer (see above) at Bucknell University or elsewhere.
2. Students who have a cumulative grade point average below that required at the end of the academic year – that is, 1.80 for first-year students, 1.90 for sophomores, and 2.00 for juniors – will be notified by the dean that they are on **"grade point warning"** or are advised to withdraw, or are subject to dismissal, depending upon the severity of the difficulty. (Continuation of a grade point deficiency could well lead to required summer school at Bucknell or dismissal at the end of the spring semester).
3. Seniors must be in good standing (both in terms of grade point average and passed courses) in order to be eligible to enroll in the final semester.
4. Engineering students who have not met the minimum grade point average in all courses in the College of Engineering are placed on **"engineering grade point warning"** and may be advised to withdraw, or may be subject to dismissal, depending on the severity of the difficulty. Minimum

engineering grade point averages are 1.80 at the start of the third semester, 1.90 at the start of the fourth semester, and 2.00 at the start of the fifth and subsequent semesters.

All of the foregoing provisions are those normally followed in instances of grade point or credit deficits. However, it should be noted that occasionally a student may be technically in good academic standing and yet be subject to academic dismissal. Such instances might include a disastrous performance in the most recent semester and/or a pattern of decline in performance over several semesters. Similarly, grade point or credit deficiencies may be so great as to eliminate the possibility of continuation "on warning" either in a spring semester or during the summer.

Conversely, in exceptional circumstances, the definition of normal progress toward the degree in terms of passed credits may be altered by the dean of the student's college to allow a student to extend his or her undergraduate career to nine semesters.

Students frequently are well advised to consider withdrawing from the University if academic difficulty persists or seems likely to occur. Consultation with staff in the office of the dean of the student's college may be helpful in such instances.

It is the prerogative of the deans of the colleges to dismiss a student from the University at any time, or to place a student on "warning" for one semester or longer, for academic reasons.

In all matters pertaining to academic standing, the decisions of the deans of the colleges will be final. If a student is dismissed for academic reasons, readmission consideration may not be given until one calendar year has passed. Readmission is not automatic. Readmission will be considered only upon formal request, and will be approved only if there is substantial evidence that return is likely to be successful, including the reasonable expectation of earning good standing. Requests for readmission consideration must be submitted to and approved by the dean of the student's college.

Registration, Enrollment, and Withdrawal

Registration and Enrollment

Course Registration

Registration must be for a specified number of courses. Regardless of the number of course credits previously earned, degree candidates must elect at least the minimum number of three courses required each semester. The faculty adviser's signature is required for the initial schedule each semester and for subsequent changes.

Course Cancellation

The University reserves the right to cancel any course for which fewer than eight students are registered, or for other cogent reasons.

Courses That May Not Be Elected for Credit

No credit will be given (nor may a second grade be earned) for a course previously passed or for a course with content similar to one previously completed. (A list of such cross-listed courses is published in each semester's *Schedule of Classes*.) In addition, courses that have been audited may not be taken subsequently for credit. Language courses that are below the student's language placement may not be elected for credit unless, in extenuating circumstances, authorized by the language department chair (or program director) and the dean of the student's college.

Military Science

In addition to electing courses for credit each semester, a student may elect the basic course in military science of the Reserve Officer Training Corps. Credit for one elective course may be granted for the satisfactory completion of the advanced course in military science; request for such credit must be made to the associate dean of the student's college.

Auditing

By definition, it is not appropriate to enroll as an auditor for courses involving studio art, dance, sign language, independent study, thesis preparation, or for any course requiring extra time and attention from the instructor. Note that courses that have been audited may not be taken subsequently for credit.

Regularly enrolled, full-time undergraduate students may carry audits in addition to their regular course load without additional charge. For any audit by all other students, the course audit fee is charged. Regularly enrolled, full-time students who wish to visit a class, without registration and without record, may do so with the permission of the instructor on a space-available basis.

Financial Obligations

To be admitted to any course, a student – whether a graduate or an undergraduate – must pay the semester's bill in full, or else make satisfactory arrangements with the Office of Finance.

Several plans for payment of tuition and other charges are available. Students and parents receive information about these plans directly and make arrangements with the organization of their choice.

Adding and Dropping Courses

Students may add and drop courses, subject to space availability, during the first two weeks of the semester.

Withdrawal from Courses

Withdrawal from (Dropping) Courses

Students may withdraw from a course **during the usual two-week drop/add period** by filing a completed Drop/Add form with the registrar. If another course is not added, the remaining course load must be no less than the minimum required three course credits and normal progress toward the degree will be considered. Reducing the course load to three course credits requires the approval of the faculty adviser and academic dean. (Financial aid packages are not likely to be extended or redefined to cover extra summers or semesters when the student elects a less-than-average course load, thereby requiring additional periods of enrollment. Questions concerning the Financial Aid ramifications of "less-than-average course loads" should be pursued directly with the Office of Financial Aid.)

After the usual two-week drop/add period, all course withdrawals must be approved by the student's academic dean. In unusual circumstances, dropping a course may be approved **through the fourth week** of the semester if the student is still carrying three course credits; in two semesters, as exceptions to this four-week limit, dropping a course may be permitted **through the 10th week** of the semester. The grade of "W" is assigned for all such approved course withdrawals after the first two weeks of the semester.

Exceptions to these deadlines may be approved only if there are serious health difficulties or similar extenuating circumstances. Poor performance, anticipation of poor performance, extracurricular obligations, changes in educational plans or interests, or the existence of extra course credits, are not considered extenuating circumstances.

Separation from the University, Leave-of-absence, Readmission

Separation from Bucknell

There are several reasons for which a student may be separated from the University. The forms of separation recognized by the University include: Withdrawal, Voluntary Leave-of-absence, Health Leave-of-absence, and Involuntary Leave-of-absence.

Students on any type of leave or withdrawal must leave campus within 24 hours of initiating the leave. Students subject to any leave or withdrawal covered by this policy may not attend classes, participate as a member of a student organization, or be on campus for any reason without prior permission from the Dean of Students.

Withdrawal

Students who decide, for any reason, to discontinue their educational experience at Bucknell and do not intend to return will complete the process for withdrawal. Students interested in withdrawing from Bucknell should contact the associate dean of their college to initiate the process.

Voluntary Leave-of-absence Prior to the Start of the Semester

A student in good standing who wishes to temporarily interrupt studies following the end of a semester may apply to the dean of the college for a leave-of-absence if the student intends to complete degree requirements at Bucknell University and if the courses for the semester preceding the leave have been satisfactorily completed.

The leave-of-absence will be for one semester. A student on leave will not be carried on Bucknell University rolls during the period of the leave. A student may be approved for only one leave-of-absence in any 12-month period. The 12-month period begins on the first day of the student's leave-of-absence.

Applications for a leave-of-absence normally will be submitted by August 1 for a fall semester, and by January 1 for a spring semester.

During a leave-of-absence, students wishing to take academic courses elsewhere to transfer back to Bucknell must receive prior permission of the dean of the college and in no case would more than two course credits be approved.

Students on leave-of-absence who subsequently fail to return to Bucknell University will be involuntarily withdrawn with an effective date reverting to the last date of attendance at the University. If a student decides to enroll at another institution and not return to Bucknell University, they must contact the dean of the college and initiate withdrawal from Bucknell University. In both cases, a student will be required to submit an application to the dean of admissions to return to Bucknell University.

Voluntary Leave-of-absence During the Semester

A student who, during any semester, is unable to meet the demands of his or her academic program should contact the office of the dean of the appropriate college to discuss possible options. Such a student may be well advised to consider a voluntary leave. Voluntary leave after the second week of the semester will result in the recording of WP (withdraw passing) or WF (withdraw failing) grades for each course (see Grading System). It should be noted that grades of WF will be factored into the student's GPA. A voluntary leave once classes have begun will result in the loss of some or all tuition (see Finance and Financial Aid Information/Deposits and Refund Policies). A voluntary leave must be initiated by the last day of classes for the semester; the student must fill out a form that is available online. Students should contact their academic dean's office for additional information.

A student who does not plan to continue at the University, for whatever reason, **following the conclusion of a given semester**, should be referred to the office of the dean of the appropriate college to complete the necessary forms for effecting a leave-of-absence.

A student on a leave-of-absence from the University may apply for **readmission**. A written request should be sent to the associate dean of the student's academic college before June 1 for a fall semester readmission, before November 1 for a spring semester readmission, and before March 1 for a summer session readmission. Normally, a student who requires a leave-of-absence after the first four weeks of the semester will not be considered for readmission for the next regular semester. **A student who enrolls full time (more than two courses per semester) at another university following a leave-of-absence and wishes to return to Bucknell University must apply as a transfer student.**

Leave-of-absence for Health Related Reasons

During the semester:

Counseling and Student Development Center

Staff of the Counseling and Student Development Center will consider supporting a student's request for a leave from the University during a semester based on psychological or mental health reasons if the student has been actively engaged in counseling either with Counseling and Student Development Center staff or with another clinician/agency. If a student has not been engaged in counseling, thereby lacking the documentation needed to support a leave, staff in the Counseling and Student Development Center will assist the student in obtaining the necessary assessment or diagnosis. This might be with Counseling and Student Development, with a clinician in the community, or with a clinician at home. A student must initiate a health leave at least two weeks before the last day of regular classes and have all supporting documentation to Counseling and Student Development before the last day of classes. A mental health or psychological health leave after the first four weeks of the semester normally requires the student's absence from the University for at least one complete regular semester before consideration will be given for readmission. This allows the student time to address the issues that necessitated the leave-of-absence.

Bucknell Student Health

Physical health concerns may also interrupt a student's ability to fulfill his or her academic obligations. A health leave for physical health reasons must be initiated through Bucknell Student Health and can occur at any time during the semester. Once the health leave is initiated, the medical reason for the leave must be addressed before the student can return. A physical health leave after the first four weeks of the semester normally requires the student's absence from the University for at least one complete regular semester before consideration will be given for readmission.

Whether the health leave is initiated through Counseling and Student Development or Bucknell Student Health, grades of W (withdraw) will be recorded for all courses for the semester. A health leave may result in the loss of some or all tuition unless the student has purchased tuition insurance that is offered before the start of each academic year (see Finance and Financial Aid Information/Deposits and Refund Policies/Credit and Refund Policies)

Following the conclusion of a semester:

If a student needs to take time off for health reasons following the conclusion of a semester, it must be processed as a health leave and authorized by Bucknell Student Health or Counseling and Student Development.

Involuntary Leave-of-absence

Bucknell University endeavors to provide a safe and orderly environment in which all students are able to pursue their academic and social development. Bucknell reserves the right to require an involuntary administrative leave of any student who suffers from a mental health disorder and, as a result of such disorder:

- Engages, or threatens to engage in behavior that poses a danger of causing physical harm to self or others, and/or
- Engages, or threatens to engage in behavior that would cause significant property damage, which directly and substantially impedes the lawful activities of other members of the University, and/or
- Demonstrates an inability to satisfy personal needs (e.g., nourishment, shelter) such that there is a reasonable possibility that serious physical harm or death might occur within a short period of time, and/or
- Commits a violation of the University's Student Conduct Code and lacks the capacity to comprehend and participate in the University's disciplinary process, and/or
- Commits a violation of the University's Student Conduct Code and did not understand the nature or wrongfulness of the conduct at the time of the offense.

The student will be given the opportunity to elect voluntary leave or will participate in a Behavioral Assessment.

Students and Prevention of Suicide, Serious Self-Harm and Harm to Others

The Pledge of Student Responsibility notes that it is the duty of each student to protect and promote the health and safety of himself/herself and of others in the Bucknell community. Therefore, acts that deliberately put into serious jeopardy the health and/or life of the individual or members of the Bucknell community (suicide attempts, suicide threats, destructive self-mutilation, inability to care for self, alcohol and other drug abuse, physical

assaults, threats of harm to others, etc.) contradict a fundamental standard of the Bucknell community. The student who engages in such activities may be required by the Dean of Students to participate in a Behavioral Assessment, a professional assessment of the student's condition.

Behavioral Assessment

The process the Dean of Students uses to determine whether a student should be separated from the University is called a Behavioral Assessment. The Behavioral Assessment Committee is chaired by the Dean of Students and also consists of the Director of Bucknell Student Health and the Director of Counseling and Student Development. Students have the opportunity to fully and completely discuss their situation and provide all information they deem relevant to the Committee. Students may request an independent professional review in accordance with the stated Behavioral Assessment procedures. The decision of the Dean of Students at the conclusion of the Behavioral Assessment process is final.

The result of a Behavioral Assessment may include relevant restrictions while the student remains on campus: for example, the student might need to refrain from consuming substances that intensify problematic behavior; or the student may have to relocate into more supportive housing on campus. And in certain cases, the student may be required to take some time away from Bucknell in order to focus on the issues at hand.

The student referred to a Behavioral Assessment is required to sign a release of information so that his/her general circumstances can be discussed with the Dean of Students. The release does not require that the therapist and/or physician discuss all the details or background of the case, but it must allow the therapist/physician to share information on four elements: 1) that the student has been seen; 2) the general nature of the problem; 3) that a course of treatment has been set and is either on-going or completed; and 4) whether, in the professional opinion(s) of the therapist and/or physician, the student is fit or unfit to return to studies and represents (or does not represent) a continuing threat to himself/herself or others.

A student who refuses to comply with a Behavioral Assessment, and/or who refuses to sign limited releases (noted above) will have his/her case assessed on the behavioral circumstances by the Dean of Students. In dealing with suicide, serious self-harm and harm to others, the Dean of Students must consider both the welfare of the individual and the wider Bucknell community. Therefore, if dangerous behavior seriously affects other persons in a residence hall, fraternity or sorority, class, or other places on campus and its environs, that is relevant.

In situations characterized by suicide or serious self-harm, the Dean of Students or other member of the Behavioral Assessment Committee, reserves the right to consult with the parents, guardians, or emergency contact of the individual in danger.

Finally, students who observe or hear another student engage in, or threaten to engage in, suicide or serious self-harm have a moral obligation to seek assistance for that troubled individual. They might confidentially contact the Counseling and Student Development Center, Bucknell Student Health, Deans of Students, or Chaplains.

Readmission

To apply for **readmission** after a health leave-of-absence or an involuntary leave-of-absence, the student must submit a letter to the associate dean of his/her college asking to be readmitted. At the same time, the student must provide to the director of the Counseling and Student Development Center or Bucknell Student Health the following documentation from his/her treating clinician(s) or physician(s): 1) Diagnosis or clinical assessment; 2) Summary of treatment, including progress in treatment and resolution of the issues that prompted the withdrawal; 3) Current medications; 4) Evaluation of the student's readiness to resume his/her university responsibilities; and 5) Any recommendations for follow-up treatment or support. Once these criteria are satisfied and the student is deemed ready to return, readmission procedures can be initiated. The deadline for submission of these materials is June 1 for a fall semester, November 1 for a spring semester, and March 1 for a summer session. The Director of Counseling and Student Development and the Director of Bucknell Student Health may refer students applying for readmission to a Behavioral Assessment if they feel a more comprehensive assessment of the student's condition is required.

Suspension

Suspension is a sanction that makes a student ineligible to continue enrollment and/or re-enroll at the University for a specific period of time. The Hearing Board or Administrative Hearing Officer making the decision to suspend will determine the date when the suspension shall take effect and the earliest date that the individual is eligible to re-enroll in the University and conditions, if any, that must be met before re-enrollment.

Should an individual be suspended within a semester, any refund of room, board, tuition, or fees will be made in accordance with applicable policy; no academic credit may be earned for that semester; and the student may not transfer in academic credit in a period of suspension from other institutions of higher education. Grades of WP or WF will be recorded if the suspension is after the second week of classes. However, a student on suspension may carry course work elsewhere, not for transfer credit, but simply for personal edification or growth.

Suspension also applies to a student organization and requires that the group cease operation for a period of time. The Hearing Board or Administrative Hearing Officer making the decision to suspend will determine the date when the suspension shall take effect and the earliest date that the group is eligible to begin operation at the University and conditions, if any, that must be met before returning.

Credit and Evaluation

Credit and Transfer Credit

Course Credit

The unit of credit is a course credit. Normally a one-semester course is one course credit. However, some courses range from one-quarter course credit to three course credits. Four course credits constitute a normal load; three course credits constitute a minimal full-time load. For purpose of comparison, one course credit is considered equivalent to four semester hours or six quarter hours.

Many classes at Bucknell University meet for three scheduled hours of instruction per week. A number of classes also have scheduled contact hours beyond three per week. Courses are equivalent to four semester hours or six quarter hours because they include scheduled, faculty-supervised activities (such as labs, service learning, common hours, etc.) and/or intensive, iterative faculty involvement in student performance and achievement with independent or small-group student work (such as writing assignments, problem sets and problem-solving activities, student performances in the arts, student creative work, etc.). Courses at Bucknell that receive one unit of academic credit have a minimum expectation of 12 hours per week of student academic engagement. Student academic engagement includes both the hours of direct faculty instruction (or its equivalent) and the hours spent on out-of-class student work. Half and quarter unit courses at Bucknell should have proportionate expectations for student engagement.

Advanced Placement and Credit

Bucknell University recognizes advanced scholastic achievement in secondary schools by granting to qualified students University credit, advanced placement (<https://www.bucknell.edu/Documents/Admissions/FactSheets/AdvancedPlacement.pdf>), a reduction of general education requirements, or a combination of these. Students receiving such recognition may enroll, as first-year students, in advanced courses in the subjects in which they have received the advanced placement, or they may elect courses in other subjects. This plan of advanced placement creates the opportunity to begin college work at a higher level, and it may shorten the time required to complete one's undergraduate work.

Course credits granted through the advanced placement program may be used to fulfill appropriate degree requirements. These normally include the disciplinary breadth requirements in the College of Arts and Sciences, minimum course credits required for graduation, and, if approved by the registrar and the department involved, specific major or minor requirements. (Physics credits may be considered as a laboratory science for the natural science divisional disciplinary breadth requirement only if approved by the department. Chemistry credits are not considered as a laboratory credit.)

A student's performance on the Advanced Placement Tests of the College Entrance Examination Board will determine whether advanced placement and credit will be granted. Most departments give credit for scores of 4 or 5. Credit is not given for scores of 1 or 2. In all instances, the credit will be given only for work equivalent to courses in the academic departments of the University. There is a limit to the amount of credit that may be granted in most subject areas. In addition, there is an eight-course maximum on the total credit that may be granted for advanced placement tests and for college work taken while in secondary school.

For more information pertaining to advanced placement and credit, see *Advanced Standing for First-year and Transfer Students*.

International Baccalaureate and Credit

IB Diploma recipients, with a minimum score of 5 on each of the six subject examinations, will be awarded six course credits toward their degree requirements at Bucknell. Diploma recipients not meeting the minimum score requirements will receive course credit for only those higher level courses passed with a score of 5 or higher. IB Certificate students (non-diploma) will receive course credit for each higher level course passed with an examination score of 5 or higher. No credit is awarded for standard level courses except as noted for IB Diploma recipients above.

Credit by Examination

Full-time undergraduate students in residence may earn undergraduate credit by examination, with a letter grade assigned, in courses approved by a department and by the dean of the college concerned. Credit by examination is not available to graduate students; special students; students who have previously audited, withdrawn, or failed the course; students on exchange from other universities; and persons who have never attended Bucknell University.

A list of courses available for credit by examination is available from the registrar. Application for such examinations must be made at specific times on a form available from the registrar. Approval must be obtained from the department chair and dean of the college concerned. If approval is given, the nonrefundable credit by examination fee is to be paid to the cashier for each examination, and the examination is to be taken at the appointed time.

A maximum of six course credits may be earned from credit by examination, credit granted for achievement on comparable subject tests of the College Level Examination Program, and nontraditional study courses. (Note that these six course credits are in addition to the eight-course maximum permitted under "Advanced Placement and Credit.")

Students in residence are expected to carry the minimum of three academic courses in each semester, not including possible credit by examination. Credit by examination grades of F are not recorded on the permanent record. The faculty is not expected to assist students in preparing for these special examinations.

Coursework Elsewhere and Transfer Credits

Following admission, coursework elsewhere is permitted only during the summer when approved in advance by the registrar and during the academic year when approved in advance by the registrar and the director of global and off-campus education. Study elsewhere during the academic year is approved only for authorized programs abroad and a limited number of previously approved domestic programs. Credit for courses taken elsewhere, including courses taken previously by incoming first-year and transfer students, must be approved by the registrar.

The specific amount of credit that is posted to the student's Bucknell University academic record is based on the formula noted above (See "Course credits"). That is, one Bucknell University course credit is equivalent to four semester hours or six quarter hours. As a one-time exception to this formula, a student may receive a maximum of 2.0 Bucknell course credits for six semester hours or 2.0 Bucknell University course credits for nine quarter hours; thereafter, the usual formula is applied.

Grading System

Grading

The performance of a student in each course is evaluated on the grade report by the use of the following symbols:

A	Superior achievement
A-	
B+	
B	High pass
B-	
C+	
C	Pass
C-	
D	Low pass
P	Passing work; no grade assigned
F	Failing work
I	Incomplete work; to be assigned only in accordance with the restrictions indicated below
AU	Work as an auditor, for which no credit is given
IP	Incomplete work in continuing courses for thesis, research, or honors project
W	Approved withdrawal from a course during the extended drop period. Also may signify an authorized health withdrawal from a course at any time. (See paragraph below.)
WP	Approved withdrawal from a course after the prescribed time limit with a passing grade; usually approved only when the student is voluntarily withdrawing from the University or is suspended. (See paragraph below.)
WF	Approved withdrawal from a course after the prescribed time limit with a grade below a D; usually approved only when the student is voluntarily withdrawing from the University or is suspended. (See paragraph below.) Course credit is not given for a grade of F, AU, W, WP or WF.

All course withdrawals must be approved by the student's academic dean. In unusual circumstances, dropping a course may be approved through the fourth week of the semester if the student is still carrying three course credits; in two semesters, as exceptions to this four-week limit, dropping a course may be permitted through the tenth week of the semester. The grade of "W" is assigned for such approved course withdrawals. Exceptions to these deadlines may be approved only if there are serious health difficulties or similar extenuating circumstances. Poor performance, anticipation of poor performance, extracurricular obligations, changes in educational plans or interests, or the existence of extra course credits are not considered extenuating circumstances.

The grade of P, signifying passing work but with no grade assigned, is applicable only in courses specifically approved by the faculty.

The temporary grade of Incomplete will be authorized in the event of serious illness or personal emergency when requested by a student and approved by the course instructor and the dean of the student's college prior to the end of the examination period. Normally such a request will be in the form of a written petition, which will specify the date for its resolution, usually not later than three weeks after the end of the semester. The grade to which the incomplete will revert if the required work has not been completed by the specified date will be assigned by the instructor at the time the incomplete is authorized. Extension of the deadline must be approved by the dean of the student's college and will be granted only under exceptional circumstances, such as may occur in the case of missed laboratory work.

Grade Point Average

Number of quality points given for each full course:

A	4.00 points
A-	3.67 points
B+	3.33 points
B	3.00 points
B-	2.67 points
C+	2.33 points
C	2.00 points
C-	1.67 points
D	1.00 point
F or WF	No points

A student's grade point average (GPA) is computed by dividing the number of quality points earned by the number of course credits attempted. The GPA calculation is carried to three places beyond the decimal point (i.e., thousandths) and is NOT rounded, but is truncated to two places beyond the decimal point (i.e., thousandths) to establish the official grade point average. Thus, for example, a student with a grade point average calculation of 2.799 has an official GPA of 2.79. Note that a grade of F or WF is included in the GPA.

Grade Changes

Student-initiated requests for changes in a final course grade must be submitted by the first day of classes of the second academic year following the year in which the course was originally taken. For example, if a course was taken in spring 2015 the student's request for a grade change must come to the faculty member by the first day of the fall 2016 semester. Such a time period allows for individuals to appeal grades if they have been away from campus for study abroad, leave-of-absence, or other separations from the University.

Superior Academic Achievement

The University recognizes superior academic achievement in a variety of ways. Among these are appointment to the dean's list, receipt of the President's Award for Distinguished Academic Achievement, the granting of degrees with distinction, graduation with honors, election to honorary and professional societies, and the awarding of prizes.

Dean's List

Undergraduates who successfully complete no less than 3.0 course credits during the semester and who earn a semester grade point average of 3.50 or higher receive dean's list honors for that semester.

President's Award for Distinguished Academic Achievement

Rising sophomores, juniors, and seniors, and graduating seniors with a cumulative grade point average of 4.0 receive the President's Award for Distinguished Academic Achievement.

Degrees with Distinction

Degrees with distinction are awarded to bachelor's degree candidates who have taken 30 percent or more of the number of courses required for graduation in courses numbered above 199. Additional requirements for graduation with distinction are as follows:

A degree Summa Cum Laude is awarded to a candidate who has achieved at the time of graduation a grade point average of 3.90, or better, and who has been in residence at Bucknell University for at least three years. (That is, having earned at least 24 Bucknell course credits.)

A degree Magna Cum Laude is awarded to a candidate who has achieved at the time of graduation a grade point average between 3.70 and 3.89 and who has been in residence at Bucknell University for at least three years. (That is, having earned at least 24 Bucknell course credits.)

A degree Cum Laude is awarded to a candidate who has achieved at the time of graduation a grade point average between 3.50 and 3.69.

Honors Program

All academic departments and interdisciplinary majors of the University offer the possibility of departmental honors, coordinated through the University Honors Council, in which students in those majors may undertake special studies or investigations.

The honors program also operates within the special programs known as the College Major and the Interdepartmental Major.

Students interested in departmental honors should consult the heads of the departments and must apply for honors in accordance with the procedures established by the Honors Council.

Honorary, Recognition, and Professional Societies

Chapters of Phi Beta Kappa, the oldest national honorary scholarship society in America, and of Tau Beta Pi, the national engineering honorary scholarship society, are active on the campus. Phi Beta Kappa members are elected from the upper eighth of the junior class and upper fifth of the senior class.

There is a chapter of Alpha Lambda Delta, a national honorary scholastic society for first-year students.

Omicron Delta Kappa and Mortar Board, national recognition societies for juniors and seniors, select their members for excellence in scholarship, leadership, and service.

There are also chapters of the following national honor societies:

Alpha Chi Sigma (chemistry)
 Alpha Kappa Delta (sociology)
 Alpha Psi Omega (theatre)
 Beta Gamma Sigma (management)
 Chi Epsilon (civil engineering)
 Eta Sigma Phi (classics and ancient Mediterranean studies)
 Kappa Delta Pi (education)
 Omicron Delta Epsilon (economics)
 Phi Sigma (biology)
 Phi Sigma Tau (philosophy)
 Pi Mu Epsilon (mathematics)
 Pi Sigma Alpha (political science)
 Psi Chi (psychology)
 Sigma Pi Sigma (physics)
 Theta Alpha Kappa (religious studies)

Professional societies having chapters on the Bucknell University campus are the American Institute of Chemical Engineers, the American Society of Civil Engineers, the Institute of Electrical and Electronics Engineers, the American Society of Mechanical Engineers, the Association for Computing Machinery, the American Chemical Society, the Society of Women Engineers, the National Society of Black Engineers, and the Society of Hispanic Professional Engineers.

Conduct Expectations and Regulations

Faculty members, administrators, and students of Bucknell University believe that the educational aims and purposes of Bucknell must be upheld and promoted by the personal integrity and responsibility of each individual member of the University. The University values a constituency composed of individuals with varied interests and diversity of opinion, and also recognizes that its members must be bound together by respect for the individual and collective rights of other members of the academic community.

Rules and regulations to promote necessary order and unity stem from the corporate authority of Bucknell University. That corporate authority, in turn, stems from both public law and the Charter of Bucknell, which was approved by the Commonwealth of Pennsylvania in 1846 and which remains under the charge of the University's Board of Trustees. Rules and regulations governing conduct, and procedures necessary for their implementation, express Bucknell's corporate authority for its members and are consistent with the Joint Statement of Principles of Academic Freedom and Tenure (1940), endorsed by the Association of American Colleges and the American Association of University Professors, and the Joint Statement on Rights and Freedom of Students (1967), endorsed by the Association of American Colleges, the American Association of University Professors, and the National Student Association.

In general, an individual's actions off campus are subject only to sanctions of civil authorities; however, whenever its interests as an academic community are clearly involved, the University may take disciplinary action independent of civil authorities. It should be understood that the University may have the responsibility of advising appropriate authorities of violations of civil or criminal law committed by anyone on its campus when a request is made by those authorities for specific information, or when there is a danger to life and/or property.

Acts that will subject a person to University disciplinary action are specified in the *Student Handbook*. Disciplinary procedures, rights, and censures as established for violations of University regulations are defined in the same publication.

Statement of Community Responsibility

Bucknell University is strongly committed to fostering a sense of social responsibility and nurturing an atmosphere of respect and integrity in all areas. Upon entry to Bucknell, students read and recite the following statement that mirrors expected conduct described in the Student Code of Conduct.

We are a community of learners who value personal and intellectual honesty.
 Our actions reflect maturity, social responsibility, and respect toward others.
 We value individual differences and will not tolerate harassment or discrimination.
 Our actions show respect for our own health and well-being.
 We honor Bucknell by upholding the policies that support our community standards.

Academic Responsibility

Bucknell University students are responsible for the preparation and presentation of work representing their own efforts. Acceptance of this responsibility is essential to the educational process and must be considered as an expression of mutual trust, the foundation upon which creative scholarship rests. Students are directed to use great care when preparing all written work and to acknowledge fully the source of all ideas and language other than their own.

In cases of alleged academic dishonesty, procedures involving the student, the instructor, the department chair, the appropriate dean, and a Board of Review on Academic Responsibility have been established to assess the facts and determine appropriate penalties, which range from a grade of F on the work to permanent dismissal from the University. Refer to the *Student Handbook* or *Faculty Adviser Handbook* for more detailed information.

Class Attendance

The academic goals and achievements of individual students are the University's primary purpose. The University also recognizes the significant contribution of other activities to the academic and personal development of Bucknell students. It is inevitable that conflicts will arise between the pursuit of extracurricular activities and students' academic schedules. With the emphasis on active learning, class attendance has taken an even more vital role in the instructional goals of the University.

It is desirable, when conflicts do occur, that students have a policy available to guide their decisions concerning class attendance. The present policy states the expectations placed on faculty members, students, and extracurricular advisers, so that students may know their options and the ramifications of their choices.

Policy

1. Responsibilities about class attendance:

- a. Students are expected to attend the regularly scheduled meetings of the courses for which they are enrolled.
- b. Classes scheduled during class hours should be given priority over other activities. "No student who participates in an extracurricular event, team, or program can be penalized solely for missing such extracurricular activities when they are scheduled in conflict with regularly scheduled meeting times of the student's courses." (Action of the faculty, September 1993)
- c. Faculty should provide, on the first day of classes, a clear statement of:
 - i. The consequences of any absences.
 - ii. Scheduled time commitments outside of class.
- d. Students should not be required to attend extra or rescheduled academic events that conflict with other classes or other important commitments.

2. Responsibilities about non-class activities.

- a. Extracurricular advisers should, during the first week of classes, inform students of those dates upon which they will be asked to miss a class due to an extracurricular activity.
- b. Students should give faculty as much advanced warning of class absence as possible.
- c. University units regularly sponsoring extracurricular activities are urged to develop guidelines about the appropriate level of demands to place upon student participants with respect to missing class.

3. General responsibilities:

- a. Because students are ultimately responsible for their education at Bucknell University, they must be the ones to weigh the consequences of missing classes or other activities and make their choices accordingly.
- b. Both faculty and advisers of extracurricular activities are encouraged to be as flexible as possible in addressing attendance requirements.

Students and faculty may seek advice in these matters from their college dean.

ADMISSIONS

- Qualifications for Admission (p. 236)
- Visiting Bucknell (p. 236)
- Applying for Admission (p. 236)
- Decision Plans (p. 237)
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- Standardized Tests (p. 238)
- Entrance Deferral (p. 238)
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Admissions Review Process for Undergraduate Applicants

Bucknell University's admissions process is highly selective, as the University receives many more well-qualified applications than it has spaces available in each incoming class. The admissions committee's review process includes:

- Quality of the admissions application
- Secondary school curriculum, including both rigor and performance
- Aptitude for college study as reflected by the SAT or ACT test scores (Applicants for whom English is not their first language or whose primary language of instruction is not English are required to submit TOEFL, or IELTS or PTE Academic scores)
- Written recommendations
- School and community activities
- Indications of special talents
- Evidence of strong personal qualities of character and leadership

The admissions committee is interested in applicants with the intellectual capabilities, academic preparation and sincere interest in contributing to Bucknell's residential learning community.

Visiting Bucknell

Visit campus to learn more about Bucknell's academic programs, resources, and facilities. Visit options for prospective students and families include:

- Preview Session
- A Day in the Life for high school seniors
- Campus Tour
- Facility Tour
- Lunch Visit
- Seasonal open house programs

Interviews are not a part of the application process.

Find out more at bucknell.edu/visit. Take our virtual tour at bucknell.edu/virtualtour.

Applying for Admission

To apply for admission as a first-year student, please use the Common Application, available at commonapp.org. For your application to be complete, you must submit the following:

- Common Application, including the non-refundable \$40 application fee or fee waiver request.
- All supporting materials, including questions specific to Bucknell University; the personal essay (no supplementary essay is required); Secondary School Report and guidance counselor evaluation; transcript from each high school attended; SAT or ACT scores (SAT Subject tests are not required); at least one teacher recommendation, preferably from a core subject; and the Mid-Year Report, when available.
- Early Decision applicants must submit the Common Application Early Decision Agreement form, including all required signatures (applicants, parent/guardian, and school counselor).
- Applicants for whom English is not their first language or whose primary language of instruction is not English are required to submit TOEFL, or IELTS or PTE Academic scores. This requirement is waived for students whose secondary school instruction is entirely in English.

If you are applying as a transfer student, you must submit:

- Common Application for transfer students, including the \$40 application fee or fee waiver.
- All supporting materials, including the Transfer Credit Summary Sheet, an academic evaluation from a college instructor, the College Official's Report for Transfer Admissions, an official transcript of each college and high school attended, and mid-semester grade report.

If you applied previously to Bucknell, the application fee may be waived and the official secondary school report may be retrieved.

Decision Plans

First-year students

Bucknell University offers Early Decision I with an application deadline of November 15, and Early Decision II and Regular Decision with an application deadline of January 15.

If Bucknell University is a student's first choice, Early Decision allows the student to receive an admission decision within one month of the application deadline. Early Decision applicants may file Regular Decision applications at other institutions, but must withdraw them if they are offered admission to Bucknell. Decisions for Early Decision applicants include admit, defer to Regular Decision, or deny. Admitted applicants are required to submit a \$500 nonrefundable enrollment deposit by the date indicated in their admission letter, typically within one month of the admission notification.

Regular Decision applicants receive notification by April 1. Decisions for Regular Decision applicants include admit, wait list for later consideration, or deny. Early Decision applicants deferred to Regular Decision will either be admitted or denied admission. Admitted applicants who decide to enroll are required to submit a \$500 nonrefundable enrollment deposit by May 1.

Find out more about the application process at bucknell.edu/apply.

Transfer students

Students may transfer to Bucknell for either the fall or spring semester.

The application deadline for the fall semester is March 15; for the spring semester, the deadline is November 1.

Academic Requirements

Minimum requirements for various course areas as they relate to prospective major and non-major studies include:

Requirements in Foreign Language

All applicants are required to have completed a minimum of two years of a foreign language (in the same language) in secondary school for all of Bucknell's degree programs.

Please note that coursework taken prior to the ninth grade does not count toward the two-year requirement.

Requirements in Mathematics

At least three years of college preparatory mathematics are required for admission.

Students planning to take calculus at Bucknell University, including all students majoring in mathematics, science, engineering, or economics are required to have additional preparation, including a year of precalculus and, preferably, calculus. The term "college-preparatory mathematics" denotes a logical sequence of topics, including algebra and geometry, with emphasis on basic concepts and on principles of deductive reasoning. The term "precalculus" denotes the study of polynomial, rational, trigonometric, logarithmic and exponential functions. The term "calculus" denotes the study of transcendental functions; interpretation, significance and calculation of a derivative; and introduction to the definite integral.

Requirements in the Sciences for Engineering Applicants

Engineering applicants are required to have one year of either chemistry or physics, however, Bucknell strongly recommends a minimum of three years of science, including chemistry and physics.

Bachelor of Arts in Music or a Bachelor of Music Applicants

Students who are applying to pursue a Bachelor of Arts in Music or a Bachelor of Music degree must complete a two-part prescreening and audition process. Information regarding the materials required for the prescreening process, as well as deadlines and general notification and registration guidelines, are available at bucknell.edu/ArtsMeritScholarships.

Standardized Tests

Applicants for undergraduate admission are required to take either the SAT or the ACT examination, either in the junior year of high school or the fall of senior year. SAT Subject Tests are not required. Test results must be sent directly from a test organization to Bucknell University (SAT code 2050 and ACT code 3528). Information on the SAT is available at sat.org (<http://www.sat.org>) and on the ACT at actstudent.org (<http://www.actstudent.org>). Applicants do not need to complete the optional essay section on either the SAT or ACT.

Applicants for whom English is not the first language or whose primary language of instruction is not English are required to submit TOEFL, or IELTS or PTE Academic scores. The minimum recommended TOEFL score is 600 on the paper-based exam (PBT) or 100 on the Internet-based exam (IBT). The minimum recommended score is 7 on the IELTS and 68 on the PTE Academic exam. Information on the TOEFL is available at ets.org/toefl (<http://www.ets.org/toefl>), the IELTS at [ielts.org](http://www.ielts.org) (<http://www.ielts.org>), and the PTE Academic at pearsonpte.com (<http://pearsonpte.com>). Test results must be sent directly from the test organization to Bucknell University.

Entrance Deferral

A student may elect to defer enrollment for one or two years after being admitted. Requests must be submitted in writing to the dean of admissions any time between receipt of an offer of admission and July 1. A nonrefundable deposit will be required to hold this space. Deferrals are typically granted to students who desire to engage in personal enrichment or community service activities. Students may not request a delay in their Bucknell enrollment to attend a secondary school, college, or university full time. Requests may be declined for any reason.

Advanced Standing for First-year and Transfer Students

First-year students

Applicants who earn the equivalent of eight or fewer Bucknell University course credits at another college while in high school shall only be considered for admission as first-year students. These students will be required to comply with University curricular and co-curricular programs and policies for entering first-year students.

Credits can be earned through College Board Advanced Placement (AP), International Baccalaureate (IB), or college courses taken while in high school. Students earning any of these credits may attend Bucknell for eight semesters (or 10 semesters if they are enrolled in a five-year engineering program).

Students who have earned more than eight course credits but want to be admitted as first-year students should consult with the associate dean of their respective college after admission is offered to determine which courses they should select for transfer.

Students interested in transferring more than eight Bucknell University course credits shall be considered for admission only as a transfer student. These students will not be eligible for, or required to comply with, University curricular and co-curricular programs and policies intended for those entering college immediately after high school. The graduation dates of these students will be adjusted to reflect their prior work. The graduation date, or class year, determines the number of semesters a student may attend Bucknell. When necessary, the deans may adjust a student's graduation date due to curricular needs.

Transfer students

Students who have graduated from high school and have earned college credits while matriculated in a degree program elsewhere will only be considered for admission as a transfer student. Students with less than four accepted transfer credits will be eligible for, and required to comply with, University curricular and co-curricular programs for first-year students.

While the preceding policies apply in most situations, exceptions may be made by the Office of Admissions after considering an applicant's particular circumstances and consulting with the Offices of the Registrar, the Deans of Arts & Sciences or Engineering, and Student Services.

Students applying for transfer admission are typically expected to have a grade point average of at least a 3.0 (on a 4.0 scale). The average GPA of admitted transfer students is 3.4. Courses will be credited if they are comparable to those offered at Bucknell, if they can be counted toward the requirements for graduation, and if a grade of C or better was earned. A grade of C- or below, Pass/Fail grades, or audited courses will not be accepted for transfer credit. Courses in professional or vocational fields, math courses lower than introductory calculus, and language courses that repeat high

school work are not acceptable for transfer. Courses taken online at regionally accredited universities will be considered for transfer credit at the discretion of the department chair.

Most students transfer to Bucknell from schools employing the semester hour credit system. For schools on a semester hour system, four semester hours are equivalent to one Bucknell course credit. Policy does allow that two courses of only three semester hours may each transfer as a full course credit. Transfer credit would be reduced to .75 credits for any three semester hour course taken thereafter. For schools on a quarter credit hour system, six quarter hours are equivalent to one Bucknell course credit. Policy does allow that two courses of only 4.5 quarter hours may each transfer as a full credit. Transfer credit would be reduced to .75 credits for any 4.5 quarter-hour course taken thereafter.

The grade point average required for good standing and for graduation is compiled only on work taken at Bucknell. Applicants for admission with advanced standing must provide the dean of admissions with an official transcript of record that reflects all earlier college work and any other requested information.

In highly structured programs such as those leading to the Bachelor of Music degree, the Bachelor of Science degrees, and the engineering degrees, the sequence of courses is very important. Potential transfer candidates interested in these areas should contact the Office of Admissions as early as possible for advice on selecting courses where they are currently enrolled.

Students will not be admitted to Bucknell's undergraduate program if they have earned the equivalent of more than 80 semester hours elsewhere. This limit includes credits earned through Advanced Placement, International Baccalaureate, and College Level Examination Program subject tests. To satisfy Bucknell's graduation requirements, undergraduates in the College of Arts and Sciences must complete a minimum of 12 Bucknell University courses and in the College of Engineering a minimum of 13. A minimum of two semesters in residence during the junior and senior years are also required. The first semester after matriculation and the final semester before graduation must be in residence.

Integrity of Application Process

Each applicant is required to certify that any and all information furnished to the University is accurate and complete. In addition, any material submitted (including – but not limited to – the application itself, essays, and supplemental materials) must be the applicant's original work. Any applicant for admission or financial aid who knowingly submits false or fraudulent information, conceals material information, or intentionally misleads or misinforms the University, may be subject to actions including (but not limited to) denial of admission, revocation of an award of financial aid and repayment of dispersed funds, dismissal from the University, or revocation of a conferred degree.

Medical Requirements

All full-time domestic and international entering students must submit the Bucknell Student Health medical history and physical examination form completed by their medical provider. Students are required to complete a tuberculosis screening and be up to date on the required immunizations stated on the health form.

Meningitis: Pennsylvania law requires all students residing in University housing either to have the meningitis vaccine for serogroups A, C, W and Y, or to sign a declination statement after review of written information concerning the benefits of receiving the meningitis vaccine.

Health Insurance Requirement

All full-time undergraduate students and graduate students attending Bucknell University must enroll in or waive out of the health insurance coverage offered through the University. All students (except international students, see below) providing verifiable proof of comparable coverage, may waive the purchase of the sponsored plan. Students failing to submit proof of coverage or whose plan does not provide comparable coverage, will be automatically enrolled in the plan offered by the University at the end of the enrollment period. Students will receive information regarding the University-sponsored plan through a summer mailing. Information will also be available in the students' *myBucknell* portal beginning in early August.

In order to complete registration for fall semester classes, the online waiver/enrollment form must be completed prior to the start of classes.

Bucknell University requires all international students to purchase the University-sponsored medical insurance program. The premium for this coverage is automatically charged to the student's account and enrollment is automatic. There is also coverage available for dependent spouses and children that can be purchased through the school-sponsored plan.

Readmission

A student who has withdrawn voluntarily from Bucknell University and has attended another college or university without the permission of the college dean at Bucknell must submit an application for readmission to the Office of Admissions under the regulations governing transfer students.

FINANCE AND FINANCIAL AID INFORMATION

Approximately 52 percent of Bucknell's undergraduate students receive Bucknell grants or scholarships. When other types of aid are considered – such as grants from sources other than the University, student loans, and campus employment – about 62 percent of our undergraduate students receive some financial assistance in meeting their educational expenses.

Bucknell's grant and scholarship program is a mix of need-based grants and scholarships that do not necessarily require a student to have financial need. This blended approach provides the University with the flexibility to appropriately recognize the achievements of the best and the brightest students within our applicant pool. The majority of Bucknell aid is awarded to students with financial need, and these are re-evaluated annually by considering family income, assets, number of members in the household, and number of children enrolled at least half-time in undergraduate degree-seeking programs. A limited number of scholarships will be awarded to students with no need or who do not apply for aid. Since we have an exceptionally talented pool of students applying for admission, all merit awards are extremely competitive.

First-year need-based aid recipients will continue to receive assistance in subsequent years as long as they continue to demonstrate eligibility as determined by the Office of Financial Aid, maintain satisfactory academic and social standing with the University, and meet the specified financial aid application deadlines. If a family's financial situation remains essentially the same, a student's aid should remain consistent over his or her four years at Bucknell University. However, changes in income, assets, and number of children in the family who are enrolled at least half-time in undergraduate degree-seeking programs can increase or decrease need-based aid eligibility from year to year, so students will need to reapply for aid each year.

Withdrawals and Leaves-of-absence

If you are a current financial aid recipient, please understand that when you withdraw, federal regulations require the Office of Financial Aid to calculate the percentage of the semester you completed and determine whether we must return any of your federal financial aid to the federal government and/or Bucknell financial aid to the University. As a result, it is possible that you will owe the University a balance because your financial aid eligibility will have changed. In addition, please be aware that federal loans that you have borrowed will go into repayment six months after you drop below half-time enrollment, unless you are in an approved leave-of-absence status as defined by the federal government for Title IV financial aid purposes. However, the federal Title IV leave-of-absence definition is more stringent than the Bucknell leave-of-absence definition, so they are not the same thing. In the vast majority of cases, Bucknell leave-of-absence does not qualify as a federal Title IV leave-of-absence. Therefore, your official status to the federal government must be reported as a withdrawal and your loan repayment will begin six months after the effective date.

If you will be returning to Bucknell after a voluntary leave, health leave or involuntary leave-of-absence, please be aware that you must reapply for financial aid each year. Although we cannot make any guarantees, if you are eligible, we will do our best to provide financial aid to you. Our deadline for returning students is April 15, so please be sure to complete your financial aid file by this date.

Types of Financial Aid

Financial aid packages usually consist of three different aid types:

Scholarships/Grants

Scholarships/Grants are gifts and do not have to be repaid. Funds for need-based grants and merit-based scholarships come from the University itself, as well as foundations, corporations, state agencies, and the federal government.

Student Loans

Student Loans are funds borrowed for educational expenses and must be repaid by the borrower, usually with interest.

Campus Employment

Campus Employment provides an opportunity for students to earn funds for their educational expenses. Although students are not assigned specific jobs or placements by the Office of Financial Aid, financial aid recipients are often given preference in campus hiring. Financing for campus employment comes from the University and the federal government. Students who qualify for the Federal Work Study program have additional opportunities for employment in the area of community service.

Applying for Financial Aid

The **Free Application for Federal Student Aid (FAFSA)** is required each year for all federal financial aid programs such as the Federal Pell Grant, Federal Direct Loans and Federal Work-Study. The form can be found at www.fafsa.ed.gov, (<http://www.fafsa.ed.gov>) and Bucknell's FAFSA code is 003238. For **current/returning students**, our deadline is April 15. For incoming first-year students, our deadline is May 1. (For **incoming first-year students** who also wish to apply for Bucknell need-based financial aid, we require the CSS PROFILE – see below.)

The **CSS PROFILE** is required if you wish to be considered for Bucknell need-based financial aid, but you only need to file it once, the first time you apply for need-based aid. The form can be found at student.collegeboard.org/profile (<http://student.collegeboard.org/profile>), and Bucknell's CSS code is 2050. Our deadlines are November 15 for Early Decision 1, January 15 for Early Decision 2, and January 15 for Regular Decision. If your biological

parents are divorced or separated, your non-custodial parent must also complete and submit the **Bucknell University Non-Custodial Parent Form** (available on our website) by the same deadlines.

Accepted and enrolling incoming first-year students must also submit tax, verification and any other requested documents by May 10. Current/returning students must submit these by April 15.

Transfer student applicants must file the same documents as first-year students, but the CSS deadline is November 1 for spring enrollment and March 15 for fall enrollment.

International incoming first-year students must complete and submit the Bucknell International Student Financial Aid Application, located on our website. (International current/returning students do not have to file this form again.)

Please refer to our literature and website at www.bucknell.edu/FinancialAid.xml for specific application information, types of financial aid, and procedures.

All inquiries and questions regarding financial aid at Bucknell should be directed to the Office of Financial Aid.

Deposits and Refund Policies

Required Deposits

Admissions

All incoming students are required to make a nonrefundable deposit of \$500 in accordance with the terms of the letter of admission to the University. This deposit will be credited to the student's first semester billing.

Other Deposits

Other deposits may be required of students enrolled in specific courses or programs.

Credit and Refund Policies

Tuition and Room Fees

Tuition and room fees will be credited to accounts of students who give written notification of withdrawal from the University, subject to the conditions that follow. The date of receipt of the written notice by the Office of the Registrar will be considered the official date of withdrawal. No credit of tuition or room fees will be made after the midpoint of the term or semester. No refund will be made if academic credit is earned. Prior to the midpoint of the term or semester, tuition and room fees will be credited as follows:

Timing of Withdrawal/Leave-of-absence and Amount of Tuition and Room Fees Credit

- Prior to first day of classes: 100 percent credit.
- From first day of classes through the midpoint of the term or semester: The amount of credit issued will be reduced by two weeks of tuition and room fees for each week, or partial week, completed.
- After the midpoint of the term or semester: No credit will be issued.

Student Fees

Student fees will be credited, in full, in the case of voluntary withdrawal, or voluntary or involuntary leave-of-absence prior to the first day of classes. No portion of the fees will be credited after classes begin.

For students **suspended or dismissed for disciplinary reasons**, the University will not issue credit for tuition or room fees.

Active Duty Withdrawal

Students who must withdraw because they are called to active duty and who receive no academic credit for the semester will receive a full tuition refund. If academic credit is awarded, the refund will be prorated according to the amount of that academic credit. The student fees also will be credited in full, and room fees will be credited based on the number of unused days.

Board Charges

Board charges are credited on the basis of the unused portion of a board contract for all withdrawals, suspensions, and dismissals. Board charge credits are subject to a forfeit fee not to exceed \$50.

For **off-campus or summer programs**, there will be no credit for the cost of personal services, travel expenses, supplies, or services furnished by outside contractors that have been used prior to withdrawal or for which no credit is available to the University. For **students other than full-time undergraduate students**, the "100 percent credit" period will extend through the end of the last day of the formal drop/add period.

University Housing Damage Charges

The University holds resident students responsible for any unassigned loss, damage, repair, or replacement of the furnishings, doors, windows, walls, and the condition of the room during the term of occupancy. Furthermore, because living in a University residence is a privilege accompanied by certain responsibilities associated with community living, resident students assume responsibility for any unassigned loss or damage to any property in the public area (lounges, hallways, bathrooms, etc.) within the community. The costs associated with communal damages can be viewed on *myBucknell*. However, individual room damages and unassigned damage occurring in communal areas are posted on a resident's account at the conclusion of each semester.

Refunds

Credit balances appearing on the student's B-bill account will be refunded in accordance with the following guidelines:

- Refunds will be issued when a credit balance actually exists on the student's B-bill account.
- If the total Title IV, HEA program funds credited to your account exceed the amount of tuition, room and board, you may authorize Bucknell University in writing or electronically to pay other current charges that were incurred at Bucknell for educationally related activities. These charges may include books, supplies, telephone toll charges, etc., which were incurred either before or within 14 days of the credit balance occurring.
- If the credit balance is a result of excess payments, the credit balance will be refunded to the student upon their online request through *myBucknell*.
- If a refund is not requested, the credit balance will remain on the account to help offset future charges.

Note: Specific credit and refund guidelines exist for students receiving financial assistance under Title IV of the Higher Education Act of 1965, as amended. This refund policy is included in its entirety later in the University *Catalog*. Questions concerning these guidelines should be directed to the Office of Financial Aid by phone at 570-577-1331 or email finaid@bucknell.edu.

Financial Obligations

No student will be enrolled or graduated, and no student will be given a transcript of record, until all accounts have been paid or satisfactory arrangements have been made with the Office of Bursar Services.

Accounts are due by the due date specified on the B-bill account. A late fee of one percent of the outstanding balance of any student account will be assessed each billing period until the account is settled.

A past due balance may result in the suspension of Bucknell charging privileges. The charge privileges will not be reinstated until the account is paid in full. A penalty fee of \$25 will be charged for any payment made by check or online through B-bill if returned for insufficient funds. If any account is forwarded to our collection agency, the individual will also be responsible for paying any collection fees associated with the collection of this debt.

Bucknell University offers a Monthly Payment Plan, administered by Tuition Management Systems (TMS), and is a budget plan that divides college costs into 10 consecutive monthly interest-free installments. Additional information about the plan can be found on the Financial Aid website under Financing Options or, to apply, you may contact TMS at 800-722-4867 or bucknell.afford.com. (Non-U.S. citizens also may apply for the payment plan.)

Return of Federal Student Aid

The federal government requires Bucknell University to publish federal refund policy under Title IV of the Higher Education Act of 1965 as amended.¹ This refund policy sets guidelines for students who withdraw from the University if they receive financial assistance from the federal government.

The Department of Education stipulates the way funds paid toward a student's education are to be handled when a recipient of Title IV funds withdraws from school. A statutory schedule is used to determine the amount of Title IV funds a student has earned when he or she ceases attendance based on the period the student was in attendance. Through the 60-percent point in each payment period or period of enrollment, a pro rata schedule is used to determine how much Title IV funds the student has earned at the time of withdrawal. After the 60-percent point in the payment period or period of enrollment, a student has earned 100 percent of the Title IV funds.

In general, the Amendments require that if a recipient of Title IV funds withdraws, the school must calculate the amount of Title IV funds the student earned. The percentage and amount not earned is the complement of the percentage of Title IV funds that was disbursed (and that could have been disbursed) to the student, for the payment period or period of enrollment, as of the day the student withdrew or the date of the institution's determination that the student withdrew. If the student received less Title IV funds than the amount earned, the school must comply with the procedures for post-withdrawal disbursement specified by the federal regulations. If the student receives more Title IV funds than the amount earned, the school, or the student, or both, must return the unearned funds as required, and in the order specified.

The student (or parent, if a Federal PLUS loan) must return or repay, as appropriate, the remaining unearned Title IV grant and loan funds. The student (or parent, if a Federal PLUS loan) must return the unearned funds for which they are responsible to loan programs in accordance with the terms of the loan, and to grant programs as an overpayment. Grant overpayments are subject to repayment arrangements satisfactory to the school, or overpayment collection procedures prescribed by the Department of Education.

Title IV funds for the payment period or period of enrollment for which a return of funds is required must be returned in the following order:

- Federal Unsubsidized Direct Stafford Loans (other than Direct PLUS loans)
- Federal Subsidized Direct Stafford Loans
- Federal Perkins Loans
- Federal Direct PLUS Loans
- Federal Pell Grants for which a return of funds is required
- Federal Supplemental Educational Opportunity Grants (SEOG) for which a return of funds is required
- Federal Teach Grants for which a return of funds is required
- Iraq and Afghanistan Service Grants for which a return of funds is required

Any questions should be directed to Bursar Services department in the Finance Office at 570-577-3733.

Note: A listing of tuition and fees for the academic year is available from the:

Office of Finance
Bucknell University
Lewisburg, PA 17837

¹ Source: 2015-16 Federal Student Aid Handbook

ENDOWED FUNDS

This section includes a variety of endowments, including endowed and named chairs and faculty fellowships as well as scholarships, that support numerous activities across the institution.

Endowed and Named Chairs and Faculty Fellowships

The David Burpee Chair in Plant Genetics was established in 1983 through the generosity of David Burpee, Bucknell trustee for more than 40 years. Incumbents of the chair will be selected to advance knowledge in plant genetics research.

The Claire W. Carlson Chair in Environmental Engineering was funded by gifts from Trustee Emerita Claire W. Carlson, Class of 1949. Those selected to hold this chair will lead students and faculty peers through teaching, collaborative research and scholarship in specialized and interdisciplinary study associated with environmental engineering.

The John P. Crozer Chair of English Literature was established in 1865 and honors a faculty member known for outstanding scholarship in English literature. John P. Crozer, a trustee of the University, gave Bucknell, in 1856, a substantial gift for the purpose of more fully founding and endowing the University.

The William H. Dunkak Chair in Finance in the Department of Business Management was established by William H. Dunkak Jr., in memory of William H. Dunkak. The chairholder will be included in the faculty of the College of Arts and Sciences, and will be charged with teaching about, and conducting, guiding, and supporting personal and student research in the area of finance.

The David and Patricia Ekedahl Professorship in Environmental Studies was established in 2010 by David '56 and Patricia Ekedahl. Those selected to hold this professorship will be appointed for terms of up to five years and charged to lead students through teaching and collaborative research and scholarship, and through collaboration with faculty peers and students in both specialized and interdisciplinary study of environmental issues, including human effects on the environment and environmental effects on human life and culture.

The William C. and Gertrude B. Emmitt Memorial Chair in Biomedical Engineering was established to honor the memory of these members of Bucknell's Class of 1930 by their children: Virginia M. Chitwood, Class of 1959; Richard B. Emmitt, Class of 1967; and William C. Emmitt Jr., Class of 1969. The chairholder will be included in the faculty of the College of Engineering, and will be charged with teaching about and conducting, guiding, and supporting personal and student scholarship activity in the area of biomedical engineering.

The Jane W. Griffith Faculty Fellowship was established by Jane W. Griffith, Class of 1943, in 2005. Fellowship grants from this fund are awarded to superior newly hired faculty to support their research and professional academic development.

The John Howard Harris Chair in Philosophy honors a faculty member known for superior teaching and outstanding scholarship. The chair was established in 1925 in honor of the fourth president of Bucknell University. President Harris, who worked to build a faculty of superior teachers who maintain a high level of scholarship, was responsible for the expansion of the Bucknell curriculum to include professional and technical studies.

The Heinemann Family Professorship in Engineering was funded by a gift from Trustee Kirsten S. Heinemann, Class of 1981, and Steven D. Heinemann, dedicated parents of Andrew F. Heinemann, Class of 2012, and Erik Leister Heinemann, Class of 2015. The Heinemann Family Professorship will be held by a member of the faculty in the College of Engineering.

The Samuel H. Kress Professorship of Art History was created in 1967 by the Bucknell University Board of Trustees as a memorial to one of the leading patrons of the arts in the United States. It was funded through the sale of real estate given by the Samuel H. Kress Foundation after the death of Rush H. Kress, Class of 1900, a generous benefactor and Bucknell trustee for many years. Holders of the chair will be selected to recognize excellence in teaching and scholarship in the field of art history.

The Margaret Hollinshead Ley Professorship in Poetry and Creative Writing was established in 2010 by Margaret Hollinshead Ley, a member of Bucknell's Class of 1960. Those selected to hold this professorship will be appointed for potentially renewable terms of up to five years and charged with leading students from all disciplines, including math, the sciences, engineering, and the social sciences, as well as the more traditional fields within the humanities, through inspirational teaching and the creative production of poetry and prose, and collaborating with faculty peers and students in the study of poetry and creative writing.

The Christian R. Lindback Chair in Business Administration was created by a gift from the Christian R. and Mary F. Lindback Foundation in 1960, in memory of Christian R. Lindback and in recognition of his sustained interest in faculty development in all disciplines of the University.

The John D. MacArthur Chair was established in 1981 with endowment funds from the John D. and Catherine T. MacArthur Foundation, to assist in bringing new and promising faculty members to Bucknell. The professorship rotates from department to department every five years at the designation of the president.

The T. Jefferson Miers Chair in Electrical Engineering was established by gifts from Louise Matthews Miers, Class of 1926, to honor the memory of her husband, T. Jefferson Miers '26, by promoting outstanding faculty scholarship at Bucknell. Holders of the chair will be selected to recognize the excellence of their scholarship, teaching ability, and their leadership in the field of electrical engineering.

The National Endowment for the Humanities Chair in the Humanities was established in 1989 with funds from the National Endowment for the Humanities and honors an associate professor with a strong record of scholarship and teaching in the humanities at Bucknell University.

The C. Graydon and Mary E. Rogers Faculty Fellowship was established in 2009 by C. Graydon and Mary E. Rogers, both members of Bucknell's Class of 1951. Grants from this fund are awarded to attract and retain superior faculty by supporting their research, teaching, and professional academic development.

The Robert L. Rooke Chair in the Historical and Social Context of Engineering was established by a bequest from the estate of Robert L. Rooke '13. The chairholder will be included in the faculty of the College of Engineering, and will be charged with teaching about and conducting, guiding, and supporting personal and student research on the historical and social effects of technology and engineering. This teaching responsibility will be cross-disciplinary, and may include courses and students in both the College of Engineering and the College of Arts and Sciences.

The Robert L. Rooke Professorship in Engineering was established in 2004 with funding from the estate of Robert L. Rooke '13. The chairholder will be a tenured member of the College of Engineering faculty and will be charged with initiating or enhancing activities identified to be of special benefit to the educational programs and students in the College of Engineering.

The Howard I. Scott Endowment was established in 1988 and principally funded by testamentary gifts from the estate of Howard I. Scott '39 as a memorial honoring his parents, Russell Lewis Scott and Bessie Harrison Scott. The endowment funds the Howard I. Scott Chairs and Professorships in Management, supporting teaching, scholarly research, and lectures concerned with leadership, innovation, and strategic management in the modern business world.

The Ruth Everett Sierzega Chair in Linguistics was established by Edward Raymond Sierzega to recognize excellent teaching and scholarship in linguistics and languages. The chair was established by Mr. Sierzega to preserve and honor the memory of his wife, Ruth, Class of 1945.

The Silbermann Family Visiting Professorship in Modern Hebrew Language and Literature was funded by a gift from M. Steven '78 and Julie Silbermann '78 P'08 P'12 in support of teaching and research in Judaic Studies.

The Herbert L. Spencer Professorship in Biology was established in 1970 as a memorial to Bucknell's eighth president (1945-49) and executive director of the Samuel H. Kress Foundation, with a grant from the Kress Foundation.

The Swanson Fellowships in the Sciences and Engineering were established in 2002 by the children of Mary Jane Brokaw Swanson '52 and Jack Swanson '51 to honor their parents. The fellowship has been increased regularly with gifts from the Swansons and members of their family. Swanson Fellowships are granted to newly hired faculty in the laboratory science and engineering departments to support their research and professional academic development.

The David Morton and Leanne Freas Trout Professorship of French was established in 2008 by Leanne Freas Trout, Class of 1950, to honor the memory of her late husband, David, also a member of the Class of 1950, and an Emeritus member of the University's Board of Trustees. Those selected to hold this professorship will be appointed for five-year terms and charged to lead students through teaching, personal and directed student scholarship, and collaboration with faculty peers and students in the study of French language and culture, and Francophone Studies.

The Charles P. Vaughan Chair in Economics was created by the Bucknell University Board of Trustees in the mid-1920s in recognition of Charles P. Vaughan's sustained support of the University during times of extreme financial duress. The chair honors Charles P. Vaughan by promoting a faculty of superior teachers who maintain a high level of scholarship.

The Ellen P. and Samuel L. Williams Endowed Music Professorship Fund was created in 2009 through a bequest gift from Ellen Peterson Williams, Class of 1919, to honor the time she spent at Bucknell and the memory of her husband, Samuel L. Williams. The fund creates two professorships: the Ellen P. Williams Professorship, awarded to a senior faculty member in music, and the Samuel L. Williams Professorship, awarded to a junior faculty member in music.

Endowed Scholarships

Note: All Bucknell endowed scholarships are awarded to qualified individuals on the basis of documented financial need, as determined by the Office of Financial Aid. Awards from these funds shall be made in compliance with the University policy of nondiscrimination.

The Accenture Scholarship was established in 1996 by Accenture, a global leader in management and technology consulting. The award was created in recognition of the numbers of Bucknell University graduates enjoying successful careers at Accenture, and to demonstrate Accenture's ongoing support of the Bucknell student community. Preference for the scholarship shall be given to upperclass students (sophomores, juniors, or seniors) who have maintained a solid GPA while demonstrating active participation and leadership in campus activities.

The William D. Adams Presidential Scholarship was established in 2000 by Judy Plattman Denenberg, Class of 1957, and Byron A. Denenberg, Class of 1956, in honor of William "Bro" Adams, who served as Bucknell's 14th president from March 1995 to June 2000. The scholarship shall be awarded to students with demonstrated financial need, with preference for students whose ethnic, racial, economic, or national origins add to the diversity of Bucknell.

The Guy A. Agati Memorial Scholarship was established by Norma Z. Agati to honor the memory of her husband. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Steven Ahmuty Scholarship was established in 2005 by Steven J. Ahmuty Jr., Class of 1975. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Tyler H. Ahmuty Scholarship was established in 2009 by Tyler H. Ahmuty, Class of 2009. The scholarship shall be awarded to students with demonstrated financial need and without other restrictions.

The George I. Alden Trust Scholarship was established through a distribution from the George I. Alden Trust. The scholarship shall be awarded to students with demonstrated financial need and gives preference to students who reside in Massachusetts or other New England States.

The Dr. Alexander Aleshouckas Allen, Class of 1922, and Joseph Aleshouckas Allen, Class of 1915, Scholarship for students of chemistry and chemical engineering was established by Patricia Allen Dreyfus, Doc's daughter and Joe's niece. Preference for the scholarship award shall be given to residents of Luzerne, Schuylkill or Berks counties, Pa.

The Ezra Allen Scholarship was established by Ezra Allen, Class of 1895, to be awarded to a student who meets high academic standards, a preference to be shown for a student majoring in biology.

The Vivian B. Allen Foundation Scholarship Fund was created in 1969 to provide scholarship aid for students from foreign countries.

The Michael N. Allwin '12 Scholarship was funded by a gift from Maria Allwin in honor of her son, Michael Allwin, Class of 2012. Awards shall be made to students based on financial need without restriction.

The James and Etta Alsop Scholarship was created by gifts from Trustee Marlene A. Hurd and James D. Alsop, Jr., both Class of 1979. Grants shall be made to students based on financial need and without further restriction.

The American Baptist Men of Pennsylvania and Delaware Scholarship was established to assist needy and deserving students, with preference given to American Baptists.

The David James Ambuhl '80 Memorial Scholarship was established by his family and friends. The scholarship shall be awarded to students with the most pressing financial need, with preference for students enrolled in the College of Arts and Sciences and without other restriction.

The Ted Ammon Scholarship was established by R. Theodore Ammon, Class of 1971. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Owen and Judith Anderson Scholarship was established in 2007 by Owen Anderson, professor emeritus of physics and astronomy, and his wife, Judith Anderson, in appreciation for the benefits made available by the University for the education of their five children. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Robert S. Anderson Scholarship was established by Dr. Anderson, Class of 1933, to support premedical students from northeastern Pennsylvania. Residents of Luzerne County will receive first consideration, followed by residents of Lackawanna and Wyoming counties.

The Michael Andrews '64 Scholarship was established in 2000 by friends and classmates of Mike Andrews, Class of 1964. The scholarship shall be awarded to students with demonstrated financial need, with preference for students enrolled in biomedical engineering courses.

The Arvilla J. Arnold Scholarship was established by Arvilla J. Arnold. The scholarship shall be awarded to students with demonstrated financial need with preference for students who are on the varsity track or cross country teams and without other restriction.

The Association for the Arts Scholarship was established by the association in 1988. The scholarship is awarded at the discretion of the executive committee of the association to provide financial assistance to deserving undergraduate students with preference given to students who display special talents in one or more of the arts, such as, but not limited to art, creative writing, dance, music, and theatre.

The Athletic Scholarship was established anonymously by a member of the Class of 1980. Preference for awards from this scholarship shall be given to talented scholar-athletes with demonstrated financial need.

The Voris Auten Scholarship Fund was established by a bequest from Joseph W. Deppen, Class of 1900. The income is to be used for scholarships for those who have resided in Mount Carmel for 10 years, who are graduates of Mount Carmel Public High School, who are not habitual users of tobacco, intoxicating liquor, and narcotics, and who do not participate in strenuous athletic contests.

The Warren Baas Scholarship, established by the family and friends of Warren Baas, Class of 1973, is to be awarded to a member of the senior class, with preference given to an engineering major, who has combined academic strength and significant extracurricular contributions to the University.

The Baird Family Scholarship was established by Charles F. and Norma W. Baird, Class of 1946. Preference for the scholarship award shall be given to worthy and needy students, and without any restrictions.

The George Ballentine Scholarship was established by The Reverend George Ballentine, A.M., Class of 1871, for a preministerial student.

The Herbert Barness Scholarship was established by gifts from family and friends in honor of Herbert Barness, Class of 1948. The income is to be used annually to provide financial aid to a deserving undergraduate selected by the University.

The Olive B. Barr Scholarship Fund was established in 2008 with a testamentary gift from Olive Barr, Class of 1931. Olive realized the importance of providing an educational opportunity for students. Awards shall be made to students with demonstrated financial need in the liberal arts curriculum.

The Kirk Richard Barrett Memorial Scholarship was established March 8, 1997, by the family and friends of Kirk Barrett, Class of 1987, in his memory after a tragic and untimely death in 1994. It includes a gift from his estate in honor of his love for Bucknell, and his respect for Professors Warren Abrahamson and Michael Moohr. The income is to be awarded annually to a junior or senior student with financial need, with preference given to a major in biology, economics, or business, who has been supportive of the best interests of Bucknell University and who has demonstrated positive interpersonal skills and leadership.

The Charles S. Baton Scholarship was established in memory of Charles S. "Charlie" Baton, Class of 1983, by his family: his parents, Janet M. and G. Scott Baton; his sister, Elizabeth M. Baton; his wife, Cheryl A. Lesser, Class of 1985; and his daughter, Emily L. Baton. It is to be awarded to worthy and needy students, without restriction.

The Louis M. and Elsie Battenfeld Scholarship was established in 1975 by Louis M. Battenfeld, the income to be used to provide financial aid for worthy undergraduate or graduate students selected by the University.

The Charles T. Bauer Scholarship was established in 2006 by the Charles T. Bauer Foundation. This scholarship will be awarded to a student who lives in the Baltimore City School System and who exhibits significant financial need. The Charles T. Bauer Scholarship honors the memory of Charles T. "Ted" Bauer, a man of modest upbringing and altruistic spirit, who wanted the future to be better than the past. Mr. Bauer recognized his place in the universe, and he used his life to give generously to others.

The Matthew C. Baumeister Memorial Scholarship was established in 2006 by Lynn and Michel Baumeister in memory of their son, Matthew Charles Baumeister, Class of 2008. Preference for the scholarship award shall be given to students who have overcome significant personal obstacles in order to attend Bucknell.

The Bright W. Beck Scholarship was established by a bequest of Bright W. Beck, Class of 1913, the income of which is to be used to provide financial assistance to students.

The William H. Beck Scholarship was established by Aida M. Houston in memory of her uncle, Class of 1862, the income to be used for students of the Christian faith who are in need of financial assistance.

The Beidler Family Memorial Scholarship was established in 2011 by J. Garry Beidler, Class of 1958, as an expression of his family's abiding love for an institution that guided and shaped their lives, and for all the principles and ideals that Bucknell continues to represent. The scholarship shall be awarded to students with demonstrated financial need, with preference to students who are residents of Adams, Franklin, or Fulton counties, Pa. The scholarship was established to commemorate the Beidler Family's legacy at Bucknell. Members of the family include: Bruce B. Sheats, Class of 1937; Harvey P. Pettit, Class of 1942; Mary Beidler Pettit, Class of 1943; J. Kay Sheats Beidler, Class of 1959; Andrew W. Beidler, Class of 1985; Kimberly Knouse Beidler, Class of 1985; and Christopher B. Beidler, Class of 1989.

The Edward Bell Family Memorial Scholarship was established by Martin Bell Christy Jr., Class of 1931, and other descendants of Edward Bell. Bell family members were included among Bucknell's first trustees, students, and administrators; more than 100 descendants have attended Bucknell. This scholarship was established to commemorate those long family ties. Preference for the scholarship will be given to Pennsylvania residents.

The John A. Bell Memorial Scholarship was established by Amy Bell, his wife, and by the gifts of friends to honor his memory. Preference for the scholarship award will be given to qualified and needy students majoring in mechanical engineering.

The Rowland E. Bell Dean's Scholarship was established in 2008 by Rowland E. Bell, member of the Class of 1959. The scholarship will be used to recruit academically superior students in the College of Engineering.

The Rowland E. Bell Family Scholarship was established by Rowland E. Bell, Class of 1959. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Eleanor H. Bendell Scholarship was funded by a gift from the estate of Eleanor Holmes Bendell, Class of 1941. Awards shall be made to students based on financial need, with preference given to students majoring in education.

The Jean Nardi Benning Scholarship was established by Jean Nardi Benning, Class of 1959, and her husband, William A. Benning. The scholarship shall be awarded to students with demonstrated financial need, with preference given to students who have also demonstrated exceptional scholarship and leadership and significant service to the Bucknell Catholic Community.

The Paul Benson Memorial Scholarship was established by William Mendenhall III to honor the memory of his former teacher and colleague. Preference for the scholarship award will be given to students interested in applied mathematics who reside in Lycoming or other central Pennsylvania counties.

The Caroline V.S. Bergen Scholarship was established by her son, John L. Bergen, Class of 1935. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who intend to pursue careers in medicine or who have demonstrated a significant commitment to be of service to others.

The Berlin Family Scholarship was established by George R. Berlin, Class of 1965, his mother, Elizabeth Smith Berlin, Class of 1935, and his sons, Bradley J. Berlin, Class of 1993, and William B. Berlin, Class of 1993 (M.A.), in recognition of George R. Berlin's father, William H. Berlin, Class of 1935. Preference for the scholarship award shall be given to students whose racial, ethnic, cultural, economic, or other characteristics enhance the diversity of Bucknell's student group.

The Ellen Clarke Bertrand Scholarships were established by a bequest from Ellen Clarke Bertrand, a former trustee, in memory of her husband, Herbert Bertrand, and her parents, Samuel J. and Agnes Robertson Clarke, the income of which will be used as scholarships for young women and men of ability and good character who need financial assistance.

The Beshel Family Scholarship was established by Joseph J. Beshel. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Beth Eden Baptist Church Scholarship was established by the Beth Eden Baptist Church of Pittsburgh for a preministerial student needing help.

The Howard D. Bidwell Scholarship was established in 2000 by Howard D. Bidwell, Class of 1952. The scholarship shall be awarded to students with demonstrated financial need, with first preference for students majoring in the civil engineering program and secondary preference for students majoring in other engineering programs.

The Billings Family Scholarship was established in 2004 by Ronald P. '69 and Ruth Ralph Billings '70. The scholarship shall be awarded with preference for students enrolled in the College of Engineering or who are majoring in education and without other restriction.

The Harriet Smull Blesh Fund was established by Harriet Smull Blesh, Class of 1928, and her husband, Morrell H. Blesh, in honor of their son, James Smull Blesh. Income from this fund shall be used each year to provide scholarship aid, modification of physical facilities, special aid and assistance, or whatever is deemed most necessary by the University to make education possible for qualified students with physical handicaps.

The Lawrence S. Bloom Scholarship was established by Mr. Bloom, Class of 1952, to support qualified students with demonstrated financial need. First preference for the award will be given to student residents of Blair County, Pa.

The Bohling-Snyder Scholarship was established by Dorothea Bohling Snyder, Class of 1952, to honor her time at Bucknell and the memory of her husband, Paul, and their parents. The scholarship shall be awarded to students with demonstrated financial need, with preference given to students majoring in mathematics, engineering, or the sciences.

The Elmer K. Bolton Scholarship was established by a gift from Elmer K. Bolton, Class of 1908.

The Boston-Lyon Family Scholarship was established in 1999 by Lois Depuy Boston, Class of 1945, and her husband, E. Daniel Boston. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Roy Grier Bostwick Scholarship Fund was established by action of the Board of Trustees out of the residuary bequests in the estate of Marie Leiser Bostwick, Class of 1899. It honors her husband, Class of 1905, a member, 1919-47, and chairman of the Board of Trustees, 1941-47.

The Bott-Jennings Family Scholarship was established by Robert L. Jennings Jr., Class of 1973, and Barbara H. Bott, Class of 1973. The scholarship shall be awarded to students with demonstrated financial need, whose ethnic, racial, economic, or national origins add to the diversity of Bucknell.

The Richard W. Bowen Class of 1944 Scholarship was established by Richard W. Bowen, Class of 1944. Preference for the scholarship award shall be given to students enrolled in the College of Engineering, and holding superior academic credentials.

The James Roland Brady Scholarship was established by James E. Soller, Class of 1969, and Janet Clark Soller, Class of 1968, in memory of James' maternal grandfather. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Arthur L. Brandon Athletic Scholarship was created by a bequest from Arthur L. Brandon, Class of 1927. Awards made from the scholarship shall be granted to talented student-athletes with demonstrated financial need, especially those who have been selected by the coaches, in consultation with the director of athletics and the director of financial aid, as most likely, without a grant from this fund, to attend some other college. Awards from the fund shall be made without other restriction.

The Arthur L. and Margaret Weddell Brandon Scholarship was established by trustee emeritus Arthur L. Brandon, M.S. 1927, in loving memory of his wife, Margaret, Class of 1916. The scholarship is given preferentially as a grant to reduce the self-help obligation of student-athletes at Bucknell.

The Brandon Family Scholarship was established by Virginia Brandon Davis, Class of 1936, in honor of the Brandon family members who attended Bucknell. The scholarship is given preferentially as a grant to reduce the self-help obligation of student-athletes at Bucknell, and serves as a companion to the Arthur L. and Margaret Weddell Brandon Scholarship.

The Lauren P. Breakiron Scholarship was established by Lauren Breakiron, Class of 1952. Preference for the scholarship award will be given to students who are citizens of the United States majoring in engineering or computer science.

The Virginia C. Bristol Scholarship was established through a bequest by Virginia C. Bristol, Class of 1931. The scholarship shall be awarded to students with demonstrated financial need, with preference to students majoring in mathematics without further restriction.

The Maureen Maguire and Suzanne Hunt Brott Memorial Scholarship was established in 2011 by Raymond Sullivan, Class of 1986, and his wife, Megan Brott Sullivan, Class of 1986, as a memorial to their mothers and to honor their commitment to quality education. The scholarship is intended to continue that support and shall be awarded with preference given to students enrolled in the College of Arts and Sciences with demonstrated financial need.

The Brough-Webber Memorial Scholarship was established in 2004 by Elizabeth Brough Webber and William R. Webber, Class of 1950. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in music, business, or economics.

The Eleanor Golightly McChesney '46 and Joann Golightly Brown '48 Scholarship was established by the McChesney and Brown families, in honor of Eleanor Golightly McChesney, Class of 1946, and Joann Golightly Brown, Class of 1948. Preference for the scholarship award will be given to a student who pursues or plans to pursue a major in any branch of either the physical or biological sciences.

The Owen Brown Memorial Scholarship was established in 2005 by Hollis and Gail Brown, both members of the Class of 1969, to honor the memory of their grandson. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in biology, cell biology/biochemistry, chemistry, or any engineering discipline. Further preference shall be given to students who intend to pursue research in their chosen field of study.

The Wayne Marshall Brown Memorial Scholarship was established by Harriet C. Brown, J. Marshall Brown, and friends in memory of Wayne Marshall Brown, Class of 1973. Preference for the scholarship award shall be given to a qualified student majoring in art.

The P. Dewees Browning Scholarship was established by a bequest of Daisy Bell Browning in memory of her husband, Class of 1904, the income to be used as a scholarship for a deserving student.

The Bucknell Alumni Association Scholarship was established in 1985 by the board of directors of the Alumni Association of Bucknell University. Preference for awards from the fund will be given to students who meet the requirements for financial aid and who are the children of Bucknell alumni.

The Harriet M. Bucknell Scholarship was established by Mrs. Harry S. Hopper in memory of her mother. The scholarship is to be awarded to a young woman.

The William Bucknell Scholarships are given to help worthy young men to obtain an education with which to increase their usefulness in life.

The Bernita Earl Budenbender Scholarship was established by Brenda M. Earl, Class of 1981. Preference for the scholarship award shall be given to students who are judged to have the most pressing financial need enrolled in the College of Arts and Sciences, and without other restriction.

The Marie and Fred A. Bufanio Sr. Scholarship was established by Fred A. Bufanio Sr., Class of 1936, and his wife, Marie. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in chemical engineering and without other restriction.

The Clyde E. Burgee Memorial Scholarship Fund was established by Samuel H. Woolley, Class of 1932, and other former students and friends of Professor Burgee, the income to be used to aid needy students majoring in accounting and economics.

The Joseph Hamilton Burnett Scholarship was established by a bequest of Helen Couffer Bonsall, the income to be used as a scholarship for deserving students.

The Alma Jacobs Burt Scholarship was established by Rachel Carringer Hauth, Class of 1941. The scholarship award shall be made without restriction.

The John C. Bush Memorial Scholarship was established by Ellen Q. Bush, Class of 1979, in memory of her father, John C. Bush, Class of 1942. Preference for the scholarship award shall be given to students from northeast Pennsylvania, and to those students whose enrollment supports the University's vision for diversity.

The William J. Busser Jr. and Alvesta R. Busser Memorial Fund was established by a bequest of William J. Busser Jr., the income to be used for scholarships for needy and worthy graduates of the Lewisburg Area High School who are nominated by the Lewisburg Area School Board and who could not otherwise afford a college education.

The Arthur F. Butcosk Scholarship was established by a bequest plan from Arthur F. Butcosk, Class of 1937. The scholarship shall be awarded to students with demonstrated financial need, with preference given to students majoring in the sciences, and special preference given to chemistry majors.

The Edna Follmer Butt Memorial Scholarship was established by an estate gift from Grace R. Follmer, Class of 1921, and Helen Follmer Lutz, Class of 1921, in memory of their sister, Edna Follmer Butt, Class of 1922, who was a teacher of mathematics. Preference for the scholarship award shall be given to students majoring in mathematics.

The Robb '86 and Joan Cadigan '86 Family Scholarship was established in 2004 by Robb '86 and Joan D. Cadigan '86. The scholarship shall be awarded to students with demonstrated financial need, who are majoring in the liberal arts.

The Joseph J. Calaman and John T. Calaman Scholarship was established by Joseph J. Calaman, Class of 1943, and is named for him and his brother, John T. Calaman, Class of 1950. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who are United States citizens majoring in the arts, business, sciences, or engineering.

The John V. Campana III Scholarship was established in his memory by IDS Financial Services Inc. and enhanced by family and friends. The income will provide financial aid for a deserving undergraduate athlete selected by the University in accordance with established scholarship policies. Preference shall be given to a junior or a senior athlete who is majoring in management, accounting, or economics, and who is interested in the financial services profession.

The Robert B. and Ellen H. Campbell Scholarship was established by Robert B. Campbell, Class of 1950, and Ellen H. Campbell, Class of 1950. Preference for the scholarship award shall be given to management majors who are entering their junior year and who have displayed academic excellence. In gratitude for the education the donors received as a result of the GI Bill, the donors also desire that the award be given to students who are United States citizens.

The Douglas K. Candland Scholarship was established by Glen E. Tullman, Class of 1981, and his wife, Trish, to honor Professor Candland's years of service as teacher, scholar, and mentor. The scholarship shall be awarded to students with demonstrated financial need who are majoring in the liberal arts.

The Thomas G. Carodiskey Scholarship was established by Thomas G. Carodiskey, Class of 1949, in memory of Dr. Roy C. Tasker, professor of biology, and Dr. Mildred A. Martin, professor of English. The scholarship shall be awarded to students with demonstrated financial need, with preference for students of the arts and humanities and without other restriction.

The F. W. "Bill" Carson '42 and Betty Thomas Carson '42 Scholarship was established in 2000 by Bill Carson '42 and Betty Carson '42. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in English who have demonstrated interest in creative writing.

The Harry L. and Marjorie R. Carson Scholarship was established in 2000 by Harry L. Carson, Class of 1939, to celebrate his long association with Bucknell and to honor the memory of his wife, Marjorie. Awards are to be made to students with financial need, with preference given to students majoring in management or accounting.

The Dora O'Brien and Margaret O'Brien Case Scholarship Fund was established by the estate of James A. Case, Class of 1917. Awards from the fund are to provide scholarships to needy women graduates of Lewisburg area high schools attending Bucknell University.

The James B. Cawley Scholarship was established by Florence T. Cawley in memory of her husband, Class of 1887, for the support of a worthy student from Northumberland County.

The William A. Cawley Memorial Scholarship was established by Alice Spokes Cawley, Class of 1929, in memory of her husband, a member of the Class of 1915. The scholarship award will be made without restriction.

The John I. Chamberlain Scholarship was established by a bequest from the estate of his mother, Elizabeth I. Chamberlain, to preserve and honor the memory of John I. Chamberlain, Class of 1966. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who are members of the editorial staff of *The Bucknellian*.

The Champlin Family Scholarship was established in 2007 by Ellen Campbell Champlin, B.S. 1958, M.S. 1960, and her husband, Clarence Champlin, in deep gratitude for the preparation received by Ellen for a career in elementary education. The scholarship shall be awarded to students with demonstrated financial need, and without restriction.

The Chandler Family Scholarship was established in 2006 by Sally T. Chandler, her daughters, Nancy Chandler Koglmeier '78, Elizabeth Chandler Bell '86, and her daughter-in-law, Elizabeth Cosgrove Chandler '82. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who have transferred to Bucknell from community or junior colleges.

The Liz Cosgrove Chandler '82 and David Chandler Scholarship was established in 2008 by Liz Cosgrove Chandler and David Chandler. The scholarship shall be awarded to students with demonstrated financial need, and without restriction.

The William R. Chaney Family Scholarship was established in 2006 by Carole Chaney Prosser '81, Diana Chaney Price '84 and William R. Chaney, parent. This scholarship is in recognition of Carole and Diana's appreciation for their father's unwavering support, guidance, and belief in the opportunities made possible through education. The scholarship shall be awarded to students with demonstrated financial need and without restriction.

The Robert and Ellen Chrencik Scholarship was established in 2007 by Robert Chrencik, Class of 1973, and his wife, Ellen Chrencik. The scholarship shall be awarded to students with demonstrated financial need, with preference for students in the management department majoring in management or accounting.

The Thomas S. Christo Jr., Class of 1965, Memorial Scholarship was established by his parents, to be awarded preferably to a worthy member of the Alpha Phi chapter of the Kappa Sigma fraternity.

The G. Thomas Clark Scholarship was established in 1994 by G. Thomas Clark, Class of 1959. The scholarship shall be awarded to students who are judged to have the most pressing demonstrated financial need with preference given to those from the Rochester, N.Y., metropolitan area.

The Class of 1907 Scholarship Fund was established by a contribution from Mary Stanton Speicher and John W. Speicher, her husband. Additional funds were provided by Margaret E. Catherman in memory of her husband, John I. Catherman. The income is to be given to a worthy and needy student.

The Class of 1929 Scholarship is awarded each year to a deserving student.

The Class of 1932 Scholarship was established at the 50th Reunion of the class through gifts by class members. There are no restrictions on the scholarship, which is to be awarded by the Office of Financial Aid in accordance with standard University policy.

The Class of 1934 Scholarship, established at the 50th Reunion of the class through gifts by class members, is awarded annually to a deserving student.

The Class of 1936 Scholarship was established by members of the class during their 50th Reunion year. The scholarship is unrestricted.

The Class of 1937 Scholarship was established by members of the class in 1987 to commemorate their 50th Reunion. The scholarship is unrestricted.

The Class of 1938 Scholarship was established by members of the class in 1988 to commemorate their 50th Reunion. The scholarship is unrestricted.

The Class of 1939 Scholarship was established by members of the class in 1989 to commemorate their 50th Reunion. The scholarship award will be made without restriction.

The Class of 1940 Scholarship was established in 1990 by members of the class and presented to the University in memory of former Bucknell president Arnaud C. Marts, to commemorate their 50th Reunion. The scholarship award will be made without restriction.

The Class of 1941 Scholarship was established in 1991 by members of the class to commemorate their 50th Reunion. This scholarship was presented to the University in honor of all Bucknellians who served in World War II, especially those who gave their lives. The scholarship award shall be made without restriction.

The Class of 1942 Scholarship was established in 1992 by members of the class to commemorate their 50th Reunion. The scholarship award shall be made to a deserving undergraduate student and without other restriction.

The Class of 1943 Scholarship was established in 1993 by members of the class to commemorate their 50th Reunion. The scholarship award shall be made to deserving undergraduate students with demonstrated financial need, and without other restriction.

The Class of 1944 Scholarship was established in 1994 by members of the class to commemorate their 50th Reunion. The scholarship award shall be made to deserving undergraduate students with demonstrated financial need, and without other restriction.

The Class of 1945 Scholarship was established in 1995 by members of the class to commemorate their 50th Reunion. The scholarship award shall be made to deserving undergraduate students with demonstrated financial need, and without other restriction.

The Class of 1946 Scholarship was established by members of the class during their 40th Reunion year. The scholarship is unrestricted.

The Class of 1957 Scholarship was established in 2007 by the Class of 1957 to commemorate their 50th Reunion. The scholarship shall be awarded to students with demonstrated financial need, and without restriction.

The Class of 1968 Scholarship was established by the class at its 10th Reunion as part of Bucknell's first Senior Class Reunion Gift Program. It is to be awarded each year to a deserving student.

The Class of 1970 Scholarship was established by members of the Class of 1970 in celebration of their 25th Reunion and in honor of Gary A. Sojka on the occasion of his retirement as 13th president of Bucknell University. The scholarship commemorates Dr. Sojka's many contributions during his tenure at Bucknell. Consistent with his commitment to the founding principles and cherished traditions of the University, and his all-inclusive interest in and dedication to all Bucknell students, awards from this fund shall be made to students with demonstrated financial need and without restriction.

The Class of 1985 Scholarship was established in 1995 by members of the class to commemorate their 10th Reunion. The scholarship award shall be made to deserving undergraduate students with demonstrated financial need, and without other restriction.

The Class of 1986 Scholarship was established in 1996 by members of the class to commemorate their 10th Reunion. The scholarship award shall be made to deserving undergraduate students with demonstrated financial need and without other restriction.

The R. Henry Coleman Memorial Scholarship was established by friends and family members of Mr. Coleman, a Bucknell trustee from 1955-76, and chairman of the board from 1972-76. The Coleman Scholarship will be awarded annually to Bucknell students with demonstrated need and high academic promise.

The Colvin-Greene Memorial Scholarship was established in memory of Irene Colvin Kunschner, Class of 1927, and in honor of her parents, Eva Greene and Abram Colvin, by their family, friends, and neighbors. Preference for the award will be given to students of musical accompaniment and the humanities, with special preference to residents of Susquehanna County, Pa.

The Clarence B. and Samuel G. Comstock Scholarship was established through a bequest by Rachel M. Comstock. The scholarship fund is for students in the junior class who have excelled in the study of biology, and who seem likely to become outstanding medical practitioners.

The Claire M. Conway Scholarship was established by Claire M. Conway, Class of 1905.

The John R. Conway Scholarship was established by Patricia M. Watts in memory of her brother-in-law. Preference for the scholarship award shall be given to students who intend to pursue a career in business.

The Conway Family Scholarship was established by Larry and Carolyn Wilcox (Class of 1962) Conway. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Cook Scholarship was established by Thomas N. Cook Jr., Class of 1978. Preference for the scholarship award will be given to students demonstrating excellence and leadership in academics, athletics, and fraternal activities.

The Eugene and Doris Cook Scholarship was established in 2002 by M. Eugene Cook, Class of 1943. The scholarship shall be awarded to students with demonstrated financial need studying engineering, computer science, physics, chemistry, or premedical studies, and who reside in Union, Snyder, Centre, Clinton, Lycoming, Northumberland, Columbia, or Montour counties, Pa.

The Franklin H. and Ann Graybill Cook Scholarship was established by gifts from Franklin H. and Ann Graybill Cook, both members of the Class of 1933. Preference for the scholarship award shall be given to students majoring in sociology or political science.

The Shirley J. Cook Scholarship was funded by a gift from the estate of Shirley J. Cook, Class of 1974. Awards shall be made to students based on financial need without restriction.

The William Albion Cook Scholarship was established by Mrs. Augusta N. Cook in memory of her son, Class of 1899, for a male student.

The Mr. and Mrs. Robert L. Cooley Scholarship was established by Robert L. Cooley, Class of 1936, and his wife, Norma. The scholarship shall be awarded to students with demonstrated financial need, who have excelled academically.

The John R. and Virginia R. Cooper Scholarship was established by a testamentary gift from Mr. Cooper, a friend to Bucknell, and father and grandfather of Bucknellians. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Richard and Janet Costa Advancement of Science Scholarship was established in 2011 by Michael J. Costa, Class of 1991, and his wife, Lauren R. Costa, Class of 1990, with funding from The Houston Endowment, to honor their parents' example in encouraging the study and practice of science and engineering. The scholarship shall be awarded with preference for finalists, semi-finalists, or students competing in the national Intel Science Talent Search.

The Reverend Emily W. Craig Scholarship was established through a bequest from Emily W. Craig, Class of 1944. Preference for the scholarship award shall be given to a student studying religion or English.

The Ernest S. Cramer Scholarship was established by Ernest S. Cramer, Class of 1938. Preference for the scholarship award shall be given to students with demonstrated financial need majoring in engineering or the sciences.

The Anna May Speare Crist Scholarship was established by Charles W. Crist in memory of his wife, Class of 1923, the income to be used for an outstanding student majoring in French.

The CTW-Beneficial Foundation Scholarship Fund was established in 1973 by the Beneficial Foundation, Inc. In 1998, the foundation changed its name to CTW Foundation, Inc. The income is to be used to establish scholarships for needy and disadvantaged students.

The H.E. Culver Scholarship for Science and Engineering was established by H.E. "Ed" Culver, B.S. Class of 1950, M.S. Class of 1951. Preference for the scholarship award shall be given to students enrolled in the five-year program in liberal arts and engineering, who combine engineering with physics or chemistry, and to students majoring in physics or chemistry.

The Martin and Arlene Cummings Scholarship was established with gifts from Martin M. '41 and Arlene Avrutine Cummings '42. Awards shall be made to students based on financial need, with preference given to pre-med students or students majoring in the biomedical sciences.

The Jane W. Curtis and Susan J. Curtis Scholarship was established by Jane Wherly Curtis, Class of 1957, and her daughter Susan J. Curtis, Class of 1989. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in French.

The Cusick Scholarship was established by William J. and Joyce D. Cusick, parents of William J. Cusick, Class of 1981, George R. Cusick, Class of 1983, Susan Sisto Cusick, Class of 1983, and Thomas E. Cusick, Class of 1987. The scholarship shall be awarded to University students with demonstrated financial need, with preference given first to descendants of William J. and Joyce D. Cusick, then to members of a men's varsity lacrosse team who are citizens of the United States.

The George H. and Kathleen DeRosa Damman Scholarship was established by George H. and Kathleen DeRosa Damman, both Class of 1956. Preference for awards from this scholarship shall be given to talented scholar-athletes who participate in varsity intercollegiate golf and who have demonstrated financial need.

The Richard Darlington Memorial Fund was established by a bequest of Richard Darlington, Class of 1909, who served as a member of the Board of Trustees for 11 years, the income to be used to aid worthy and needy students.

The Joan and Nicholas Daviduk '49 Scholarship was funded by a gift from the estate of Nicholas Daviduk '49. Grants from the scholarship are awarded as scholarships to students in engineering without restriction.

The K.H. "Happy" and Virginia Brandon Davis Scholarship was established by Virginia Brandon Davis, Class of 1936, in memory of her husband. The scholarship award shall be made without restriction.

The Nelson F. Davis Jr. Scholarship Fund was established by action of the Board of Trustees from residuary bequests in the estate of Harriet I. Johnson to honor a loyal member of the Class of 1922.

The Phoebe B. Davis Memorial Scholarship was established by Alice V. Davis, Class of 1925, to preserve the memory of her sister, Phoebe, a member of Bucknell's Class of 1922. Preference for the scholarship award will be given to young women, majoring in English, who plan a secondary school teaching career.

The Dawson Family Scholarship was funded by a gift from Peter and Christina Dawson, parents of Miles Dawson, Class of 2012. Awards shall be made to a student based on financial need and without other restriction.

The Jeffrey, Julie Ann and Philip Dawson Scholarship was established by Chester S. and Julia Shank Dawson, Class of 1948, in loving memory of their children. Preference for the scholarship award will be given to students with an interest in art or music.

The Michael J. Delaney Scholarship was established by Michael J. Delaney, Class of 1952. The scholarship shall be awarded to students with demonstrated financial need, with preference for graduates of Greater Nanticoke Area High School (Nanticoke, Pa.) or for students who are residents of Luzerne County, Pa., and without other restriction.

The Denenberg Family Scholarship was established by Judy Plattman Denenberg, Class of 1957, and Byron A. Denenberg, Class of 1956. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Brenda Earl and Michael De Paola Scholarship was established in 2000 by Brenda Earl, Class of 1981, and her husband, Michael De Paola. Preference for the scholarship award shall be given to students enrolled in the College of Arts and Sciences who are judged to have the most pressing financial need and without other restriction.

The Gertrude J. Deppen Scholarship Fund was established by Joseph H. Deppen, Class of 1900, in memory of his sister, Class of 1902, the income to be used as scholarships for those who have resided in Mount Carmel for 10 years, who are graduates of Mount Carmel Public High School, who are not habitual users of tobacco, intoxicating liquor, and narcotics, and who do not participate in strenuous athletic contests. Bucknell University will award scholarships to full-time graduate students under the terms and conditions of the Voris Auten Scholarship Fund and the Gertrude J. Deppen Scholarship Fund only if there are funds available from these endowments after awards have been made to undergraduate applicants. If funds are available, and graduate awards are to be authorized in any given year, public notice must be given in the Mount Carmel community newspaper and in appropriate ways at the Mount Carmel Public High School so that all college graduates who meet the requirements of these endowments and who wish to apply for such graduate scholarships would have an opportunity to do so.

The Dale A. and Carolyn M. Derr Scholarship was established by Dale A. Derr, Class of 1950, and his wife, Carolyn Melick Derr, Class of 1949. Preference shall be given to qualified students from Columbia County, Pa.

The Sarah H. Derr Scholarship was established in her memory by Dr. Ralph B. Derr, Class of 1917, the income to be awarded to a deserving student.

The Woodward H. Diller Scholarship was established by Mr. and Mrs. William J. Diller and is to be awarded to a student who meets the academic standards of Bucknell University. Recipients shall be members of ROTC, who are enrolled at the University, regardless of financial need.

The Gail E. Dobert Memorial Scholarship was established by friends and family of Gail E. Dobert, Class of 1983, whose life was tragically lost in Dubrovnik, Croatia, while on a government mission with Department of Commerce Secretary Ron Brown. Gail was a loyal and respected public servant all of her professional life, and helped and touched many Bucknellians' lives. Gail is missed dearly and will be remembered for her uplifting spirit,

energy, and passion for life. Preference for the scholarship award will be given to a Long Island, N.Y., student interested in a public service career, with special preference given to students participating in a semester of study in Washington, D.C.

The Robert W. and Lucy E. Donehower Scholarship was established by Robert W. Donehower, Class of 1942, and his wife Lucy. The income from the fund shall be used to provide financial aid to students with demonstrated need, and shall be awarded without restriction.

The Martin Drum Scholarship is available to junior college transfer students majoring in civil engineering.

The Jay Dugan Scholarship was established by the University in recognition of a gift of sculpture by Jay Dugan. The scholarship is unrestricted.

The John David Duncan Memorial Scholarship was established in 1970 by his family and friends.

The John P. Dunlop Scholarship was established by Bucknell alumni and friends of John P. Dunlop, former Dean of Students. Preference for the scholarship award shall be given to those students demonstrating outstanding leadership to the Bucknell community such as was encouraged by John P. Dunlop.

The Steven S. Dyer Scholarship was established by Mr. and Mrs. Alexander P. Dyer and their friends in memory of their son. The scholarship is to be awarded to the student who meets the academic standards of Bucknell University and possesses leadership potential as evidenced by a combination of willpower, motivation, and human relations skills.

The John D. Dzurinko Memorial Scholarship was established in 2005 by family and friends of John D. Dzurinko, Class of 1981. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The W. Warren Egee Memorial Scholarship was established by Mrs. Egee to honor the memory of her husband, Class of 1938. Preference for the scholarship award will be given to qualified and needy students enrolled in the College of Engineering, especially mechanical, electrical, or chemical engineering.

The David D. Ekedahl Scholarship was established by Retailer Financial Services, a unit of GE Capital, to honor David D. Ekedahl, a Bucknell trustee and member of the Bucknell Class of 1956, on the occasion of his retirement from GE Capital. Awards from this scholarship will be made without restriction.

The Ekedahl Family Scholarship was established by Dave Ekedahl, Class of 1956, and his wife, Patty Ekedahl. Preference for the scholarship award shall be given to students whose ethnic, racial, economic, or national origins add to the diversity of Bucknell.

The Frederic S. and Carol Cobb Elliott Scholarship was established by Frederic S. Elliott, Class of 1961, and Carol Cobb Elliott, Class of 1963. Preference for the scholarship award shall be given to students with demonstrated financial need and without other restriction.

The Ira T. Ellis Jr. Scholarship for the College of Engineering was established by Ira T. Ellis Jr., Class of 1956, to benefit students with demonstrated financial need. Preference for the scholarship award shall be given to students enrolled in the College of Engineering, with special preference given to those students majoring in electrical engineering.

The Warren E. and Nora G. Elze Scholarship was established by Warren and Nora Elze, members of the Class of 1948. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Ernest Family Scholarship was established by Russell G. Ernest, Class of 1942, his wife, Matty Ernest, and their son, Richard C. Ernest, Class of 1970, his wife, Susan, and their daughter, Deborah, Class of 1999. The scholarship shall be awarded to students with demonstrated financial need who are majoring in engineering, the sciences, or the management department curricula.

The Everett Scholarship for the College of Engineering was established by Russell W. Everett, Class of 1916, as a tribute to his parents, Mr. and Mrs. Alexander David Everett; his brothers, Harry S. Everett, Class of 1912, and Mark R. Everett, Class of 1920; and his daughter, Ruth Everett Sierzega, Class of 1945. The income from the fund is to be awarded to deserving students in the College of Engineering.

The Margaret D. Ackerman and Ruth Ackerman Fairbairn Scholarship was established by Margaret D. Ackerman, Class of 1925, in memory of her sister, Ruth Ackerman Fairbairn, Class of 1927. Preference for the scholarship award shall be given to students majoring in classics or minoring in Latin, Greek, or classical civilization.

The Winifred P. Farquhar Scholarship was established in 2000. The scholarship award shall be made without restriction.

The Samuel Farwell Scholarship, established by Samuel S. Farwell, is for preministerial students recommended by the department of religion.

The Barbara Reed Feeser '80 Memorial Scholarship was established in 2010 by Barbara's family, classmates, and friends who remember the joy that Barbara experienced in the cultivation of her musical talent and how memorably she enriched the Bucknell campus with her exuberant voice. Barbara was a dedicated academician and scientist by training, but she looked for every opportunity to enhance her life through singing, thereby also enriching the lives of others, especially her family and friends. The scholarship shall be awarded to students with demonstrated financial need and without restriction.

The Robert P. Fetch '75 Scholarship was funded by a gift from Bob Fetch, Class of 1975. Grants shall be made to students based on financial need without further restriction.

The Bradley J. Fetchet September 11th Memorial Scholarship was established in 2003 by the Bradley J. Fetchet Memorial Foundation, the Fetchet Family, and Brad's friends to honor the memory of Bradley J. Fetchet, Class of 1999, who perished in the attacks on the World Trade Center in New York City on September 11th, 2001. Brad was a dedicated young man with a special twinkle in his eye and an unending smile who often said, "You can tell the character of a man by what he does for the man who can offer him nothing." This scholarship shall be awarded to a student with financial need, with special preference to student-athletes who best exemplify the qualities that made Brad so special – his spirit of enthusiasm, compassion, love of life, commitment to family, friends, community, and especially those in need.

The Edwin and Florence Fetterman Scholarship was established by their daughter, Anna Fetterman Gutekunst, Class of 1944. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who have demonstrated service to Bucknell and/or the surrounding community, and without other restriction.

The Figgie Family Scholar Athlete Fund was funded by a gift from Mark, Class of 1978, and Connie Figgie, dedicated parents of Mark P. Figgie Jr., Class of 2012, and Patrick O. Figgie, Class of 2016. Awards shall be made to varsity baseball or varsity men's soccer student-athletes based on academic merit. The scholarship was established to recognize Bucknell's commitment to students who achieve academic and athletic excellence.

The 1957 Fiji Scholarship was established by graduating members of the 1957 Phi Gamma Delta fraternity in gratitude for the role Bucknell has played in their lives. The scholarship shall be awarded to a man or woman with demonstrated financial need, who shows academic promise, and whose activities and behavior reflect positively on the University. Special preference shall be given to members of Phi Gamma Delta fraternity.

The Martha A. Fisher Scholarship was established by an estate gift from Martha A. Fisher, M.A. 1943. Preference for the scholarship award shall be given to needy and deserving students, and without other restriction.

The Aldus Fogelsanger Scholarship was established by Sarah Slaughenhaus Madison, Class of 1941. Preference for the scholarship award will be given to students in the College of Engineering with demonstrated financial need.

The Joanne E. Lewis Forsyth and Family Scholarship was established in 1998 by Kenneth J. and Nancy J. Lewis, parents of Joanne E. Lewis Forsyth, Class of 1995. The scholarship shall be awarded to students with demonstrated financial need. Preference shall be given to talented student-athletes, with special consideration given to student-athletes from California or the West Coast, whose ethnic, racial, economic, or national origins add to the diversity of Bucknell. The scholarship award shall be made without other restriction.

The John Edward Fowler Memorial Scholarship was established in 1989 by the John Edward Fowler Memorial Foundation. Preference for the scholarship award will be given to academically qualified, needy students, matriculating from the Washington, D.C., metropolitan area.

The Charles Winslow Frampton Scholarship was created by a bequest from Elma C. Frampton, widow of Charles W. Frampton, Class of 1931. Charles Frampton was a lawyer and legal scholar, who held the position of Administrator of Orphans' Court in Philadelphia, Pa. Awards from the scholarship will be made to Bucknell University students with demonstrated financial need.

The A. Guy Freas Scholarship was established by Arthur K. Freas, Class of 1948, and Margery H. Freas, to honor the memory of A. Guy Freas. Awards from the scholarship shall be granted to students with demonstrated financial need.

The Bruce J.S. and Naomi G. Freed Scholarship was established in 2006 by their family and friends, to honor lifelong students and educators. The scholarship honors Naomi, Class of 1952, and remembers Bruce, Class of 1957 (M.A.) and longtime mathematics faculty member and registrar for the University, in the year of his passing. This scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Freeman-McCaskie Scholarship was originally established as the McCaskie Scholarship by Evelyn H. McCaskie, Class of 1911, in appreciation of the educational opportunities Bucknell University offered her and her sisters, Carrie and Florence, both Class of 1906. In 1997, it was renamed to reflect the interest in and support of the scholarship by Kenneth W. Freeman, Class of 1972, and to honor his parents, James E. and Elizabeth McCaskie Freeman (cousin to the McCaskie sisters). The scholarship will provide assistance to worthy students, with preference given those who have demonstrated proficiency in music, French, or Spanish.

The Marcia R. Fremont Scholarship was established by gifts from the family and friends of Marcia R. Fremont, Class of 1950. It is to be awarded to a student majoring in science.

The Michael M. and Lillian A. Fremont General Scholarship was established in 1997 through a bequest from Michael M. Fremont, a friend of the University. The scholarship shall be awarded to full-time students with demonstrated financial need and without other restriction.

The Michael M. and Lillian Amber Fremont Scholarship was established through gifts from Michael M. Fremont and is intended to prepare students to promote international understanding and further cooperative relationships between the United States and other nations. Preference for the scholarship will be given to undergraduate students who are citizens and residents of countries other than the United States; interested students must make specific application for this award.

The Albert L. and Edward Friedman Memorial Scholarship Fund was established by a bequest from Edward Friedman, the income from which is to be awarded to a student requiring financial assistance.

The Leo and Kathryn E. Friedman Memorial Scholarship was established through an estate gift from Leo and Kathryn Friedman. The scholarship shall be awarded to students with demonstrated financial need and without other restrictions.

The Elizabeth Stage Fulton Scholarship was established through a bequest from her daughter, Margaret Fulton Connors, to preserve the memory of Elizabeth Stage Fulton, a member of Bucknell University's Class of 1911. Elizabeth followed her sister, Anna Stage Hoffman, Class of 1908, to Bucknell from their home in Clearfield. Both returned home to central Pennsylvania to teach, raise families, and share a love of literature, drama, and spiritual growth. The sisters were lifelong friends. The scholarship honors Elizabeth for her intellectual curiosity and devotion to family. The scholarship is to be awarded to needy and deserving students of Bucknell University without other restriction.

The G Endowed Scholarship was created by the Giglio and Gruver families, who were brought together by Goldman Sachs and who share a tradition of military service to the United States. Grants shall be made to students based on financial need, with preference given to veterans of the United States Armed Forces (GIs). Those veterans enrolled at Bucknell as participants of the Community College Scholars program shall be given the highest preference for need-based grants.

The Alan D. Gardner Memorial Scholarship was established by family and friends to commemorate the demonstrated loyalty of Major Gardner, Class of 1962, to his country, University, and fellow citizens, and is to be awarded to a student of proven academic excellence with a potential for strengthening campus extracurricular programs and for responsible community involvement following graduation.

The Warren D. and Esther S. Garman Scholarship was established by a bequest from the estate of Esther Selsam Garman. Awards from the scholarship are to support students in engineering with demonstrated financial need.

The Norman E. and Mary Lou Garrity Family Scholarship was established by Norman E. Garrity, Class of 1963, and Mary Lou Roppel Garrity, Class of 1964. The scholarship shall be awarded to students with demonstrated financial need, with preference given first to descendants of Norman E. and Mary Lou Garrity and then to graduates of Tamaqua High School (Tamaqua, Pa.) or Steel Valley High School (Munhall, Pa.).

The Sue Ann Geisler Scholarship was established by her parents, F. Ellis and Jane Sutherland Harley '59/'60, and other friends and family members, to honor the memory of Sue Ann, a member of Bucknell's Class of 1986. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in international relations.

The Gibb Foundation Scholarship was established by gifts from the Foundation beginning in 1986. The scholarship is to be awarded without restriction.

The Francis Gilbert Scholarship Fund was established in 1951 by Dr. Irving Berlin, Honorary 1940, in memory of his lifelong friend, the income to be awarded annually to worthy and needy students in the department of music.

The Susan Deland Ginkel Scholarship was funded by a gift from Susan D. Ginkel, Class of 1976, and her husband, Christopher H. Lee. Awards shall be made to students based on financial need with no preference.

The Leslie Kayfetz Gordon Memorial Scholarship was established by Judith Menapace Haverty and Elizabeth Smith Mao, both Class of 1971, to preserve the memory of their fellow classmate who died of breast cancer at a premature age. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The H. Lynn and Dorothy Mae H. Goughnour Scholarship was established by H. Lynn Goughnour, Class of 1932. The scholarship award will be made without restriction.

The Sidney Grabowski Scholarship was established by the children and grandchildren of Sidney Grabowski, Class of 1915. Preference for the scholarship award shall be given to students residing in Lackawanna or Luzerne (Pennsylvania) counties.

The Grahn, Bell, Carey Scholarship was established in 2010 by John D. Madison, Class of 1981, and Karen A. Seymour-Jones Madison, Class of 1980, in honor of Karen's uncle Harold "Bud" W. Grahn Jr., and in tribute to his lifelong friendship with Class of 1950 members William "Bill" W. Bell and William O. "Pat" Carey. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Matthew G. Gray and Ellen P. Gray Scholarship was established in 2000 by a bequest from Ellen Phebey Davis, Class of 1933. The scholarship shall be awarded to students with demonstrated financial need with preference for students from Luzerne County, Pa.

The Green Family Scholarship was established in 2000 by Bradford '59 and Rhoda Green. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Robert B. Greer II Memorial Scholarship was established by the family, friends, and classmates of Robert B. Greer II, Class of 1986, to honor his memory. The scholarship award shall be made without restriction.

The Roy and Ariel Griffith Memorial Scholarship was established by Jane W. Griffith, Class of 1943, in memory of her parents. The scholarship award shall be given to needy and deserving students with preference given to those enrolled in the pre-med program.

The Griffith Family Scholarship was established by Dr. Bartley P. Griffith, Class of 1970, and Denise C. Griffith, and Bartley P. Griffith Jr., Class of 1997. The scholarship shall be awarded to students with demonstrated financial need, with preference for students participating in intercollegiate athletics, particularly football and/or men's lacrosse.

The George G. Groff and Margaret M. Groff Scholarships were established by a bequest from the estate of Frances L. Groff, of the Institute Class of 1907, in memory of her parents. The income from one of the scholarships is to be used for a deserving woman who plans a career in medicine.

The Margaret Beaver Groff Scholarship was established by a bequest from the estate of Frances L. Groff, of the Institute Class of 1907, in memory of her sister, Class of 1904, the income to be used for a deserving man who plans a career in medicine.

The Robert R. Gross Scholarship was established by James E. Nevels, Class of 1974, and his wife, Lourene Dellinger Nevels, Class of 1974, in honor of Robert Gross, professor of English. The scholarship award shall be made without restriction.

The William R. Gruver Scholarship was funded by a gift from Glenn R. Fuhrman in honor of Management Professor Bill Gruver, holder of the Howard I. Scott Chair in Global Commerce, Strategy and Leadership at Bucknell. Awards shall be made to students based on financial need without restriction.

The Robert G. Guempel Family Scholarship was established by Robert G. Guempel, Class of 1948. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Art Gulden Scholarship was established by cross country and track and field alumni, family, and friends to honor Art Gulden on the occasion of his 25th anniversary as coach of Bucknell University's men's and women's cross country and track and field teams. Preference for the scholarship award shall be given to a member of the cross country or track and field teams.

The H. Dean Gulnac Scholarship was established by H. Dean Gulnac, Class of 1940. Preference for the scholarship award shall be given to students enrolled in the College of Engineering.

The Clarence Kent and Marilla Stouck Gummo Scholarship was established in their memory by their son, Blanchard Gummo, professor of art, with preference being given for students majoring in art. Descendants of Mr. and Mrs. James Ambrose Gummo and Ella Blanche Council Gummo, and of Mr. and Mrs. Murray Jesse Stouck and Ida Jennette Clark Stouck are to be given first consideration if they should be accepted by Bucknell University.

The Arthur A. Haberberger Jr. '87 and Karen M. Spano '88 Scholarship was established in 2005 by Joanne and Arthur Haberberger Sr. The scholarship shall be awarded to students with demonstrated financial need, with preference to students who are majoring in sociology or computer science.

The Linda Thompson Hager Scholarship was established by a bequest from Linda Thompson Hager, Class of 1959. Preference for the scholarship award shall be given to students with demonstrated financial need who are graduates of Hightstown High School, in Hightstown, N.J., or if none qualify, then to graduates of high schools in Mercer County, N.J.

The Velola E. Hall Scholarship was established by The Reverend Henry Chandler Hall, A.M., Class of 1882, in memory of his daughter, Class of 1904, for a college woman.

The Allen and Dorothy Hamburg Scholarship was established by Allen E. Hamburg, Class of 1939, in memory of his wife, Dorothy Gottschall Hamburg, Class of 1940, for students with demonstrated financial need who maintain at least a 3.00 (B) grade point average at Bucknell. Preference for the scholarship award shall be given to students who graduated from Hatboro-Horsham Senior High School in Horsham, Pa.

The James H. Hand '26 and Edna Watson Hand '27 Scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Robert S. Harder Scholarship was established by Robert S. Harder, Class of 1959, in memory of his parents, Howard L. and Rheta S. Harder. The scholarship shall be awarded to students with demonstrated financial need, with preference for students from Union, Lycoming, Snyder, and Northumberland counties.

The John H. Hare Scholarship was established in 1906 by his loving father. The scholarship shall provide annual financial assistance to a worthy student with first preference to a student planning to enter the ministry. If the preference cannot be met, the award shall be made without restriction.

The Max and Bessie Harris Scholarship was funded by bequests from their daughter, Mary E. Harris, Class of 1920, and son, Louis H. Harris, Class of 1917. Awards from the scholarship shall be made to graduates of Lewisburg High School.

The John Howard Hart Scholarship was established by a bequest from Samuel A. Hart, Class of 1903.

The Andrew Hartman (Class of 1971) Scholarship was established in 2002 by the Ruth and Ted Bauer Family Foundation. The scholarship shall be awarded to students with demonstrated financial need who are United States citizens, with preference for students who are the sons or daughters of a public school teacher.

The Hartman and Sanders Family Scholarship was established in 2000 by Jill Sanders Hartman '75, John Hartman, the Hartman Foundation, Elizabeth Kulp Sanders '51, and Karen Sanders Feather '78, in memory of Daniel T. Sanders '52. The scholarship shall be awarded to students who are U.S.

citizens with demonstrated financial need, with preference given to students of high academic standing, who are majoring in engineering, a physical science, or mathematics, or who are majoring in education with specific intent to teach one of the above listed disciplines.

The Edwin Dudley Hartman Service Memorial Scholarship was established by gifts from the family and friends of Mr. Hartman, Class of 1970, the income to be used to aid students who desire to be of service to individuals and society and who are in serious financial need.

The Berkeley V. Hastings and Frances Steel Hastings Scholarship, established by a bequest from Berkeley V. Hastings, Class of 1913, and by contributions from George F. Hulse Associates, the income to be used for scholarships, with preference given to students coming from Milton, Pa., and its vicinity, and to preministerial students.

The Hauck Family Scholarship was established in 1999 by Edward A. Hauck, Class of 1975, to support the education of future Bucknell students. The scholarship honors his parents, Willard D. and Charlotte Y. Hauck, who, recognizing the value of education, made sacrifices to support his studies at Bucknell. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Barbara (Stutzman) Hawley '57 Scholarship was funded by a gift from Barbara Hawley, Class of 1957. Grants shall be made to students in the College of Arts & Sciences based on financial need without further restriction.

The Harold W. Hayden Scholarship was established by Stanley G. Williams, Class of 1943. The scholarship award will be made without restriction.

The Howard E. Hayden Memorial Scholarship was established in 2000 by his family. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in English, history, or pre-theological studies.

The William Randolph Hearst Foundation Scholarship Fund was established in 1998 by the William Randolph Hearst Foundation. The scholarship shall be awarded to a deserving first-generation student.

The Ephraim M. Heim Scholarship was established by Robert C. Heim, Class of 1924, in memory of his father, the income to be used for a deserving student, with preference given to those in business administration.

The Heinemann Family Scholarship was established by Trustee Kirsten S. Heinemann, Class of 1981, and Steven D. Heinemann, dedicated parents of Andrew F. Heinemann, Class of 2012, and Erik Leister Heinemann, Class of 2015. Awards shall be made to students based on financial need with preference given to varsity men's or women's swimmers.

The Catherine Vaughan Helleman Scholarship was established by Stephen W. Vittorini, Class of 1979, in memory of his grandmother and great-grandfather, Charles P. Vaughan, acting president of Bucknell University in 1931. Preference for the scholarship award shall be given to a student or students from the Philadelphia area whose ethnic and economic origins add to the diversity of the University. It is the donor's wish that the scholarship recipient(s), upon graduation, expect to use their learned skills and knowledge to enhance the economic and cultural well-being of communities similar to those from which they were selected.

The Robert and Patricia Reish Hemphill Family Scholarship was established in 1999 by Robert B. Hemphill, Class of 1958, and Patricia Reish Hemphill, Class of 1959. The scholarship shall be awarded to students with demonstrated financial need, with preference for students from Union County, Pa.

The John W. and Amy M. Henneberger and Dr. Sara Chubb Schaaf '43 Scholarship was established by gifts from Dr. Lois M. Henneberger, Class of 1943, in memory of her parents and friend and classmate. The scholarship shall be awarded to students with demonstrated financial need, with preference for students in the premedical program who are juniors or seniors, and without other restriction.

The Ruth Mount Herrel Memorial Scholarship was established by Mrs. B.A. Ives, to honor the memory of her mother, a member of Bucknell's Class of 1921. Preference for the scholarship award will be given to returning and older students.

The Paul A. Hightower Scholarship was established by Stanley G. Williams, Class of 1943. The scholarship award will be made without restriction.

The Horace A. Hildreth Scholarship was established in 1999 by his daughter, Josephine H. Detmer, Class of 1952, to honor the memory of Mr. Hildreth, Bucknell's ninth president. The scholarship shall be awarded to students with demonstrated financial need with first preference given to students from Maine or who are enrolled in programs that may lead to careers in government service.

The C. Clayton Hill Ministerial Memorial, created by Norman B. Hill, Class of 1917, in memory of his brother, Class of 1929, provides that the income be awarded as a scholarship to a preministerial student who shows proficiency in the study of the Bible, and who is worthy of assistance.

The Hills Family Scholarship was established in 2004 by Fredereick J. and Jean Lambert Hills, both Class of 1961, in memory of Robert and Katherine Hills. The scholarship award shall give preference to students enrolled in the College of Engineering.

The William A. Hinkle '48 Memorial Scholarship was established by Patricia Hungerford Hinkle, his wife, for the support of an upperclass student in chemical engineering.

The Robert Hoff Family Scholarship was established in 2000 by Robert A. Hoff, Class of 1974. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Benjamin Hoffman Scholarship was established by the family in memory of Benjamin Hoffman, Class of 1952, the income to be awarded to any student who displays financial need.

The Holmes Family Diversity Scholarship was established in 2003 by Stephen P. Holmes and Bonnie L. Holmes, both members of the Class of 1979. Grants from the scholarship will be awarded to students whose ethnic, racial, economic, geographic, cultural, or national origins add to the diversity of Bucknell.

The John C. Hoover Scholarship was established in 2010 by John C. Hoover, Class of 1982. The scholarship will be used preferentially to recruit and retain students with demonstrated interest and superior abilities in mathematics and its creative application.

The Daris Bracey Hosler Scholarship was established in 1999 by Daris Bracey Hosler, Class of 1931. The scholarship shall be awarded to students with demonstrated financial need, with preference given to students majoring or minoring in the classics.

The Marguerite Brierly Hough Scholarship was established by an estate gift from Mrs. Hough, Class of 1923, in recognition of the benefits she received from the University. Preference for the scholarship award will be given to junior and senior students in the College of Engineering.

The Richard H. Howard Scholarship was established in 2004 by Richard H. Howard, Class of 1964, in gratitude for the role Bucknell has played in his life and in honor of his 40th Reunion. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in chemical or biomedical engineering, and without other restrictions.

The Alfred C. Howell Scholarship was established by John R. Gregg in memory of his stepfather Alfred C. Howell, a former trustee of Bucknell University. Mr. Howell's love of poetry and his lifelong interest in book collecting prompted the guidelines for this scholarship. The scholarship shall be awarded to students with demonstrated financial need who are majoring in English.

The Charles E. Howell Memorial Scholarship was established by Bucknell students under the auspices of the Bucknell Student Government, and by the friends and family of Charles Howell, a member of Bucknell's Class of 1990. As a minority student, an academically superior engineering student, football player, and outstanding citizen of the University community, Charles Howell set an example for all Bucknellians. This scholarship will be awarded annually to a student who best represents the qualities Charles exhibited before his untimely death in 1987.

The J. Preston Hoyle M.D. Scholarship was established in 2007 by June M. Hoyle and their children: Lynn, Jeff and Susan '88. The scholarship honors Dr. J. Preston Hoyle's 30 years of service at Bucknell as medical director, associate physician, and sports team doctor. In his gentle manner, Dr. Hoyle cared for countless students and community members. He left his mark as someone to whom students and faculty could turn for support that went beyond just medical advice. He was a true asset to the Bucknell community. In recognition of the fact that Preston and June worked to pay for their own education, the scholarship shall be awarded to students with demonstrated financial need.

The Hoyt Family Scholarship was established by Brian Hoyt, BS and BA Class of 1987, MS Class of 1992, and his wife, Carolyn Merl Hoyt, BS Class of 1987, through the generosity of George W. Hoyt. In keeping with the significant opportunities that the five-year engineering program provided Brian, the scholarship shall be awarded to an engineering student, with preference given to a student enrolled in the five-year engineering program in liberal arts and engineering, and first preference given to students in their fifth year of that program.

The Robert D. Hunter Scholarship was established in 1991 by members of Accounting Firms Associated, Inc., to honor one of its founders, Robert D. Hunter, a member of the Class of 1949 and a University trustee from 1973-78, on the occasion of his retirement. Preference for the scholarship award shall be given to a junior or senior student majoring in accounting who plans to become a certified public accountant.

The Idleman Family Scholarship was established by Lee H. Idleman, Class of 1954. The income is to be awarded to worthy and needy students, and without any restriction.

The George A. and Frances M. Ingald Scholarship was established by their daughter, Carol Anne Ingald, Class of 1978, in honor of their 50th wedding anniversary. The scholarship shall be awarded to students with demonstrated financial need, with first preference for students majoring in mechanical engineering or economics.

The Helen Shaffer Iredell Scholarship was established by an estate gift from Charles V. Iredell, Class of 1920, in memory of his wife, Helen Shaffer Iredell, Class of 1918. The scholarship award shall be made without restriction.

The Donald N. Isken '75 Family Scholarship was funded by a gift from Donald, Class of 1975, and Patricia Isken, parents of Ashley Lauren Isken, Class of 2012. Awards shall be made to students based on financial need with preference given to students who reside in Delaware.

The Randi S. Jacobs Scholarship was established through a bequest from Randi S. Jacobs, Class of 1977. The financial aid grant shall be awarded to students with demonstrated financial need without other restriction. The scholarship will be awarded with a preference for female students, but the University may disregard this preference if it is determined to be contrary to law or University policy.

The Joan Carol Jacobsen Scholarship for the Arts was established in 2007 as an endowed scholarship by action of the Board of Trustees out of a residuary bequest from the estate of Joan Jacobsen, Class of 1952. Awards from the scholarship shall be granted to art students.

The Robert F. Jaegle Memorial Scholarship shall be awarded to meritorious students with need, majoring in accounting.

The Frances Theiss James Scholarship was established by T. Garner James in memory of his wife, a member of the Class of 1940. The scholarship award will be made without restriction.

The Edward F. Johnson Jr. Scholarship was established by relatives and friends in memory of Edward F. Johnson Jr., Class of 1951, the income to be used to aid a worthy and needy student.

The Marion E. Mayfield-Johnson and Edward M. Johnson Scholarship was established by Marion E. Mayfield-Johnson, Class of 1949, and her husband, Edward M. Johnson. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Lewis E. Jones Scholarship was established by a legacy of Lewis E. Jones for a student of Welsh descent.

The Lloyd H. Jones/Lehigh Electric Engineering Scholarship was established by Lloyd H. Jones ME '72 and Lloyd Jones EE '49. The scholarship shall be awarded to students with demonstrated financial need, who are pursuing engineering degrees and are U.S. citizens, with a preference for students in the mechanical or electrical/electronic engineering departments.

The Rockefeller Jones Fund was bequeathed to the University by a legacy of Elizabeth B. Jones in memory of her husband, Thomas Rockefeller Jones, Class of 1862, the income to be used as scholarships for two young men of good moral character.

The John T. Judd Scholarship was established by a bequest of Anna C. Judd in memory of her father, John T. Judd; it is to be made available to Baptist students of good character.

The Dr. John T. Judd General Scholarship was established by his grandson, James W. Shields, to honor Dr. Judd and the many members of the Shields family who have graduated from Bucknell. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Deborah Juran Scholarship was established by Deborah Juran, Class of 1971. Preference for the scholarship award will be given to worthy students of demonstrated financial need who are residents of California.

The Edith Phillips Kalp Scholarship was established by Margaret E. Kalp in memory of her mother, the income to be awarded annually to such individual as the Scholarship Committee deems advisable.

The William Lawrence Kalp Scholarship was established by Margaret E. Kalp in memory of her father, the income from which is to be awarded annually to such individual as the Scholarship Committee deems advisable.

The Dr. Carl G. Kapp Memorial Fund was established through a bequest from Irma Kapp Rich, in memory of her brother, a member of the Class of 1925. The income from this fund shall be used to provide interest-free loan awards to deserving students who are enrolled in the premedical program, have completed their freshman year in this curriculum, and have demonstrated financial need. Student recipients of a loan award have a moral, but not legal obligation to repay the loan award when they are able.

The Clara M. Kauffman Scholarship was established by a bequest from Carson W. Kauffman, Class of 1940. Preference for the scholarship shall be given to students of good character and high scholastic standing enrolled in the College of Engineering, or in science programs. Students who are orphaned or who have but one living parent shall receive first consideration.

The Keech Family Scholarship was established by Rev. Dr. Finley M. Keech, Class of 1949, and Catherine L. Keech, Class of 1947, in memory of his father, Rev. Dr. Finley Keech, Class of 1922 (D.D. 1942), Mary Elizabeth Peifer Keech, Class of 1924, and his uncle, George T. Keech Jr., Class of 1915. The scholarship shall be awarded to students with demonstrated financial need and without further restriction.

The Alexis W. Keen Scholarship was established by an estate gift from Mr. Keen, Class of 1913. The scholarship award will be given to students residing in Wayne Township, Passaic County, N.J.

The Allan and Bette Kenzie Scholarship was established in 2000 by Allan G. and Bette Skow Kenzie '57/'56. The scholarship shall be awarded to students with demonstrated financial need, with preference for students whose ethnic, racial, economic, or national origins add to the diversity of Bucknell.

The W.K. Kellogg Foundation Scholarship was established by the W.K. Kellogg Foundation, for women preparing to enter nursing or medical technology.

The Edward Gridley Kendall Scholarship was established by a bequest from Grace W. Kendall, in memory of her husband, to be used to aid deserving men.

The S. Bruce and Betty Eyer Kephart Scholarship was established by S. Bruce Kephart, M.D., Class of 1939, and his wife, Betty Eyer Kephart, Class of 1940. The scholarship award will be made without restriction.

The M. Elizabeth King Scholarship was established through a gift from Elizabeth King, Class of 1934. The scholarship award will be made to students with demonstrated need and without other restriction.

The Arthur D. Kinney Scholarship was established by Arthur D. Kinney Jr., Class of 1956. Preference for the scholarship award shall be given to students who are scholar-athletes with demonstrated financial need.

The Obadiah W. Kitchell Scholarship was established by a bequest from Obadiah W. Kitchell, an honorary degree recipient in 1899, with preference given to graduates of the East Orange High School, in New Jersey.

The Grace and Stanley Kitzinger Scholarship was established in 2000 by Grace Livengood Kitzinger '49. The scholarship shall be awarded to full-time sophomore, junior, or senior students of high scholastic merit with demonstrated financial need, with preference for students majoring in biology. The student recipients should be United States citizens.

The Klaber Family Scholarship was established by Richard D. and Judith Beattie Klaber '55/'55 and their children, Bethany S. Succop '80, R. Douglass Klaber Jr. '86, and Andrew B. Klaber '87. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Richard A. Klein Scholarship was established in 2000 by Richard A. Klein, Class of 1969. The scholarship shall be awarded to students with demonstrated financial need, with preference for those who have elected a major or minor in theatre or dance, or who are active participants in the University's theatre programs, and without other restriction.

The Kleinert Family Scholarship was funded by a gift from Robert A. and Christine L. Kleinert, dedicated parents of Sophie J. Kleinert, Class of 2014. Awards shall be made to students based on financial need, with preference given to female student-athletes in good academic standing who possess leadership skills.

The Kleinert-Wagner Scholarship was established by Richard and Susan Kleinert, Classes of 1974 and 1975, in honor of their parents, Frederick and Donna Wagner and Robert and Jane Kleinert. It is the donors' preference that the scholarship award be made to Christian students of music or electrical engineering.

The Marie R. Kline Memorial Scholarship was established by Raymond D. Kline, Class of 1919, to honor the memory of his wife. Preference for the scholarship award will be given to students from the Lewisburg area.

The Klock Family Scholarship was established by Lawrence S. Klock, Class of 1969, and his wife, Cheri Klock, in honor of his parents, Grace and Charles Klock. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Koandah Scholarship was established by James M. Sanborn and Emilie Sherman Sanborn, Class of 1955, in honor and memory of Sholl and Sherman family members who have attended Bucknell University. The scholarship shall be awarded, in compliance with the University's policy of non-discrimination, to qualified students who could not otherwise afford an education at Bucknell University, and who would, as Bucknell students, add to the economic, ethnic, racial, cultural, and national diversity of the University.

The Kohn Family Scholarship was established in 2011 by Mr. Steven A. Kohn, Class of 1981, and his wife, Yvette V. Kohn, in recognition of Mr. Kohn's appreciation for his Bucknell experience, and out of the desire for others to realize a similar benefit. The scholarship shall be awarded to students with demonstrated financial need.

The Helen Morton Koons Scholarship was established in 2000 by her daughter, Helen E. Koons, Class of 1971. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The John Arthur Koons, Class of 1900, Memorial Fund was established by a bequest of Josephine Bonham Koons, the income to be used to aid residents of Pennsylvania.

The Samuel J. Koons Scholarship was established by Helen E. Koons, Class of 1971, his daughter, and Helen Morton Koons, Class of 1925, his wife. Preference for the scholarship award shall be given to science or engineering student residents of Pennsylvania.

The Kress and Warg Endowment was established by a legacy of Clara L. Warg to endow scholarships in memory of Jack Culberson Kress and Clara L. Warg, for the education of needy young men.

The Paul Kreutzpointer Scholarship was established by Mrs. Annie Kreutzpointer in memory of her husband.

The Clarence M. and Henrietta H. Kriner Memorial Scholarship was established by their daughter, Sara Kriner Goodman, Class of 1950, in memory of her parents, Clarence M. and Henrietta H. Kriner, Class of 1917. Preference for the scholarship award will be given to students in the College of Engineering.

The Daniel G. Krise Scholarship was established by Daniel H. Krise, Class of 1899, for a student preparing to teach in the public schools of Pennsylvania.

The Johanna Kunkel Memorial Scholarship was established by Florence Hohnbaum Harvey, Class of 1939, to honor the memory of her aunt who made possible her education at Bucknell.

The Kenneth G. Langone Scholarship was established at the 20th anniversary of Mr. Langone's company, Invemed Associates, by Walter W. Buckley Jr., to honor and recognize the many contributions of Mr. Langone. Preference for the scholarship award shall be given to students who have evidenced high integrity, loyalty, and steadfast determination in their daily lives.

The Langone Walling Scholarship was established in 2014 by Kenneth and Elaine Langone in memory and honor of lifelong friends Fitz Roy and Mary Jane Walling. Fitz received his Bachelor of Arts in Education in 1946, was a veteran of World War II, and served as the Director of Admissions for more than 20 years. Preference for the scholarship award shall be given to students who have evidenced high integrity, loyalty, and steadfast determination or overcoming adversity in their daily lives.

The Katherine B. Larison Scholarships were established by Katherine B. Larison, of the Institute Class of 1867, and were supplemented by the General Alumnae Association of the University. They are for women of exemplary character.

The Mabel Irwin Lavers Scholarship was established in 2001 by a bequest from Theodore H. Lavers, Class of 1929, to honor the memory of his wife, a graduate of the Class of 1930. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Lawlor Family Scholarship was originally established as the Doris Tucker Memorial Scholarship by Stuart Tucker and Scott Lawlor '86, to honor the memory of a wife and mother. In 2006, the scholarship was renamed and additional contributions were received from Scott Lawlor '86 and his wife, Elena Lawlor. The scholarship award was redirected to students with demonstrated financial need whose life experiences contribute to the cultural and ethnic climate of the campus, including first-generation college students, students from outside the University's traditional geographic area, and those who bring cultural and ethnic diversity to the campus.

The Leadership First Scholarship was established by Joseph A. Cifolillo, Class of 1961, and Joseph N. Cifolillo, Class of 1984. The award recognizes the importance of leadership, by providing scholarship aid to undergraduates. The Leadership First Scholarship is awarded to students whose activities and contributions to the community have distinguished them as leaders among their peers. Priority for new awards will be given to entering freshmen without consideration of academic ranking. This award is renewable for each of four years of undergraduate study at Bucknell.

The Charles J., Filomena and Dr. Charles J. Leagus Jr. '53 Memorial Scholarship was established under an agreement completed in 2004 and funded by Dolores Leagus Clark, M.A. 1953, to preserve and honor the memory of her parents and brother. The scholarship shall be awarded to students without restriction.

The Ledgerwood Family Scholarship was established in 2007 by William C. Ledgerwood '74 and D. Leanne Trout Ledgerwood '74 in honor of family members who are also Bucknell graduates. The scholarship shall be awarded to students with demonstrated financial need. The scholarship award shall be made without restriction.

The Dr. Leiser Foundation Scholarship, established by a bequest from Dr. William Leiser III, Class of 1909, recognizes the medical services provided for the citizens of Lewisburg by three generations of the Leiser family, including the donor; his father, Dr. William Leiser Jr.; and his grandfather, Dr. William Leiser.

The William Forrest Lenker Scholarship was established by members of the Kappa Sigma fraternity to honor William Forrest Lenker, Class of 1956, on the occasion of the centennial celebration of the Alpha Chi chapter of the Kappa Sigma fraternity. The scholarship award shall be given to students with demonstrated financial need, with preference for members of the Kappa Sigma fraternity who have demonstrated exceptional scholarship, leadership, and service to Bucknell and the community.

The Edward Leptinsky Scholarship was established in 2011 by Michael J. Costa, Class of 1991, and his wife, Lauren R. Costa, Class of 1990, with funding from the Houston Endowment, to honor Mr. Leptinsky who was first in his family to attend college, and appreciated the importance of access to educational opportunities. The scholarship shall be awarded to students with demonstrated financial need, with preference for students from Serra Catholic High School in McKeesport, Pa., or Allegheny County, Pa.

The Ira A. Levin Scholarship was established by Ira A. Levin, Class of 1952, in memory of his parents. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Rosetta Miller Lewis Scholarships were established by a bequest from Rosetta Miller Lewis.

The Warren "Bud" Lewis Scholarship was established by his wife, Gladys Rowland Lewis, children, and friends to preserve his memory. The scholarship award will be made without restriction.

The Peggy and Bob Ley Scholarship was established by Margaret Hollinshead Ley, Class of 1960, and her husband, Robert Ley. The scholarship shall be awarded to students with demonstrated financial need, with first preference given to students who have been historically under-represented at Bucknell University.

The Diana Rudge Limongelli '89 Scholarship was funded by a gift from the Rudge Family Foundation in honor of Diana Rudge Limongelli, Class of 1989. Awards shall be made to students based on financial need without restriction.

The William L. Litchfield Scholarship was established by Marcia Litchfield Martell, Class of 1973, and Sharon Litchfield Spencer, Class of 1975, in memory of their father, William L. Litchfield, Class of 1928. Preference for the scholarship award shall be given to student-athletes.

The Margaret B. Livingston Scholarships, established by a bequest from Margaret B. Livingston, are for preministerial students recommended by the department of religion.

The Mildred Rose Lloyd Memorial Scholarship was established in 2011 by Ellen Q. Bush, Class of 1979, and her daughter Millie Lloyd. The scholarship remembers Mildred's kindness, warmth, and caring, to Ellen and Millie, and to everyone in her community, as well as her affection for Bucknell, and Bucknell's scholarship students. The scholarship shall be awarded to students with demonstrated financial need, who by their presence help create a student body that is representative of the diversity of the world outside Bucknell.

The Marguerite D. Lofft Memorial Scholarship was established by Henry T. Lofft, Class of 1917, in memory of his wife. In awarding the scholarship, preference will be given to worthy civil engineering students.

The Esther B. Long Memorial Scholarship was established to honor the memory of Esther B. Long, Class of 1947, by her son, Morris A. "Andy" Long, Class of 1949, and her daughter-in-law, Helena J. Long. In recognition of Esther Long's lifetime of service as director of Bucknell's dining service, the scholarship shall be awarded to students with demonstrated financial need, with preference for students who are employed by the University's dining service, or who are geology majors.

The O.W. Longan Scholarship was established by a bequest of O.W. Longan, Esq., for a student who plans to enter the ministry and who lives in Lycoming County, Pa.

The Shaw Loo Memorial Scholarship was established in 1998 to commemorate the 140th anniversary of Shaw Loo's arrival on campus from Burma, as Bucknell's first international student. The scholarship also marks the historic ties of Bucknell to the nation and people of Burma, extending back to the University's founding in 1846.

The K. Allen and Mary Lovell Music Scholarship was established for a deserving woman student studying piano and with a wholesome interest in her fellow students; the student is to repay the scholarship to the fund.

The Horace A. and Antoinette M. Lowe Scholarship was established through a bequest from Horace A. Lowe Jr., Class of 1940, and his wife, Antoinette. The scholarship award shall be made without restriction.

The Alma Lowry Scholarship Fund was established by the bequest of Alma Lowry Williams and is named for her and for her maternal grandmother, Alma Lowry, whose cousin, Stephen W. Taylor, wrote the Charter of the University and served as Acting President. Income from the fund is to be awarded to students in the fields of religion, medicine, teaching, humanities, and the fine arts, especially in music. No part of the fund may be used for athletic activities or promotion.

The W. Norwood Lowry Scholarship was established by a gift from Robert Lowry Stanton, Class of 1940. Preference for the scholarship award will be given to worthy students majoring in physics or mathematics.

The Francis X. Lucarelli Scholarship was established in memory of this distinguished member of the Class of 1962 by members of the Lucarelli family for the purpose of providing financial assistance to worthy and needy students.

The Lewis Frederick Lyne Jr. Mechanical Engineering Scholarship was established by a bequest of Lewis Frederick Lyne Jr., Class of 1914, the income to be available to men who are students in mechanical engineering and who are also members of the Sigma Chi fraternity.

The Jane Brown Maas Scholarship was funded by a gift from former Trustee Jane Brown Maas, Class of 1953. Grants shall be made to students based on financial need, with preference given to students majoring in English.

The Betty Ann Waddington Mackey Scholarship was established by Betty Ann Waddington Mackey, Class of 1948, and her husband, Howard D. Mackey. The scholarship is established in Betty Ann's honor and in gratitude for what Bucknell University has meant in her life. The scholarship is to be awarded to students with demonstrated financial need, with preference given to students majoring in psychology.

The Neil Thompson and Gary MacNew Scholarship was established in 2000 by Gary A. MacNew, Class of 1976. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who are citizens of Canada, or who are seeking a Bachelor of Science in Business Administration and who have demonstrated support to the community through volunteer work in serving the poor, sick, disabled, or needy.

The Sarah Slaughenhap Madison '41 Scholarship was funded by a gift from Linda Madison Kirk in 2012. Awards shall be made to students based on financial need without restriction. The scholarship serves as a memorial honoring Linda's mother, Sarah Slaughenhap Madison, Class of 1941. Sally was an incredible lady, who was widowed at age 36, raised two small children by herself, ran a successful business, and traveled the world. For Linda, Sally was her mother, father, and very best friend. Sally will be remembered by those who will follow in her footsteps.

The Malesardi Scholarship was established by gifts of the Malesardi Foundation and Robert E. Malesardi, Class of 1947, the income to be used to aid students with demonstrated need. Preference is to be given to qualified candidates from Elk County, Pa.

The Joseph Earl Malin Scholarship was established by a bequest of Dolly Frey Malin in memory of her husband, Joseph Earl Malin, Ph.D., Class of 1916. It is to be awarded to worthy young men who are majoring in chemistry.

The Malone Family Scholarship was established by J. Gilbert Malone, Class of 1927, in memory of his mother, Mary Ruff Malone, and his wife, Mary Gerlash Malone. The scholarship award shall be made without restriction.

The E.R. and E.M. Manchester Scholarship was established through a bequest from Elizabeth M. Manchester, Class of 1935. The scholarship award shall be made without restriction to students with demonstrated financial need.

The Colin Donohue Marren Scholarship was established in loving memory of Colin Marren, Class of 2010, by his family, classmates, and friends. Colin had a passion for living life to its fullest, and he truly appreciated the opportunity to be a "Bucknellian." The scholarship will be awarded to a student with demonstrated financial need, with preference for a student from Westchester County, N.Y., or Fairfield County, Conn., a commitment to community service and without further restriction.

The Henry A. and Kathryn E. Martin Scholarship was established in 2007 through a bequest from Henry A. Martin, Class of 1939. The scholarship shall be awarded to students with demonstrated financial need, with preference for students from Hazleton Area School District, Luzerne County, Pa.

The Arnaud C. Marts Scholarship Fund was established by contributions from students, faculty, administration, family, and friends as an expression of appreciation of President Marts' service to the University. The income is to be used as a scholarship for deserving students.

The Franklin Mathews Service Scholarships were established for male students by Franklin Mathews, Class of 1868.

The Christy and Jane S. Mathewson Scholarship was established by Jane S. Mathewson, and it is to be awarded to a student who is in financial need; who possesses special ability in mathematics; who has shown integrity and dependability; and who has participated in the school's activities, especially in athletics.

The Margaret Blair Mathias Memorial Scholarship was originally established in 1997 as the Janet B. Mathias Scholarship by Janet B. Mathias, Class of 1966. This scholarship has been awarded to students with demonstrated financial need who major in, or have an established record of participation in, music, art, or theater, with first preference given to students majoring in music performance. In 2010, Ms. Mathias renamed the scholarship in honor of her mother, Margaret Blair Mathias, Class of 1936, who passed away in 2005, and expanded the award to include students majoring in English who demonstrate financial need, exceptional writing skills, and a thorough knowledge of English grammar.

The John H. and Susan B. Mathias Scholarship was established by John H. '69 and Susan B. Mathias '69, and honors the extensive ties of the Mathias family to Bucknell University. Preference for the scholarship award shall be given to students whose ethnic, racial, economic, or national origins add to the diversity of Bucknell.

The J.P. Mathias Scholarship was established by Margaret Blair Mathias, Class of 1936, to honor the memory of her husband, J.P. Mathias, Class of 1935. Preference for awards from this scholarship shall be given to varsity student-athletes with demonstrated financial need, selected by the director of athletics and the coaches.

The Andrew Wray Mathieson Scholarship, named for Mr. Mathieson, a member of the Bucknell Board of Trustees and the Class of 1950, was established by his children, Margaret A., Class of 1977, Andrew F., and Peter F., Class of 1983, to honor his many contributions to and deep devotion for the University, and in honor of his father, Andrew R. Mathieson, Class of 1920. Preference for the scholarship award will be given to residents of Allegheny County or other southwestern Pennsylvania communities.

The Barry R. and Marjorie A. Maxwell Scholarship was established in 1998 to express the respect and affection of friends and associates of the Maxwells, on the occasion of Barry Maxwell's retirement as vice president for administration at Bucknell University. The scholarship shall be awarded to students with demonstrated financial need, with preference for students in engineering, and without other restriction.

The Leila Preston McCain Scholarship was established by a gift from Donald R. McCain, Class of 1905, to be awarded annually to a woman who is a member of the senior class, who is of high moral character, and whose scholastic record is superior.

The John Lehy McCarthy Memorial Fund was established by a bequest of Elizabeth B. McCarthy, Class of 1917, in memory of her son, the income to be used to aid any worthy students in need.

The Marti L. McCord Scholarship was established in memory of Marti Lynn McCord, Class of 1963, who died shortly after graduation. The scholarship award shall be made without restriction.

The Shirley Jane McCreary Scholarship was established by Ralph W. McCreary in memory of his daughter, a member of the Class of 1952. The awarding of this scholarship is based primarily on need and preference is given to students planning a career in nursing or medicine.

The Frank and Edna Keen McCrina Memorial Scholarship was established through a bequest from Mary McCrina Miller, Class of 1940, in memory of her parents. Preference for the scholarship will be given to students majoring in the humanities.

The Gilbert G. McCune Leadership Award was established by Mr. McCune, Class of 1927. The award recognizes the importance of extracurricular achievement through scholarship aid to seniors who have brought honor to the University by their activities outside the classroom.

The William D. McFarlan Jr. Scholarship was established by a legacy of William D. McFarlan Jr.

The George V. McGee Investment Studies Endowment was established in 2002 by The Charles Foundation Inc., a Rooke Family Private Foundation, to honor George V. McGee, Class of 1938, a friend of Robert C. Rooke. The endowment provides merit-based grants to students who demonstrate potential as future professionals engaged in the fields of finance and investment. Students selected as McGee Scholars must hold a record of superior academic achievement, contributions to the University community, and successful participation in finance- or investment-related internships, employment or other activities.

The Mark Ryan McGinly Memorial Scholarship was established in 2007 in memory of Mark R. McGinly, who lost his life on September 11, 2001, in the New York City World Trade Center. The scholarship was launched by the Mark Ryan McGinly Memorial Scholarship Fund in Vienna, Va., the McGinly family, and Mark's many friends to commemorate the 10-year anniversary of the Class of 1997. Mark was a very proud Bucknell graduate and made many wonderful friends, fond acquaintances, and valued business associates as a result of his Bucknell University experience. Preference for the scholarship shall be given to deserving undergraduate students with demonstrated financial need who are majoring in management.

The Richard G. McGinnis International Engineering Study Scholarship was established in 2006 by Debra Anderson Apruzzese '80 and John J. Apruzzese '80, and Louis and Angelika Anderson, to honor Professor McGinnis, who successfully pursued his vision to expand the Bucknell engineering experience to include international study. The scholarship provides assistance for Bucknell engineering students to travel and study outside the United States. Awards shall be made to full-time students who demonstrate that their international study program is a valuable addition to their on-campus experience, and who have demonstrated financial need.

The Alex G. McKenna Scholarship was established in memory of Mr. McKenna by his children, Linda McKenna Boxx, Class of 1974, and David E. McKenna, Class of 1973. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Newman Frederick McKinney-Jennie Owens McKinney Memorial Scholarship Fund was established by Newman F. McKinney, Class of 1928, and his wife, Jennie Owens McKinney, Class of 1930, to provide scholarships in civil engineering in honor of Newman Frederick McKinney and William McKinney; in history in honor of Jennie Owens McKinney; in premedicine in honor of Charles Owens; in English in honor of Anna Maude Lobaugh Owens; in education in honor of Blanche Newman McKinney; and in psychology in honor of Thomas Gilesie McKinney.

The William D. and Dorothy O. McRae Scholarship Fund was established in 1979 by chapel choir alumni and friends, the income to be awarded to a worthy vocalist, organist, or other musician, with preference for a member of the chapel choir, as recommended by the director of the chapel choir and the department chair of music.

The Meerwarth Scholarship was established by a gift from Lurena M. Meerwarth and her daughter, Tracy L. Meerwarth, Class of 1996. Preference for the scholarship award shall be given to students majoring in biology who are United States citizens.

The Clifford C. and Elizabeth Melberger Scholarship was established in 2005 by Clifford K. "Mickey" Melberger, Class of 1961, and his wife, Ruth B. Melberger, in memory of his parents and to honor their commitment to education. The scholarship shall be awarded to students with demonstrated financial need.

The Melior Scholarship was established in 2010 by Charles M. Boldt, Class of 1972. The scholarship's name was derived from the word ameliorate, meaning "to make better." The scholarship shall provide assistance to a student enrolled in the College of Engineering with a demonstrated financial need, thereby providing an improvement in the student's financial situation that benefits both the student and Bucknell.

The Herbert L. Merin Scholarship was established in 1998 by Andrew J. Merin, Class of 1970, to honor his father. Although Herbert Merin never attended college, he had a reverence for education. The scholarship was created to reflect the gratitude of his son for granting him the opportunity to attend Bucknell and to follow his father's instructions to always pay back those institutions that have helped him along the way. The scholarship shall be awarded to students who are judged to have the most pressing demonstrated financial need, and without other restriction.

The Sara Chandler Merrick Scholarship was established in memory of their daughter by Grace Milhous Merrick, Class of 1927, and J. Leon Merrick, the income from which is to be used to provide financial aid for a deserving undergraduate selected by the University in accordance with established scholarship policies. Preference shall be given to students from southeastern Pennsylvania, especially those from the Kennett Square area.

The Florence Beckworth Miller '27 Memorial Scholarship was established in 2002 by her sister, Evelyn M. Beckworth, Class of 1930, to honor Florence's outstanding academic performance in her pre-med studies. The scholarship shall be awarded to students with demonstrated financial need with preference given to students planning to pursue a career in medicine who are also United States citizens.

The Lois Cullen Miller '54 Chemistry Scholarship was established in 2005 by Eugene Miller. The scholarship shall be awarded to students with demonstrated financial need, with preference for upperclass students who are majoring in chemistry.

The Robert G. Miller Math, Science and Engineering Scholarship was established in 2011 by Rosemary H. Miller, and honors her late husband, Robert G. Miller, Class of 1937, and his descendants. The scholarship shall be awarded to citizens of the United States of America and with preference for students who are majoring in or intend to major in mathematics, any of the laboratory sciences, or any engineering discipline.

The Miller Family Engineering Scholarship was established through a bequest from John W. Miller, Class of 1943, as a tribute to his brothers, Clyde L. Miller, Class of 1931, and C. Guy Miller, Class of 1935. Preference for the scholarship award shall be given to students with demonstrated financial need in the College of Engineering.

The Mills Family Scholarship was established in 2009 by Bucknell trustee Craig Mills, Class of 1976, and his daughter, Chelsea Mills, Class of 2006. The scholarship shall be awarded to students with demonstrated financial need who are enrolled in the College of Arts and Sciences.

The Jacob H. Minick Fund was established by a bequest from Jacob H. Minick, Class of 1891, the income of which is to be given each year to students who, because of some physical difficulty, are forced to use crutches during all of their college work.

The Moll-LaBar Family Scholarship was established by Bruce A., Class of 1954, and Marion Moll LaBar, Class of 1956. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Michael W. Moohr Memorial Scholarship was funded by gifts from members of the Bucknell University community. Awards shall be made to students based on financial need without restriction. The Michael W. Moohr Memorial Scholarship serves as a lasting tribute to Michael W. Moohr, an Associate Professor of Economics who taught at Bucknell for 35 years. He joined the faculty in 1975, served as Chair of the Economics Department from 1990 to 1994 and received the Lindback Award for Distinguished Teaching in 1983. As an academic adviser, Michael helped hundreds of students through his wide range of interests and expertise, including the economics of art and architecture. He was a faculty adviser to the Pi Beta Phi sorority, the Real Estate Club, which he was instrumental in founding, and was a co-director of the Bucknell in Barbados Program.

The Frederick C. Moor Jr. Scholarship was established by Stanley G. Williams, Class of 1943, and his wife, Doris, in memory of F.C. "Doc" Moor, aviation pioneer and powerboat racing champion. The scholarship award will be made without restriction.

The James Moore III Scholarship was established for descendants of the family.

The Dorothy H. and Peter F. Morgantini Scholarship was established by Dorothy Harris Morgantini and Peter F. Morgantini, both members of the Class of 1987. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Edmond N. and Virginia H. Moriarty Scholarship was established by Virginia Moriarty and Edmond Moriarty, trustee. The scholarship shall be awarded to returning students with demonstrated financial need, with preference for students who need assistance due to a sudden financial loss, such as parental unemployment, disability, or the death of a family member or other causes, and without other restriction.

The Morrell Family Scholarship was established by James J. and Karen Olsson Morrell, both members of the Class of 1974, to honor the Rev. James D. Hammerlee, who served Bucknell for 26 years and was a friend and mentor to both. Preference for the scholarship award shall be given to students with demonstrated financial need and without other restriction.

The Ann M. Morrison Scholarship was established by Ann M. Morrison, Class of 1970, and Steven J. Pitchersky. The scholarship award shall be made without restriction.

The Carl M. and Kathryn W. Moyer Scholarship was established by Kathryn W. and Carl M. (M.S. 1969) Moyer. The income earned by the scholarship is to be used to provide emergency assistance to students who have experienced sudden financial loss through the death of a family member, or for other causes, and who could not continue their education without such scholarship aid.

The Earle L. and Christine Sterner Moyer Memorial Scholarship was established by Christine Sterner Moyer, Class of 1928, and enhanced by additional contributions from her son, William S. Moyer, Class of 1957, and daughter-in-law, Joan F. Moyer. Preference for the scholarship award shall be given to needy and deserving students.

The Mt. Pleasant Institute Scholarships Fund was established through the merger of the Western Pennsylvania Classical and Scientific Institute at Mt. Pleasant with Bucknell University, as a memorial of long and faithful service to the Mt. Pleasant Institute by Leroy Stephens, A.M., D.D., Class of 1868, a Bucknell trustee for 40 years. The fund provides an endowment for awarding undergraduate scholarships to students of ability and character who are worthy of financial assistance, preference being given to Baptist students, or to students of Baptist antecedents, living in western Pennsylvania. As a result of the merger in 1936, the following endowed scholarships were established:

- **The Nathaniel S. Houseman Scholarship**
- **The Nelson Weddle Jr. Scholarship**
- **The Sarah Ann Trevor Scholarship**
- **The Leroy Stephens Scholarship**

The Mullins Family Scholarship was established in 2008 by Dr. Kevin J. Mullins, Class of 1987, and his wife, Stacey Gardner Mullins, Class of 1988. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in neuroscience.

The Thomas Joseph Murray Memorial Scholarship was established in 2011 by his family and friends. The scholarship will provide financial aid for a deserving undergraduate student selected by the University in accordance with established scholarship policies. Tom, a football player and management major, remained a loyal supporter of varsity athletics following his years at Bucknell. Preference shall be given to a student who is pursuing a Bachelor of Science in Business Administration.

The Malcolm E. Musser Scholarship was established by gifts of the Robert L. Cooley family, and is to be awarded to a student who is an outstanding golfer.

The Geoffrey P. and Barbara F. Mynott Scholarship was established by Geoffrey P. and Barbara Folk Mynott '54/'56. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Eleanor Nachshin Scholarship was established by Robert J. Nachshin, Class of 1972, and his wife, Monica Lipkin. The recipient shall be selected in the following order of preference: 1) juvenile (Type I) diabetes; 2) other form(s) of diabetes; 3) sight impairment so as to be unable to read; 4) kidney transplant or renal dialysis; 5) diseases or disabilities similar to those caused by juvenile diabetes.

The Ross J. Nahrgang Scholarship was established by Mrs. Anne Horoschak Nahrgang, B.S., M.D., Class of 1923, as a memorial to her son, the income to be used to aid one or more women students, preferably in the premedical program.

The Richard Nathan Scholarship was established through a bequest from Richard Nathan, Class of 1939. The scholarship award will be made without restriction.

The Peggy Apgar Neville '61 Memorial Scholarship was established in 1996 by Stephen B. Neville, Class of 1957. Preference for awards from the scholarship will be given to students residing in the southeastern United States; awards will be made without other restrictions.

The Newcomb Family Scholarship was established by William Y. Newcomb, Class of 1936, his wife, Mary VanKirk Newcomb, Class of 1934, and their sons, William A. Newcomb, Class of 1965, and L. Kirk Newcomb, Class of 1968. The scholarship award shall be made without restriction.

The Nichols Family Scholarship was established in 2003 by Scott Nichols, Class of 1970, and his wife, Muriel Nichols. Preference for the scholarship shall be given to students majoring in music. Grants from the scholarship will be used to assist in attracting the strongest possible talented students.

The S. Yvonne Novak Scholarship was established by Darryl L. Novak, Class of 1963; Sigrid Christensen Novak, Class of 1964; and Lars, Margo and Yvonne Novak. The scholarship award shall be given to students with demonstrated financial need, with preference given to young adults with insulin dependent type I diabetes.

The Christopher and Elizabeth O'Brien Family Scholarship was funded by a gift from trustee Christopher J. O'Brien '80 and his wife, Elizabeth O'Brien. Awards shall be made to students based on financial need with preference given to junior-year students enrolled in the School of Management who are identified by faculty for their potential to succeed in their chosen field.

The Dennis and Judith O'Brien Scholarship was established by friends and colleagues in honor of Bucknell's 12th president and first lady, the income to be used to provide one or more scholarships for undergraduate students in the humanities.

The Merle M. and Frances B. Odgers Scholarship Fund was established by the Bucknell Parents Association and others in honor of the former president and Mrs. Odgers, the income to be used to provide one or more scholarships for undergraduate students.

The Margaret Tustin O'Harra Memorial Scholarship was established in 2006 as an endowed scholarship by action of the Board of Trustees out of a residuary bequest from the estate of Helen F. O'Harra. The scholarship is intended to honor the memory of Helen's mother-in-law, Margaret Tustin O'Harra, and shall be awarded to students without restriction.

The Stewart W. Oldt Memorial Scholarship was established in 2008 with a testamentary gift from Barbara Oldt to honor the memory of her father. Awards shall be made to a deserving student from the Central Pennsylvania area that is enrolled in the College of Engineering, with preference for a student majoring in mechanical engineering.

The J. Orin Oliphant Scholarship was established by Edward G. Hartmann, Class of 1937, and other students and colleagues of Dr. Oliphant, the income to be used for a student majoring in the humanities, preferably in history.

The Oliver Family Scholarship was established in 2011 by Patricia Tarleton Oliver, Class of 1980, and her husband, Brian D. Oliver. The scholarship shall be awarded to students with demonstrated financial need, and without restriction.

The Tim O'Mara Memorial Scholarship was established to honor the memory of Timothy J. O'Mara, Class of 1990, by Tim's parents, J. Joseph and Helen O'Mara, and his friends and lacrosse teammates. Awards shall be made to students based on financial need, with preference given to men's varsity lacrosse players.

The James G. Orbison Scholarship was established in 2009 by alumni and other admiring friends and colleagues to honor their esteemed friend, faculty member and dean, James G. Orbison, Class of 1975, on the occasion of his return to the faculty and retirement as Dean of the College of Engineering, and the 35th anniversary of his graduation from Bucknell. This scholarship is a tribute to a teacher, scholar, and administrator who served as mentor and instructor for Bucknell students, faculty, and colleagues, and who as Dean led the College of Engineering to national prominence as one of the top undergraduate engineering programs. Awards from this scholarship will be made to undergraduate students enrolled in the College of Engineering.

The Oristaglio Family Scholarship was established in 1999 by Stephen M. Oristaglio, Class of 1977. The scholarship shall be awarded to students with demonstrated financial need, with preference for varsity scholar-athletes who have an interest in the arts.

The Sally J. and R. Lyman Ott Scholarship was established by R. Lyman Ott Jr., Class of 1962, Sally J. Clute Ott, Class of 1964, Kathryn A. Ott, Class of 1991, and Curtis L. Ott. Preference for the scholarship award shall be given to students who are varsity soccer team members and who are majoring in the liberal arts.

The Esther Owens Scholarship was established by a gift of Miss Esther Owens.

The William G. Owens and Jeannette W. Owens Scholarship was established by William G. Owens, Class of 1880, to perpetuate the interest of his wife, Jeannette W. Owens. It is to aid students who have committed themselves to serve in foreign missions under the supervision of the Baptist Church, and is to be awarded to students who are of good character and who need financial aid. If the preference cannot be met, the award shall be made without restriction.

The William G. Owens Scholarship was established by his daughter, Jeannette Owens Burnet, Class of 1917, in memory of her father, Professor William G. Owens, Class of 1880, who taught the physical sciences at Bucknell for over 50 years. It is to be used to help worthy students, a preference given to those who are majoring in chemistry.

The Parks Family Scholarship was established by Marilyn Olson Parks, Class of 1968, and her husband, Robert W. Parks, Class of 1966. The scholarship award shall be made without restriction.

The Judy Parsons Memorial Scholarship was established by the Bucknell Student Government, with contributions from the family and friends of Judy Parsons, Class of 1988, to honor her memory. Preference for the scholarship award will be given to physically handicapped students.

The Pascucci Family Scholarship was established by Michael C. Pascucci, Class of 1958. Preference for the scholarship award shall be given to students with demonstrated financial need, and without other restriction.

The James N. Patterson Scholarship was established by James Patterson, M.D., Class of 1924. The scholarship award will be made without restrictions to support the Bucknell education of students with demonstrated financial need.

The Paulis Family Scholarship was established in 1993 by the family of Dara M. Paulis, Class of 1993, Bradley D. Paulis, Class of 1989, and his wife, Nancy Neu Paulis, Class of 1988, as an expression of their appreciation for the educational opportunity given to them at Bucknell and to the glory and honor of God who made it possible. Preference for the scholarship award shall be given to a United States citizen who meets high academic standards, displays financial need, and demonstrates community involvement.

The William A. Payn Music Scholarship was created by a gift from Emeritus Trustee Robert C. Rooke and Natalie D. Rooke to honor Emeritus Professor of Music William A. Payn. The scholarship will strengthen Bucknell's music program by enhancing the University's ability to recruit and enroll vibrant music students who have demonstrated excellence in music. Awards shall be made to students based on their merit in music.

The Dr. Joseph and Elizabeth Pennino Memorial Scholarship Fund was established by a bequest of the late Elizabeth Pennino, the income of which provides a scholarship for a student enrolled in the civil engineering department.

The Richard J. Peterec Scholarship was established in 2008 by a group of loyal alumni to honor their beloved professor, and by other admiring friends and colleagues. This scholarship is a tribute to an unforgettable teacher and scholar who inspired and mentored four decades of Bucknellians. In recognition of Professor Peterec's challenge to his students to view themselves and others in a broader global context, the scholarship shall be awarded annually to students with demonstrated financial need majoring in geography or international relations.

The Pettit Family Scholarship was established by Raymond F. Pettit, Class of 1953. The scholarship shall be awarded to students with demonstrated financial need, with preference for student-athletes.

The Joseph W. Peyser Scholarship Fund, established by a bequest from Joseph W. Peyser, the income to be used to aid worthy students who are graduates of the high school of the Shikellamy School District and who have been residents of Northumberland for at least three years prior to high school graduation.

The Philadelphia Alumnae Scholarship was founded by the Philadelphia Alumnae Club, for a woman who lives in Philadelphia.

The Llewellyn Phillips Scholarship was established by a friend in memory of Professor Llewellyn Phillips, Class of 1892, for a student contemplating a life's work in a Christian vocation.

The Emil J. and Elva E. Polak Memorial Scholarship was established by gifts from friends, family, colleagues, and former students of Emil J. Polak, professor of mathematics and astronomy at Bucknell from 1954-84, and his wife, Elva Elze Polak. Preference for the scholarship award shall be given to students majoring in mathematics or astronomy.

The Charles "Charlie" Pollock '70 Memorial Scholarship was established in 2008 by Gayle Pollock, his wife, and by the gifts of friends to honor his memory. Charles had a major impact on Bucknell through the leadership roles he held for more than 10 years, serving as assistant to the president at Bucknell and, later, as vice president for student affairs. He became Bucknell's vice president for external relations in April 2006. The scholarship shall be awarded to students with demonstrated financial need and without restriction.

The Arky Pollokoff Memorial Scholarship was established in 2001 by the family, friends, and classmates of Arky Pollokoff, Class of 1978, to honor his memory. The scholarship shall be awarded to students with demonstrated financial need and without other restrictions.

The Post Family Scholarship was established by Robert M. Post, Class of 1954, and Anne Prosser Post, Class of 1956. The scholarship award shall be made without restriction.

The William J. Post Scholarship was established in 2005 by family members and friends to honor the memory of Bill Post, a member of Bucknell's Class of 1992. The scholarship shall be awarded to students with demonstrated financial need who are majoring in engineering.

The Harvey M. Powers Scholarship was established in 1997 by Jane Brown Maas, Class of 1953, to honor the memory of Harvey Powers, director of Bucknell's theatre program from 1946 until 1986. The scholarship shall be awarded to students with demonstrated financial need, with first preference for students who have elected to major in theatre or English. Secondary preference will be given to students who are active participants in programs, publications, or productions of the University's theatre or English departments. Awards from the fund will be made without other restriction.

The Nancy B. Prial and James D. Pavlekovsky Scholarship was established in 2000 by Nancy B. Prial, Class of 1980, and her husband, James D. Pavlekovsky. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The PricewaterhouseCoopers Scholarship was established by Jeb and Sally Stoner Bachman '78/'78, Frank and Susan Stoner Brown '78/'78 and the PricewaterhouseCoopers Foundation to provide scholarship support to outstanding students interested in career opportunities in the field of accounting.

The Puff Family Scholarship was established in honor of Dr. Robert C. Puff '42 and Mrs. Isabel Clark Puff '43, by their children and spouses: Robert C. Puff Jr. '67 and his wife, Nancy Larzelere Puff '69; Barbara Puff '69; Sally Puff Courtney '74; and Jeffrey V. Puff '75 and his wife, Rae Ann Puff. Awards from this scholarship shall be used to recruit students with demonstrated financial need and exceptional academic promise. The scholarship is intended, where possible, to provide the entire financial need of selected recipients, thereby eliminating or reducing their need to become indebted with loans for financial aid, or to take time away from collegiate pursuits for work. It is the donors' hope that students selected to receive grants under this agreement will use the time saved from such extra work obligations to excel in academic efforts and engage actively in the life of the University through participation in service organizations, student government, social clubs, the arts, athletics, etc.

The Ann Purcell Scholarship was established by Ann Sundberg Purcell, Class of 1953. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Joseph T. and Mary Bachman Quick Scholarship was established in 2005 by Joseph T. Quick, Class of 1938, in loving memory of his wife, Mary Bachman Quick, Class of 1938. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Betty Ann Quinn Scholarship Fund was established by the Bucknell chapter of the National Association for the Advancement of Colored People, the income to be given to a worthy black student.

The William L. Quirk Memorial Scholarship was established by his wife, Janet B. Quirk, to preserve the memory of her late husband. The scholarship is to be awarded to any student with demonstrated financial need and without other restriction.

The Dayton Ranck Scholarship was established out of respect for and in memory of Dayton Ranck, a former vice president of the University and a member of the Class of 1916. The income is to be given to a student in need of financial assistance.

The Rasmussen Family Scholarship was established in 1999 by Warren and Nancy Rasmussen, past parents '79. The scholarship shall be awarded to students with demonstrated financial need, with preference for an engineering student who is a (1) resident of Illinois or (2) resident of a Midwestern state. If neither preference can be met, the award shall be made without restriction.

The Milton M. Ratner Scholarship Fund was established by the Milton M. Ratner Foundation to provide scholarship aid to needy students who could otherwise not attend a private university.

The Reader's Scholarship was funded by a gift from Richard H. Fidler, Class of 1963, in appreciation for the individuals who read to him, and in memory of his parents, Lillian M. and Wilbert C. Fidler. As Bucknell's first blind graduate, Richard's education was made possible by the readers and the loving support and guidance of his parents. Awards shall be made to students based on demonstrated financial need.

The Henry M. Reed '44 Scholarship was established in 2000 by Henry M. Reed, Class of 1944. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Marian McInay Reed Scholarship was established by Marian M. Reed, the income to be used for the education, or for the support and maintenance during the period of such education, of worthy and capable students.

The Robert G. Reed Memorial Scholarship was established in 2007 by his mother, Mary Ann G. Reed, his aunt, Jane W. Griffith, other members of his family, and friends, to honor and preserve his memory. Robert graduated in 1972 with degrees in engineering and business. The scholarship shall be awarded to students with demonstrated financial need, with preference for students enrolled in the College of Engineering.

The Robert L. and Elva K. Reitz Scholarship was established by Robert L. Reitz, Class of 1938, and Elva K. Reitz. The scholarship award will be made with preference given to student-athletes.

The Edward J. and Patricia C. Reitzel Scholarship was established by Edward J. Reitzel, Class of 1961, and his wife, Patricia C. Reitzel. The scholarship shall be awarded to students with demonstrated financial need with preference for student-athletes.

The Leon J. Rhodes Scholarship, established by the estate of Leon J. Rhodes, Class of 1932, shall be awarded to juniors in financial need who, in their first two years at Bucknell, have made significant contributions in scholarship, leadership, and in extracurricular activities.

The Professor John W. Rice Scholarship in Biology was established in 2011 by his son, Dr. Andrew C. Rice, Class of 1948, to honor his father's 43 years of teaching at Bucknell University. The scholarship shall be awarded to students with demonstrated financial need with preference given to biology majors who have completed their first year.

The John W. Rice Memorial Scholarship was funded by a gift from the estate of Howard J. 'Joe' Merrion, Class of 1938, in honor of Biology Professor John W. Rice who taught at Bucknell University for 43 years. Joe often attributed his successful career as a bacteriologist to Dr. Rice, a longtime mentor and friend. Grants shall be made to students majoring in biology.

The Richards Family Scholarship was established by Daniel R. '78 and Christine Peterjohn Richards '76 in memory of Llewellyn Phillips, Class of 1892. The scholarship is intended to help meet the financial need of students whose presence helps match the Bucknell student body more closely to the diversity of the world community, and may be used to provide extra grants to academically superior students who are members of the varsity water polo or swimming and diving teams.

The Danforth K. and Marjorie H. Richardson Scholarship was established in 1997 by Danforth K. Richardson, Class of 1942, and his wife, Marjorie Hopwood Richardson, Class of 1943, with gifts from the Richardson Foundation, Inc. The scholarship shall be awarded to students with demonstrated financial need, with first preference for students who reside in Florida, and second preference for students who reside in the Pittsburgh (Pa.) metropolitan area.

The John W. Richter III Scholarship was established by his parents, John W. Richter II and Linda A. Richter, to honor his memory. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who are majoring in geology and without other restriction.

The Matthew Bunker Ridgway Jr. Scholarship was established by General and Mrs. Matthew B. Ridgway and friends in memory of their son, Class of 1971, the income to be used to provide financial aid for worthy undergraduate or graduate students selected by the University without any restriction whatsoever.

The Mary Taubel Rieder Memorial Scholarship was established through an estate gift from Mary Taubel Rieder, Class of 1929. Preference for the scholarship award shall be given to needy and deserving students majoring in history.

The J. Paul Riesmeyer Scholarship was established in 2000 by Martha U. Grimm in memory of her husband, J. Paul Riesmeyer, Class of 1930. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in mechanical engineering.

The Jeanne B. Ritter Scholarship was established in her honor by her husband, Harry E. Ritter, Class of 1962, and their sons, Gary A. Ritter, Class of 1979, Keith B. Ritter, Class of 1982, and Robert L. Ritter, Class of 1992. The scholarship award shall be made without restriction to students with demonstrated financial need.

The Dean Rivenburg Scholarship Fund was established by a gift from Mr. and Mrs. Virgil L. Towner in honor of Romeyn H. Rivenburg, Dean of the College from 1923-45 and vice president of the University from 1936-45. The income is to be awarded to a worthy student in need who meets the standards of the University, with preference given to students from Ohio.

The Barbara Linsky Robbins Memorial Scholarship was established in 2003 by Richard K. Robbins, Class of 1970, to honor his mother. The scholarship shall be awarded to students with demonstrated financial need, with preference for students in the English department.

The Robbins Family Scholarship was established in 2005 by David '74 and Karen Robbins to honor the tradition of teaching that has been pursued by the following members of their family: David's grandmother, Anna Wilson Kline; his mother, Ruby Kline Robbins; Karen's grandmother, Effie Helwig Beaver; and their daughter, Caroline Cherrington Robbins '05. The scholarship shall be awarded to students with financial need, with preference for students majoring in elementary education and who have completed their freshman year, in order to encourage their pursuit of excellence in education as exhibited by the members of the Robbins family.

The Dorothy E. Robertson Music Award was established by an estate gift from Miss Robertson, Class of 1931. Preference for the scholarship award will be given to a senior-year music student who intends to follow a career in music.

The Joan E. Robertson Fine Arts Scholarship was established by Joan E. Robertson, Class of 1964, in loving memory of her aunt, Helen Stoner Crighton. Preference for the scholarship award shall be given to students with demonstrated financial need who are majoring in art, theater and dance, or English, with a minor in creative writing.

The Roberts Family Scholarship was established by W. Nelson Roberts and Jeane Morgenthal Roberts, both Class of 1947. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Louis Robey Scholarship was established in 2003 by the estate of Louis Robey. The scholarship shall be awarded to worthy students attending Bucknell University.

The Jennie S. Robinson Scholarship was established by a bequest from Jennie S. Robinson, a former teacher in the schools of Milton, Pa., and augmented by a bequest from Max Lieberman, her nephew. This scholarship is awarded to a Bucknell student selected by the faculty of Milton High School.

The Mary E. and C. Graydon Rogers Scholarship was established by Mary E. and C. Graydon Rogers, both Class of 1951. The scholarship shall be awarded to students with demonstrated financial need with preference for students who major in the natural sciences and without other restriction.

The Steffen H. and Athena F. Rogers Scholarship was established in 2004 by David M. Trout Jr. and Leanne Freas Trout, both members of the Class of 1950. The scholarship honors Stef and Athena Rogers on the occasion of Stef Rogers' retirement as Bucknell University's 15th president and commemorates their contribution to Bucknell during his administration.

The LeRoy H. and Edith Griesinger Rohde Memorial Scholarship was established by the family of LeRoy H. Rohde, Class of 1936, and Edith Griesinger Rohde, Class of 1937, to honor their memory. The scholarship award will be given to at least one junior and one senior each year, with preference given to students who demonstrate extracurricular leadership at Bucknell.

The Helen and Fred Rosenbauer Scholarship was funded by a gift from Peter H. '84 and Mary Ann (Rosenbauer) '83 Mattoon. Awards shall be made to students based on financial need without restriction.

The Rudge Family Scholarship was established in 1999 by Howard J. Rudge, Class of 1958, and Lois Iffert Rudge, Class of 1959, and their children, Scott, Neal, and Diana, Class of 1989, so that other students might benefit from the excellent educational opportunities available at Bucknell University. Believing in and representing the wide spectrum of activities and fields of study offered at Bucknell, the Rudges desire that the scholarship be awarded to students with demonstrated financial need and without other restriction.

The Rudge-Iffert Scholarship was established in 2004 by Howard J. and Lois Iffert Rudge. The scholarship shall be awarded to students with demonstrated financial need, and without other restriction.

The Girard W. Rudolph Scholarship was established in 2000 by June Rudolph in memory of her late husband, Jerry Rudolph, Class of 1947. The scholarship shall be awarded to students with demonstrated financial need, with preference for students of high academic achievement majoring in music.

The Girard W. and June O. Rudolph Scholarship was established by Girard W. Rudolph, Class of 1947. The scholarship award will be made to students pursuing a degree in business administration.

The Rusling Family Scholarship was established by William E. Rusling in recognition of Ruth Castner Rusling, Class of 1952, Beverly Rusling Peltzer, Class of 1975, and Edward T. Peltzer, Class of 1972. The scholarship is awarded to students who have financial need and demonstrate gifts of leadership at Bucknell.

The Campbell Rutledge Jr. Scholarship Fund was established by the Corning Glass Works Foundation and Eleanor Cauffiel Rutledge in memory of her husband's deep and abiding interest in Bucknell, his support of its engineering program, and his belief in young people. Mr. Rutledge was a graduate of the Class of 1933 and received a master's degree in chemical engineering in 1934. The scholarship is awarded annually, with preference given to an outstanding junior or senior engineering student upon recommendation of the Dean of the College of Engineering.

The Bruce and Kimberlie Sachs Scholarship was established in 2006 by Kimberlie Trego Sachs '81 and Bruce Sachs '80. The scholarship shall be given to students who would be unable to attend Bucknell University without financial assistance.

The Robert H. Sadler Memorial Scholarship was established in 2000 by friends and fraternity brothers of Robert Sadler '84. He earned a Ph.D. in microbiology/virology at the University of North Carolina (Chapel Hill). He did research in virology for the Howard Hughes Medical Institute at the University of California (San Francisco.) Shortly before his untimely and tragic death, he helped decipher the Byzantine genetic structure of the Kaposi's sarcoma virus. Preference for the scholarship award shall be given to students majoring in biology and without other restrictions.

The Vernon H. Salmon Scholarship was established in 2000 by Vernon H. Salmon, Class of 1949. The scholarship shall be awarded to students with demonstrated financial need, with preference given to students from the state of New Jersey, and without other restriction.

The Samek Family Scholarship was established by Edward L. '58 and Marthann L. Samek '60. The scholarship shall be awarded to students with demonstrated financial need who are children of Bucknell alumni.

The Sampson Family Scholarship was established in 1992 by Benard A. Sampson, Class of 1969, and Myles D. Sampson, Class of 1967. The scholarship award shall be made without restriction.

The George F. Sandel '32 Memorial Scholarship was established in 2002 by his family, including Elizabeth Sandel, Class of 1971, and Carolyn Sandel Anderson. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in education or planning a career in education.

The Britt and Janet Saterlee Scholarship was established in 2000 with a gift by Britton W. '44 and Janet Saterlee. The scholarship award shall be made without restriction.

The Anne M. Savacool '54 Scholarship was established in 2007 by Anne M. Savacool, Class of 1954, in appreciation of the financial aid she received while attending Bucknell. The scholarship shall be awarded to students with demonstrated financial need, and without restriction.

The Stephanie A. Sayre Scholarship was established to honor the memory of Stephanie A. Sayre, Class of 1991, by her parents, George W. and Mary Ann T. Sayre, and augmented by family and friends. As an acknowledgement of her love for the theatre, preference for the scholarship award shall be given to a student displaying special talent in the performing arts, preferably theatre, and who, without financial assistance, would be unable to attend the University.

The George J. Sbordone Scholarship was established in 2010 by Barbara Sbordone Hoy, Class of 1971, and her husband, Mark Hoy, to honor the lifetime achievement of Barbara's father. The scholarship shall be awarded to a student in the College of Engineering with demonstrated financial need and no other restriction.

The William Charles Schaffner Scholarship was established in 2007 with a testamentary gift from William Charles Schaffner, Class of 1951, in memory of his parents, William W. Schaffner and Mary M. Schaffner. Awards shall be made to students from the Harrisburg Academy who are attending Bucknell University.

The Edgar and Anna Scharfenberg Class of 1938 Scholarship was established in 2009 with a testamentary gift from Doris Ann Scharfenberg, Class of 1938, in memory of her parents. Awards shall be made to worthy and deserving students, and without restriction.

The Scheffler Family Scholarship was established in 1996 by Leonhardt Scheffler, Class of 1935, and his wife, Elizabeth Bentley Scheffler, M.A. 1935. The scholarship shall be awarded to students with demonstrated financial need, with preference for a junior or senior student.

The Dorothy Bunnell Schnure Scholarship was established by gifts from Dorothy Bunnell Schnure, Class of 1916, and additional contributions from family and friends. Awards from the fund will be made to students with demonstrated financial need who meet the standards of the University, and without other restriction.

The Frederick O. and Elise Miller Schnure Scholarship was established by Frederick O. Schnure Jr., Class of 1942, and Elise Miller Schnure, Class of 1945. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Robert Bunnell and Annabel Kreider Schnure Scholarship was established by Robert B. '40 and Annabel K. Schnure '40. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Schoeneman Family Scholarship was established in 2010 by Frank K. Schoeneman, Class of 1976, and his son, F. Kyle Schoeneman, Class of 2006. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who are residents of Schuylkill County, Pa.

The John F. Schrankel Scholarship was established by John F. Schrankel, Esq., Class of 1951. Preference for the scholarship award shall be given to students studying political science or history who demonstrate financial need and academic achievement.

The Schreiner Family Scholarship was established in 2010 by Frank J. Schreiner, Class of 1983, in appreciation of his Bucknell experience, and so that future generations of students, regardless of financial means, will enjoy similar opportunities. The scholarship shall be awarded to students with demonstrated financial need and without restriction.

The Schubauer Family Scholarship was established in 2000 by James W. Schubauer, Class of 1956, and his wife, Barbara. Grants from this scholarship shall be made to middle-income engineering students who are United States citizens.

The Schulte Family Athletic Scholarship was established by Frederick A. Schulte Jr. and Carol E. Schulte, parents of Scott F. Schulte '81. Preference for awards from this scholarship shall be given to talented scholar-athletes with demonstrated financial need who are members of the varsity water polo or swimming teams.

The Schumacher Family Scholarship was established in 2001 by John F. Schumacher, Class of 1966. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who graduated from high schools in the following counties of southeast Massachusetts: Barnstable, Plymouth, Bristol, Nantucket, and Dukes.

The John D. Scoutten Memorial Scholarship was established by a gift from the family and friends of John D. Scoutten, Class of 1970, the income to be used by any qualified applicant who, without such financial assistance, would not be able to attend the University. Preference is to be given to graduates of Culver Military Academy.

The Sandra Selby Scholarship was established by Sandra F. Selby, Class of 1974. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Germaine Roshon Seltzer Scholarship was established through a bequest from William O. Seltzer, in memory of his wife, Germaine Roshon Seltzer, Class of 1942. First preference for the scholarship award will be given to undergraduate students majoring in the biological sciences or in premedical or prenursing studies.

The Seltzer Family Scholarship was established in memory of Ethel M. '42 and Charles J. Seltzer '42, and their children, Charles J. Jr., Richard A. '70, Robert C. '74, and Barbara R. '78. Preference for the scholarship award shall be given to students majoring in management with a concentration in marketing or accounting.

The Shand Family Scholarship was established by J. Richard and Gail Rothenberger Shand, both Class of 1955, and their children, J. Richard Shand Jr. '81, David A. Shand '87, and Barbara Shand Neff '90. The scholarship shall be awarded to students who are United States citizens with demonstrated financial need, with preference given to students who are majoring in engineering, physical sciences, or mathematics.

The William and Ann Sharp Scholarship was established in 2000 by William H. Sharp Jr. and Ann Hardy Sharp, both members of the Class of 1959. The scholarship shall be awarded to students with demonstrated financial need.

The Shassian Family Fund for International Service-Learning was established as an endowed fund with gifts from Donald R. Shassian, Class of 1977, and Pamela Heller Shassian, Class of 1978. Income from the fund provides students with need-based support to participate in international service-learning courses.

The Shaw Family Scholarship was established by Donald M. and Marguerite M. Shaw, and their son, Andrew M. Shaw, Class of 1991. The scholarship award shall be made without restriction.

The Shaw Family Scholarship was funded by a gift from Jeff and Jeanie Shaw in honor of their daughters, Rebecca Shaw, Class of 2009, and Hannah Shaw, Class of 2015. Grants shall be made to students based on financial need without further restriction.

The Marie M. and Fred S. Shehadi Sr. Family Scholarship was established in 2001 by their son, Fred Jr., Class of 1954, and their Bucknell grandchildren: David, Class of 1981; John, Class of 1984; and Lauren Herbert, Class of 1991. The scholarship shall be awarded to students with demonstrated financial need.

The Neil F. Shiffler Memorial Scholarship was established in 2015 to honor the memory of a professor in the Management Department who taught business majors from 1950 to 1986. Neil's greatest satisfaction came from helping students acquire the skills necessary to succeed in the business community. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in management.

The Juan del Castillo and Susan G. Shipe Scholarship was established with a gift completed in 2007 by Juan del Castillo and Susan G. Shipe. The scholarship shall be awarded to students with demonstrated financial need, and without other restriction.

The Mary Reese Shorts and Arthur Mead Shorts Scholarship was established in 2006 by Mary Reese Shorts, Class of 1932, to honor the time she and her husband, Arthur, Class of 1930, spent at Bucknell. The scholarship award shall be made without restriction.

The John H. Shott Memorial Bison Club Scholarship Fund is to be awarded annually to deserving students who are of good character and who need financial assistance, with preference to be given to those with athletic ability.

The William C. and Ruth W. Shure Memorial Scholarship was established in 2005 by an estate gift from Ruth W. Shure, Class of 1930, to commemorate the friendships and education acquired during the years of student and alumni relationships to Bucknell. Because of the wide-ranging interests of both Ruth and William Shure (Class of 1930), the scholarship was established to aid needy students without other restriction.

The Barrett K. Sides Empowerment Scholarship was established by Barrett Sides '87. In the interest of providing opportunity and promoting cultural diversity on campus, the scholarship shall be awarded to a student from the continent of Africa with demonstrated financial need and without further restriction.

The David Simpkins Scholarship was established by a bequest from Adalene Van Duyne Simpkins, to honor her son, David J. Simpkins, Class of 1972 (B.A. Economics/B.S. Mechanical Engineering) and Class of 1974 (M.S. Mechanical Engineering). The scholarship shall be awarded to students with demonstrated financial need, with preference for students who are majoring in mechanical engineering.

The Blanche Thomas Simpson and Geddes Wilson Simpson Scholarship was established by Blanche Simpson Bast, Class of 1961, Geddes W. Simpson Jr., Class of 1967, Frank T. Simpson, and Mary Simpson Sunar, in honor of their parents, Blanche, Class of 1930, and Geddes, Class of 1929. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in math or the sciences, and without other restriction.

The Frank M. Simpson Scholarship was established in 2000 by Dr. Geddes W. Simpson, Class of 1929, in memory of his father, Frank M. Simpson, Class of 1885, who was a professor of physics at Bucknell from 1902 until 1942. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Michael F. Sinkus Scholarship was established by Michael F. Sinkus Jr. The scholarship award will be made without restriction.

The Dick Skelton Scholarship was established in 2000 by friends and trustees of Bucknell at the time of Dick's retirement to honor his more than 36 years as an admissions officer at Bucknell. Preference for the scholarship award is to be given to students from Wayne, Pike or Monroe counties in Pennsylvania, who demonstrate financial need.

The Kenneth W. Slifer Scholarship was established in 2001 to honor the memory of Ken Slifer, Class of 1926, by one of the many young men he encouraged and helped to attend Bucknell, thereby changing his life. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Paul Wilbur Slifer Scholarship was established by a bequest of Adam Conrad Slifer in memory of his son, for a deserving and needy student.

The Smalstig Memorial Scholarship was established by family, friends, and classmates in memory of Edward J. and Alice Drennen Smalstig '31/'31. The scholarship shall be awarded to deserving students in either the College of Engineering (with preference given to civil engineering students) or the College of Arts and Sciences (with preference given to biology majors), in order to encourage and enable them to study abroad.

The Lloyd and Myrna Smith Scholarship was established by Robert M. Brodrick, Class of 1961, in memory of his maternal grandparents. Preference for the scholarship award shall be given to engineering students.

The Marjorie Bell Smith Scholarship was established by I.R. Smith, M.D., in memory of his wife, Class of 1928, to be awarded to students who meet the University's academic standards, the preference to be given to majors in English.

The William H. Smith III, Class of 1970 Scholarship was established in 2008 by William H. Smith III. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in mechanical engineering.

The Harry E. Smithgall Scholarship was established by Harry E. Smithgall, Class of 1936. The scholarship shall be awarded to students majoring in electrical engineering, with preference to students who reside in Lycoming County, Pa.

The Bonnie Shihadeh Smithwick Memorial Scholarship was established in 2003 by members of the Class of 1968 at the time of their 35th Reunion. The scholarship is named in memory of Bonnie Shihadeh Smithwick, who was lost to us on September 11, 2001, but it is also intended to honor the memory of other classmates who have left us too soon. The scholarship shall be awarded to a deserving undergraduate student or students with demonstrated financial need.

The SMV Technologies, Inc. Scholarship was funded with a gift from Stephen N. Thorp, Class of 1958, and his wife, Betty M. Thorp. It is the donors' desire for others to enjoy similar educational opportunities that were afforded to Stephen by Bucknell University. Awards shall be made to students enrolled in the College of Engineering based on financial need without further restriction.

The Ralph R. Snow Scholarship was established by Ralph R. Snow, A.M., B.D., Class of 1894, for graduates of the Franklin High School, Pa.

The Harold M. Soars Scholarship was established by gifts of the Sprout Waldron Foundation and of Harold M. Soars, former chairman of the Sprout Waldron Company and a trustee of the University. The income from the fund is to be used to provide financial assistance to a student pursuing a degree at Bucknell, with preference given to students from Lycoming County, Pa., and from the counties contiguous to it, who are pursuing a degree in engineering.

The Margaret G. Sober '34 Memorial Scholarship was established in 2002 by her sister, Annabelle F. Sober. The scholarship shall be awarded to students with demonstrated financial need, with preference for English majors.

The Dirk A. Sojka Scholarship was established in 1989 by a gift from Helen R. Smith-Morgan in honor of her grandson. The scholarship shall be awarded to students with demonstrated financial need, with first preference going to students enrolled in master's degree programs in school psychology, with an interest in special education. Undergraduate students with interest in special education are also eligible for awards from this fund.

The Gary and Sandy Sojka Scholarship was established in 1995 by the Bucknell University Alumni Association to honor Gary and Sandy Sojka on the occasion of Gary Sojka's retirement as Bucknell University's 13th president, and to commemorate their contribution to Bucknell during his administration. In keeping with the Sojkas' longstanding, broad, and all-inclusive interest in Bucknell students, awards from this fund shall be made to students with demonstrated financial need and without other restriction.

The Sommers Family Scholarship was established by John and Catherine Sommers, Class of 1961. Preference for awards from this scholarship shall be given to talented scholar-athletes with demonstrated financial need, recommended by the director of athletics and the coaches.

The Spartan Scholarship was established in 2011 by Douglas M. Hitchner, Class of 1983, and George A. Tsougarakis, Class of 1983. The scholarship shall be awarded to students with demonstrated financial need, with preference for students participating in intercollegiate athletics, particularly soccer.

The Speer Family Scholarship was established by Edison C. and Nancy B. Speer '57/'56. The scholarship shall be awarded to students with demonstrated financial need, with preference for students from western Pennsylvania and without other restriction.

The Herbert L. Spencer Scholarship was established by the Spencer family in memory of Bucknell's eighth president. The scholarship award will be made without restriction.

The Sally L. Spencer Scholarship was established through gifts from the Spencer family, and is named for Sally L. Spencer, Class of 1953. Preference for the scholarship award shall be given to needy and deserving students whose character, ethics, and commitment to serving others represents the best in human nature.

The Jessie Lovell Sprague Music Scholarship Fund was established by Jessie Lovell Sprague, Class of 1902, the income to be used for a deserving woman student studying voice and with wholesome interest in her fellow students.

The Donald B. and Dorothy L. Stabler Scholarship Fund was established in 2010 by the trustees of the Donald B. and Dorothy L. Stabler Foundation. Income from the fund shall be awarded to worthy students with demonstrated financial need.

The Harry E. Stabler Athletic Scholarship was established by an estate gift from Harry E. Stabler, Class of 1923. Preference for the scholarship award shall be given to student-athletes from Broome County, N.Y. It is the donor's preference that, if possible, first preference be given to football players and second preference to basketball players. If no students from Broome County qualify, then the scholarship shall be awarded to a student-athlete from another area.

The Stackpole-Hall Foundation Scholarship was established in 1973 for a needy and disadvantaged student majoring in business or engineering.

The Dominick and Martha Staiano Scholarship was established by Edward F. Staiano, Class of 1958, and his wife, Janet Smith Staiano, Class of 1958, in honor of his parents. Grants from the scholarship will be made under the direction of the Dean of the College of Engineering and used to recruit and retain the best possible undergraduate students from the College of Engineering. The scholarship shall be awarded to students without other restriction.

The Mary Stanton Scholarship Fund was established by John W. Speicher in honor of his wife, and is to be awarded to a deserving student in the upper third of his/her class.

The Emily Jane Stec Memorial Scholarship was established in 2000 by her parents, Arlene Nemeth Stec, Class of 1949, and Edward J. Stec, Class of 1950. The scholarship shall be awarded to students with demonstrated financial need, with preference for students gifted in the field of dramatic arts who elect the study of theatre as an academic major or minor.

The Gordon and Joan Stetz Scholarship was established in 2011 by Gordon M. Stetz, Class of 1983, and his wife, Joan M. Stetz, Class of 1980. The scholarship shall be awarded to students who are pursuing a Bachelor of Science in Business Administration with demonstrated financial need.

The Alice Stevens Scholarship was established in 2005 by Alice L. '45 and Mike Volechenisky. Preference shall be given to students majoring in physics or chemistry.

The Austin and Anna Thompson Stevens Scholarship was established by Alden S. Thompson, Class of 1937. Preference for the scholarship award will be given to those with an interest or major in journalism or literature.

The Harold A. Stewart Scholarship was established by Mr. Stewart, Class of 1920, and trustee emeritus. Preference for the scholarship award will be given to students from western Pennsylvania, especially Westmoreland County.

The Stewart Family Scholarship was established by Richard W., Class of 1966, and Grace H. Stewart. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who have graduated from Springfield Township High School, Montgomery County, Pa.

The Charles F. Stickney Scholarship was established by Dorothy Turnbach Stickney, Class of 1949, in memory of her husband, Class of 1948, and professor emeritus of physics. Preference for the scholarship award will be given to students majoring in physics or music.

The Harold R. and Jacqueline S. Stiefel Memorial Scholarship was established in 1993 by family, friends, and members of the Sigma Alpha Mu fraternity, in memory of Harold R. Stiefel, Class of 1949, and his wife, Jacque. The Stiefels were longtime owners of the Lewisburg Campus Theatre, enthusiastic fans of Bucknell basketball, and beloved members of the Bucknell community. Preference for the scholarship award shall be given to members of the Bucknell basketball team who have demonstrated financial need.

The George and Mary Gibb Strachan Memorial Scholarship was established in 2000 by Robert G. and Patricia Wenk Strachan '58/'57, and their daughter, Ellen Strachan Wilsterman '85. The scholarship shall be awarded to students with demonstrated financial need, and without other restriction.

The Franklin R. Strayer Scholarships, five in number, were established by a bequest of Franklin R. Strayer, Class of 1894, in memory of his professors: William Cyrus Bartol, George G. Groff, John Howard Harris, William Gundy Owens, and Frank Ernest Rockwood.

The Strickland Family Scholarship was established in 2001 by Frank W. Strickland, Class of 1946 and a former Bucknell University Alumni Trustee, and Eleanor Dillon Strickland, Class of 1946. The scholarship shall be awarded to students with demonstrated financial need, with first preference to descendants of Frank W. Strickland and Eleanor Dillon Strickland and then to qualified students who are graduated from high schools in Bergen County, N.J., or Bucks County, Pa.

The Dorothy M. and Edward H. Stubenrauch Scholarship was established in 2000 by Dorothy M. Stubenrauch, past parent. The scholarship shall be awarded to students with demonstrated financial need, with preference for students majoring in engineering and without other restriction.

The Student-Faculty Congress Scholarships were established in 1965 for two or more needy students of the senior class who are in good academic standing and have given commendable service to the University.

The Susan Suhr and Marina Viale Scholarship was established in 2005 by Susan E. Suhr, Class of 1972, and Marina E. Viale. Preference for awards from the scholarship shall be given to female engineering students who are U.S. citizens with demonstrated financial need, especially those interested in mechanical, electrical, or biomedical engineering.

The Suth Family Goldman Sachs Scholars Fund was established with gifts from Goldman Sachs Gives at the recommendation of Richard Suth, Class of 1992. Awards shall be made to students based on financial need. Students supported by this fund shall be known as Suth Family / Goldman Sachs Scholars.

The Phoebe A. Suyden Scholarship was established by a bequest of Mrs. Suyden, the income to be awarded to a deserving student.

The Lester A. and Miriam M. Switzer Memorial Scholarship Fund was established by a bequest of Mrs. Switzer, the income to be used as a scholarship for a deserving student.

The Tague Family Scholarship was established by Barry E. Tague, Class of 1960, and his wife, Dorothy Tague. Preference for the scholarship award shall be given to students from the greater Philadelphia area, with demonstrated financial need, whose ethnic, racial, economic, or national origins add to the diversity of Bucknell.

The Dr. Roy C. Tasker Scholarship was established by his daughter, Lois Anne Tasker, and supplemented with gifts by friends and former students to honor the memory of Dr. Roy Carleton Tasker, who taught biology at Bucknell from 1934-66. Preference for the scholarship award shall be given to students majoring in biology, with first preference given to premed students.

The Marianne E. Szoo Teleky Memorial Scholarship was established with a gift from her daughter, Priscilla M. Teleky, Class of 1961, and Paul W. Davis, Cornell University, Class of 1952 and 1959. Preference for the scholarship award shall be given to students with visual impairments pursuing degrees in mathematics, engineering, or economics; however, other disciplines are not disqualified. Given "in lasting memory of my beloved Mother, Marianne E. Szoo Teleky, born in Hungary, whose wisdom, courage, and loving sacrifice wove the fabric of my comfortable and meaningful life. With this Memorial Scholarship, Mother's honorable, unselfish spirit and constructive energies will forever serve worthy students, and Mother's memory will endure."

The Theta Chi Alumni Association Scholarship was established in 1968 for a member of the Theta Chi fraternity.

The Stanley C. Thomas Scholarship was established in memory of Blanche Thomas Simpson, Class of 1930, in memory of her brother, Stanley Thomas, Class of 1938 (M.A. 1946).

The Hamilton O. and Lillian Somers Thompson Scholarship was established by Hamilton O. Thompson, Class of 1939, in memory of his wife, Class of 1938. The scholarship award will be made without restriction.

The Joan Groulx Thompson Scholarship was established by Dr. Alden S. Thompson, Class of 1937, and his family to preserve the memory of Joan G. Thompson, Class of 1949. Preference for the award shall be given to students of the biological sciences.

The William Homer Thompson Scholarship was established by William Homer Thompson, a former trustee of Bucknell University, with preference to be given to a graduate of The Peddie School or of the Hightstown High School, N.J.

The Freeman T. and Anna L. Tingley Scholarship was established by an estate gift from Anna L. Tingley in memory of her husband, a member of the Class of 1922. The scholarship award shall be made without restriction.

The Robin Sundry Tingué Memorial Dance Scholarship was established in 2006 to honor and preserve the memory of this member of the Class of 1987 by her husband, David Tingué. The scholarship shall be awarded to students with demonstrated financial need, and to commemorate Robin's active participation as a dancer at Bucknell, with preference for students engaged in the dance program, either as declared majors or as active and regular participants in the study and performance of dance.

The Edgar A. and Florence E. Tomlinson Scholarship was established by Edgar A. Tomlinson, Class of 1939. The scholarship award shall be made without restriction.

The Trangucci Family Scholarship was established in 2010 by Neale Trangucci, Class of 1979, and his wife Harriett Trangucci, parents of members of the Class of 2009 and 2013. The scholarship is in recognition of the compassion and inspiration provided by Mr. Robert Latour, Bucknell Director of Athletics (1968-78). This scholarship shall be awarded to students with demonstrated financial need, who bring diversity to the campus and help create a student body representative of the world outside of Bucknell.

The Harland A. Trax Scholarship was established by a gift from Harland A. Trax, A.M., LL.D., Class of 1901.

The Paul L. and Eleanor M. Troast Scholarship was established in memory of Paul L. Troast, a trustee of the University from 1949-69, by gifts from a family foundation and through the efforts of his sons, Arthur L. Troast, Class of 1950, and John G. Troast, Class of 1953; and his grandsons, John

G. Troast Jr., Class of 1979, Arthur P. Troast, Class of 1983, Douglas K. Troast, Class of 1985, and Gary S. Troast, Class of 1987. Preference for the scholarship award shall be given to students from New Jersey who demonstrate excellence in the fields of engineering or business studies.

The David and Leanne Trout Scholarship was established by Federal Paper Board Company, Inc., to honor David M. Trout Jr., a Bucknell trustee and member of Bucknell's Class of 1950, on the occasion of his retirement from the company. The scholarship award is unrestricted.

The Leanne Freas Trout Scholarship in French and Francophone Studies was established in 2009 by R. Leanne Freas Trout, a member of the Class of 1950. The scholarship will be used to recruit and retain students majoring in French and Francophone Studies at Bucknell.

The Trout Family Scholarship was established by David M. Trout, Class of 1950, and his wife, R. Leanne Freas Trout, Class of 1950. First preference for the scholarship award shall be given to graduates of Branford (Conn.) High School, and second preference to students who are residents of Connecticut.

The Trout Family Arts Scholarship was established in 2003 by David M. and R. Leanne Freas Trout Jr., both members of the Class of 1950. Grants from the scholarship will be awarded to academically superior students of art and art history.

The Robert E. and Lorraine A. Soresi Tweed Scholarship was established in 2006 by Robert E. and Lorraine A. Tweed, both members of Bucknell's Class of 1956. The scholarship shall be awarded to students with demonstrated financial need, with preference for students from North Carolina and without other restriction.

The Margaret Young Underhill Scholarship was established in 1998 by the family and friends of Margaret Young Underhill, Class of 1933, to honor her memory. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Ronald L. and Benita K. Unger Scholarship was established in 2007 by Ronald Unger, Class of 1951, to honor his wife for sharing with him her lifelong love of music, which has brought them both much joy. The scholarship shall be awarded to students enrolled in the College of Arts and Sciences with demonstrated financial need, and without other restriction.

The Lee N. and Grace Q. Vedder Foundation Scholarship was established in honor of Professor Paul Benson, the income to be used for a student in the field of mathematical and applied statistics.

The Elizabeth Veit Scholarships were established by a bequest of Elizabeth Veit for young men who are preparing to enter the ministry of the Baptist Church.

The Charles I. and Virginia Vogel Scholarship was established by Charles I. and Virginia Vogel '37/'40. The scholarship shall be awarded to students with demonstrated financial need and without other restriction.

The Charles A. and Catherine M. Vosburg Memorial Scholarship was established by Charles M. Vosburg (B.S. '58), in memory of his parents. Preference for the scholarship award will be given to R.O.T.C. cadets who are candidates for the B.S. degree with declared majors in the physical sciences or engineering, and who are also United States citizens.

The Walker Family Scholarship was established by Ray S. and Louise S. Walker. The scholarship award will be given to graduates of high schools in Clearfield County, Pa. It is the intent of the donors that the scholarship recipient(s) shall endeavor to enhance the economic and cultural well-being of the areas served by the eligible high schools.

The Doug and Inta Walker Scholarship was established in 1998 by Douglas and Inta Esmanis Walker, both Class of 1966. The scholarship shall be awarded to students with demonstrated financial need, who are majoring in engineering and whose life experiences contribute to the cultural and intellectual climate of the campus, including first-generation college students, students from outside the University's traditional geographic area, and those who bring cultural and intellectual diversity to the campus.

The Anna M. Wall Scholarships were established by Anna M. Wall, with preference given to women.

The Anna Slifer Walls Scholarship was established by William C. Walls, Class of 1873, in memory of his wife, Institute Class of 1872, for a student who is majoring in history or literature and who lives in Union County or in a designated portion of Northumberland County.

The Anna Slifer Walls Memorial Fellowship in Biological Research was established by heirs named in the E. Slifer Walls estate, to be made available first to students from Union County, then central Pennsylvania, and finally to students from any other area.

The Dr. E. Slifer Walls Scholarship was established by William C. Walls in memory of his son, Class of 1903, for a student who is majoring in a premedical or a public health course and who lives in Union County or in a designated portion of Northumberland County.

The Dorothy Moody Warren Scholarship Fund was established by Mrs. Warren, an alumna, to provide three scholarships each year, with preference to be given to full-time, needy students who are graduates of Shamokin Area High School, Pa., or Bridgeton High School, N.J.

The P. Herbert Watson Memorial Scholarship was established by his wife, Dorothea B. Watson, and friends, to honor the memory of her husband, Class of 1937. Preference for the award will be given to music majors as acknowledgement of his love for music.

The Dr. and Mrs. Joseph Weaver Scholarships were established by a gift from Colonel Joseph Kerr Weaver, Class of 1861, and were named by action of the Board of Trustees in honor of Dr. and Mrs. Joseph K. Weaver.

The Harold F. and Marguerite P. Webber Memorial Scholarship was established by family and friends. The income is to be used to aid worthy and needy students who otherwise could not afford a college education. Preference shall be given to civil engineering, music, or management majors.

The Rev. Dr. John Weaver and Eleanor Grose Weddell Scholarship was established by Arthur L. (AM '27, H '74) and Margaret Weddell Brandon (AB '16, AM '31) to honor the memory of the Weddells. Preference for the award shall be given to students of the liberal arts contemplating a career teaching English or a life involved with religion, without regard for their specific creed or denomination.

The Sigmund and Claire G. Weis Scholarship was established by Claire G. Weis, the income from which is to be awarded annually to one or more students in the department of management.

The Thomas and Karen Horn Welch Family Scholarship was established in 2008 by Karen Horn Welch and Thomas W. Welch III, both members of Bucknell's Class of 1997. The scholarship shall be awarded to students with demonstrated financial need, and without other restriction.

The Patricia Woodburne Wells Scholarship was established by Ronald V. Wells, honorary Doctor of Divinity 1968, and Patricia Woodburne Wells, Class of 1935. The scholarship shall be awarded to students with demonstrated financial need, and without other restriction.

The Peter C. Welpton Scholarship was established in his memory by his family, members of his Class of 1965, and friends, the income to be used for a worthy student majoring in economics.

The John S. Wheatcroft Scholarship was funded by a gift from Barbara Rose O'Connor, Class of 1989, and her husband Vania, to honor Jack Wheatcroft, Class of 1949, for his dedication to the craft of writing and ensuring students received the best liberal arts education possible. A nationally known author, Jack was an English professor at Bucknell from 1952 until his retirement in 1996. He published 26 books and earned the distinction of Presidential Professor in 1972. Jack founded the Stadler Center for Poetry in 1988, along with Jack Stadler, Class of 1940. Grants from the John S. Wheatcroft Scholarship shall be made to students based on financial need without further restriction.

The Claire Halline Wieder Scholarship was established in her memory by members of her Class of 1958, and friends, the income to be used for a deserving woman student.

The Frank L. Wiegand III, Class of 1960, and his daughter Maryanne Wiegand, Class of 1983, Scholarship was established in 2000 by Frank L. Wiegand III, Class of 1960, and his daughter Maryanne Wiegand, Class of 1983. The scholarship shall be awarded to undergraduates with demonstrated financial need who are U.S. citizens, with preference given to students who are the children of Bucknell alumni.

The Doris K. Williams Scholarship was established by Stanley G. Williams, Class of 1943, in honor of his wife. Preference for the scholarship award shall be given to students majoring in computer science.

The Ellen P. and Samuel L. Williams Endowed Scholarship for Music was created in 2009 through a bequest from Ellen Peterson Williams, Class of 1919, to honor the time she spent at Bucknell and the memory of her husband, Samuel L. Williams. The fund provides scholarship assistance for students studying music at Bucknell University.

The Lee A. and Annis Williams Scholarship was established by Stanley G. Williams, Class of 1943, and his wife, Doris K. Williams, in memory of his parents. The scholarship award will be made without restriction.

The Norman Lee Williams Scholarship was established by Stanley G. Williams, Class of 1943, in honor of his brother. Preference for the scholarship award shall be given to students majoring in computer science.

The Robert M. and Virginia K. Williams Scholarship was established by Robert M., Class of 1962, and Virginia K. Williams, Class of 1963. Preference for the scholarship award shall be given to students majoring in education, with demonstrated financial need.

The Ruth Williams Scholarship was funded by gifts from Jo-Anne Williams, Class of 1986, in memory of her mother. Awards shall be made to students who are residents of the United States based on financial need and without further restriction.

The T. Cortlandt and Evelyn D. Williams Scholarship Fund for Engineering Students is awarded to a student who has completed the first two years at Bucknell or a junior college, and who, in the opinion of the Dean of the College of Engineering, shows outstanding interest in and aptitude for the engineering profession.

The William V. Wilson Scholarship was established in memory of The Reverend William V. Wilson, D.D., of New Jersey.

The U Kyaw Win and Gandasari A. Win Scholarship was established in 2000 by U Kyaw Win and Gandasari A. Win. The scholarship is intended to benefit the nation and people of Burma by providing grants for current or future Burmese citizens who are students at Bucknell, and who have demonstrated financial need.

The Wingover Farm Scholarship was established in 2004 by William T. '45 and Gladys B. Watkinson. Awards for this scholarship shall be made without restriction.

The Florence E. Wolfe Memorial Scholarship was established by her son, Bucknell's former vice president for University Relations, Charles W. Wolfe, to honor his mother's memory by assisting qualified students through the general scholarship funds of the University.

The Oscar Wolfe Engineering Scholarship was established in 2001 through a bequest from Anton O. Wolfe, Class of 1939, in memory of his father, Oscar Wolfe, Class of 1912. The scholarship shall be awarded to students with demonstrated financial need who are enrolled in the College of Engineering.

The Wynee Wong Memorial Scholarship was established in 2005 by her mother, Ellen C. Wong, and her family and by friends. The scholarship fund honors the memory of this 2004 graduate of Bucknell by continuing the financial aid Wynee received as a Bucknell student. This scholarship shall be awarded to students with demonstrated financial need, and without other restriction.

The Thomas '05 and Blanch Stoner Wood '05 and son, James Wood '43, Scholarship was established in 1999 by members of the Wood family. The scholarship shall be awarded to students with demonstrated financial need, with preference for students who have achieved academic excellence in high school.

The Robert B. Woolhouse Scholarship was established in 2000 under a deferred gift plan funded by Robert B. Woolhouse, Class of 1951. The scholarship shall be awarded to students with demonstrated financial need.

The William W. and Myrtle E. Woolhouse Scholarship was established in memory of his parents, under a deferred gift plan funded in 2000 by Robert B. Woolhouse, Class of 1951. The scholarship shall be awarded to students with demonstrated financial need.

The Audley C. Wynkoop Scholarship was established by Claire Wynkoop Carlson, Class of 1949, in memory of her father, the income to be used for a deserving engineering student chosen by the dean of the College of Engineering, acting upon the recommendations of the Bucknell University Scholarship Committee.

The Paul M. Wythes Jr. Class of 1990 Scholarship was established in 1990 in his honor by his parents, Mr. and Mrs. Paul M. Wythes. The scholarship award will be made annually without restriction to financially deserving undergraduates.

The M. David Yamamoto Scholarship was established in memory of David Yamamoto, M.A. 1957, by his wife, T. Atsuko Yamamoto, M.A. 1956, and friends. Awards from this fund will be made available to students with demonstrated financial need enrolled in the Japanese Studies program.

The William '70 and Lois Yeomans Scholarship was established in 2005 by Clifford K. "Mickey" Melberger, Class of 1961, and his wife, Ruth B. Melberger, in honor of his sister and brother-in-law. The scholarship shall be awarded to students with demonstrated financial need.

The Zafirovski Family Scholarship was established in 2004 by Robin Gale Zafirovski, Class of 1979, and Mike Zafirovski. The scholarship shall be awarded to students with demonstrated financial need, with preference for incoming first-year students who have participated in varsity athletics and have demonstrated outstanding leadership and involvement in their high schools and communities.

The Zaharchuk Family Scholarship was established in 2001 by John J. and Susan Haines Zaharchuk, both members of the Class of 1981. The scholarship shall be awarded to students with demonstrated financial need with preference given to students from southeastern Pennsylvania.

The Herman E. and Gertrude J. Zehner Memorial Scholarship was established by Betty J. Zehner, in memory of her father, Class of 1913, and her mother. Preference for the scholarship award will be given to students majoring in chemical engineering or chemistry, who participate in athletics on the varsity, club, intramural, or recreational level, and are in good academic standing.

The John F. and Martha H. Zeller Scholarship was established in 2005 by the Charles B. Degenstein Foundation and its officers. The scholarship honors John F. Zeller III, a member of Bucknell's Class of 1941, acting president and longtime senior administrator and general counsel for Bucknell University, and his wife, Martha H. Zeller, a valued member of the Bucknell family. The scholarship shall be awarded to students without restriction.

The Susan Penecale Zolla Scholarship was established in 2000 by Susan P. Zolla, Class of 1968, and her husband, Edward M. Zolla. The scholarship shall be awarded to students with demonstrated financial need, with preference going to students from the West Coast who graduated from a public high school.

Funds

- Additional Funds (p. 279)
- Loan Funds (p. 286)
- Student Research Funds (p. 286)

Additional Funds

The Warren G. Abrahamson II Fund for Evolutionary Biology and Ecology was established to honor Warren "Abe" Abrahamson on the occasion of his retirement from teaching in 2011 by colleagues, former students and fellow researchers, and other friends. The fund supports teaching, learning, research, and scholarship at Bucknell in the fields of ecology and evolutionary biology as well as their application in the fields of environmental studies and conservation.

The Alumni Association Board of Directors Endowment was established in 2004 by the board of directors of the Alumni Association of Bucknell University and Bucknell University. Income from the fund shall be used to support the mission of the Alumni Association, “to be an active and effective advocate for alumni in order to promote and enhance Bucknell.”

The Arias Family Bucknell Public Interest Program (BPIP) Internship Fund was established in 2005 by Louise and Robert Arias, parents of Andrew Arias, Class of 1999. The fund shall support internship opportunities through the Bucknell Public Interest Program.

The BEAA Transformative Engineering Education Fund was established as an endowed fund with gifts from members of the Bucknell Engineering Alumni Association and other donors. Income from the fund supports transformative educational experiences in the College of Engineering. The goal is to provide undergraduate students with opportunities to participate in important and enriching education programs. The fund will provide flexibility to the College of Engineering to be responsive to student needs and take advantage of emerging educational activities while leveraging the input and guidance of engineering alumni.

The Bachman Fund for Faculty Advisors was established as an endowed fund with gifts from Trustee Jeb Bachman and Sally Bachman, Class of 1978. Income from the fund will be used by the University to provide grants for faculty advisors of student fraternities and sororities in support of their direct interaction with student leaders of these organizations.

The Balakian Fund for the Arts was created with gifts from the Balakian Family Foundation to provide high impact off-campus experiences in the arts for students studying art and art history, music, and creative writing. The fund will support student research, travel, work experiences, and participation in summer workshops. The fund honors the strong Bucknell legacy of the Balakian family, whose members include: Arax Balakian, Class of 1948; G. Peter Balakian, Class of 1973; James Diran Balakian, Class of 1978; Janet Nafena Balakian, Class of 1983; and James Gerard Balakian, Class of 2010.

The Beavers Internship was established by Thomas Gessner and the trustees of the Beavers Charitable Trust. The income from the fund will be used to support the civil engineering faculty in taking students to visit various construction projects during the spring semester of their junior year.

The Milton and Eleanor Berelson Judaica Collection Endowment was established in 1988 by Stuart E. Berelson, Class of 1959, and others, to honor the lives and commitment to education of his parents. Income from the endowment may be used to acquire books and other library materials in the field of Jewish Studies, to increase awareness of the contributions of the Jewish experience, enhance the appeal of Bucknell to students of the Jewish faith, and to support programs and activities that promote the use of the collection.

The Ellen Clarke Bertrand Library Fund was established with a bequest from the estate of Ellen Clarke Bertrand. The income derived from this fund is used to support the acquisitions, operations and maintenance of the library and its provisions of services and materials to Bucknell’s academic community.

The William P. Boger Jr., M.D. Faculty Award was established in 2006 by William P. Boger Jr. M.D., Class of 1934, in Dr. John Rice’s memory and shall be awarded to a faculty member in the sciences who has demonstrated excellence in teaching and scholarship.

The Edward McKnight Brawley Endowment was established in 2008 by the Black Alumni Association and Bucknell University. Income from the fund shall be used to assist students who have been historically under-represented in activities such as tutorials, workshops and research opportunities and internships, so that they may pursue those activities.

The Lauren P. Breakiron Technology and Management Fund was established by Lauren P. Breakiron, Class of 1952. Income from the fund shall be used to support interdisciplinary programs or activities which integrate engineering and management education in ways that provide a more holistic perspective on complex corporate problems involving technology.

The Gladys Brooks Special Collections Library Endowment was established for the acquisition of books and periodicals in support of special new curricular programs or newly emerging areas of faculty interest.

The Bucknell Community Engagement Fund recognizes Wayne Bromfield’s distinguished career of service to Bucknell University and the people of Lewisburg and Central Pennsylvania. The fund will support Bucknell activities in the Lewisburg area that improve our region and strengthen the University’s relationship with the community.

The Bucknell University Endowment for Men’s Lacrosse was established by the men’s lacrosse team alumni, family, and friends in honor of Sid Jamieson, long-time coach of Bucknell’s men’s lacrosse team. Income from the fund shall be used to support the men’s lacrosse program.

The Bucknell University Varsity Swimming and Diving Endowment was established in 2011. The fund supports and advances Bucknell’s men’s and women’s swimming and diving teams by providing resources that may be used by the teams for travel for national or other post-season competition, recruiting, or training; support for assistant coaches; or other needs that may arise.

The Canonica Family Water Polo Endowment was established in 2009 by Gregory A. and Robin C. Canonica, to honor Kandis R. Canonica. The fund gives preference to support of the Bucknell women’s intercollegiate water polo program and is intended to help the University’s women’s and men’s program to compete successfully at the highest possible level.

The Kandis R. Canonica Water Polo Fund was established as an endowed fund with gifts from Gregory A. and Robin C. Canonica in honor of their daughter Kandis, Class of 2011. Income from the fund is intended to assist the University's water polo programs to compete at the highest possible level, with a preference for supporting the Bucknell women's varsity water polo program.

The F. W. "Bill" Carson '42 and Betty Thomas Carson '42 Tennis Endowment was established in 2000 by Betty Carson '42 and Bill Carson '42, a member and two-time captain of Bucknell's varsity tennis team. The fund shall be used to support the men's and women's varsity tennis teams.

The College of Arts and Sciences Dean's Fund for New Faculty Support was established as an endowed fund with a gift from anonymous donors. Income from the fund supports the recruitment and retention of talented new faculty in the College of Arts and Sciences who exhibit teaching excellence.

The F. Michael Corrigan Men's Basketball Endowment was established under an agreement completed in 2006 by F. Michael Corrigan, Class of 1957. The fund supports Bucknell's intercollegiate men's basketball team coaches, and is intended to help the team compete successfully at the highest level.

The Dalal Family Fund for Creativity and Innovation was established as an endowed fund with gifts from Yogen and Peggy Dalal, former members of the Parents Board and dedicated parents of Nina M. Dalal, Class of 2008. Income from the fund will promote creativity at Bucknell through faculty and student collaboration on innovative projects across the curriculum.

The Martha Sober Davis '45 Memorial Management Fund was established in 2007 by her brother, Charles T. Sober, Class of 1939, to honor her memory. The fund supports management education at the highest possible level by aiding the students, faculty and programs of the department of management.

The Dawson Family Fund for Counseling and Student Development was created by gifts from Peter and Christina Dawson, dedicated parents of Miles Dawson, Class of 2012. Income from the fund supports Bucknell's Counseling and Student Development Center services, including the group therapy, alcohol awareness and intervention, and suicide prevention programs.

The Elizabeth T. and William D. Dearstyne, Jr. Endowment for Classical Music Appreciation was funded by gifts from Emeritus Trustee Bill Deastyne, Class of 1962. Income from the fund supports music appreciation activities for students, including but not limited to performance attendance by students or other activities associated with classical music and opera mainly from the western tradition. Income may also be used to support visiting artists or lecturers.

The Dixon Family Fund for Creativity, Arts and Innovation was established as an endowed fund with gifts from James and Tanja Dixon, dedicated parents of Caroline E. Dixon, Class of 2017. Income from the fund will promote creativity at Bucknell through faculty and student collaboration on innovative projects across curriculum.

The Endowment for Bison Men's Soccer was established in 2010 by a Class of 1980 member of the men's soccer team. The fund provides Bucknell's intercollegiate men's soccer program with resources to strengthen and maintain the competitive level of the program.

The Endowment for the Support of the Student Managed Investment Fund Faculty, Research, and Programs was established in 2011 with gifts from anonymous parents. Income from the fund supports faculty, research, teaching, and conduct of student investments in the University's endowment, through the Student Managed Investment Fund Program.

The Engineering Success Alliance Program Endowment was established under an agreement completed in 2011 and funded through gifts from George J. Pierson '84. The fund supports the Engineering Success Alliance program, and is intended to provide resources to advance the work and goals of that program.

The Jeffrey C. Evans Geotechnical Engineering Laboratory was established by Michael J. Costa, Class of 1991, and Laureen Leptinsky Costa, Class of 1990, funded through the Houston Endowment, in honor of Professor Jeffrey C. Evans who personifies Bucknell's teacher-scholar-mentor model. The fund supports equipment purchases, use and maintenance of the lab, and is intended to provide resources to advance student and faculty coursework, experimentation, and research in geotechnical engineering.

The Fetterolf Family Fund for Men's Crew was established as an endowed fund with gifts from Donald L. and Linda K. Fetterolf, dedicated parents of Brian Scott Fetterolf, Class of 1993. Income from the fund will be used to support men's crew, including, but not limited to, coaches' compensation and benefits and other expenses such as equipment costs, race-entry fees, and team travel.

The Eugene A. and Suzanne H. Gorab Endowment was established in 2008 by Eugene A. and Suzanne H. Gorab Foundation and Eugene A. Gorab, Class of 1985. Expenditures from the fund are unrestricted and shall be used for the general purpose of the University.

The Graham Building Operations and Maintenance Fund was established as an endowed fund with gifts from Trustee William A. Graham IV, Class of 1962. Income from the Fund supports the operations and maintenance of the Graham Building.

The William A. Graham IV Women's Varsity Athletics Endowment was established in 2004 by William A. Graham IV, Class of 1962. The fund is intended to support equitable opportunities for all coaches and athletes participating in University women's varsity athletic programs, regardless of chosen sport.

The William A. Graham IV Wrestling Endowment was established in 2004 by William A. Graham IV, Class of 1962. The fund supports Bucknell's intercollegiate wrestling program and is intended to enable it to compete successfully at the highest possible level.

The Tom Greaves Fund for Research and Curricular Development was established by Tracy Meerwarth Pester, Class of 1996, and her mother, Lurena M. Meerwarth, in honor of Thomas C. Greaves, professor emeritus of sociology and anthropology. Income from the fund supports research and curricular development in the department of sociology and anthropology, including, but not limited to, students conducting research with faculty, student/faculty conference travel, local, and international field work, curricular development, and seed funding for pilot projects. The Fund's goal is to advance students' understanding of the work of anthropology and sociology by actively involving them in research.

The Frederic and Linda Greenberg Fund for Jewish Life and Learning was established in 2000 by Linda Garrett Greenberg, Class of 1963, and her husband, Frederic Greenberg. The fund shall be used to nurture the life of the Jewish community at Bucknell and to deepen the understanding of Jewish thought, history and traditions among students of all faiths.

The Art Gulden Cross Country and Track and Field Endowment was established in 2002 by alumni and supporters of the cross country and track and field programs in honor of Coach Art Gulden on his 30th anniversary at Bucknell. Coach Gulden touched the lives of many of Bucknell's finest athletes as head coach of the cross country and track and field programs, teaching the value of hard work, dedication to achieving goals, and team work. Income from the fund shall be used to support the cross country and track and field programs.

The Douglas B. Hall '91 Memorial Endowment for Outdoor Experience was established in 2006 by his parents, Gerald '63 and Nancy Hall, and other friends, to remember Doug and honor his spirit of adventure. Expenditures will be made from the fund to provide assistance for Bucknell students enhancing their undergraduate or graduate educational experience by participating in activities such as rock climbing, spelunking, cross country skiing, hiking, canoeing and kayaking, or other adventurous activities. Eligible expenditures of the fund include the purchase of related equipment and supplies, training classes, group activities, and related travel and sundry expenses.

The Healthcare Research and Design Fund was established by Michael J. Costa, Class of 1991, and Laureen Leptinsky Costa, Class of 1990, to provide financial support for healthcare-related research and technology development projects directly involving undergraduate students in the College of Engineering. Income from the fund will directly support student participation in science and engineering research and design through student stipends, and materials, supplies, and laboratory equipment for healthcare-related projects. The fund is designed to enhance student opportunities and leverage additional support for healthcare research and medical device development in the College of Engineering.

The Terry J. Hibbard Mechanical Engineering Endowment was established in 2005 by Terry J. Hibbard, Class of 1971. The fund supports the students, faculty and programs of the College of Engineering, with preference for the department of mechanical engineering, and is intended to enable the mechanical engineering program to educate students at the highest possible level.

The Christian A. Johnson Endeavor Foundation Curriculum Development Fund is established to support interdisciplinary course and program development within the College of Arts and Sciences.

The Kalman Fund for Jewish Life and Learning was established in 1999 by Ernest M. Kalman '56, and his wife, Joan. The fund shall be used to nurture the life of the Jewish community at Bucknell and to deepen the understanding of Jewish thought, history and traditions among students of all faiths.

The Kiken Family Wine Studies Endowment was established in 2009 by Norman P. Kiken, Class of 1964, honoring the memory of Evelyn Kiken. The fund provides experience tasting, using and enjoying wine so that participants will be better able to enjoy, understand and use a wide variety of wines in personal and professional settings.

The Richard A. Klein Theater and Dance Production Endowment was established in 2006 by Richard A. Klein, Class of 1969. The fund supports the creative experience and education of Bucknell students by underwriting theater and dance performance and production, to involve students under the oversight or direction of the faculty of the department of theatre and dance.

The Benton and Carol Kribbs Memorial Men's Basketball Awards Program Endowment was established in 2011 by Robert and Sharon Kribbs to honor Benton and Carol Kribbs. Benton Kribbs served as Bucknell's men's basketball coach from 1952-1962 and as Director of Athletics from 1962-1968. The fund is intended to support the awards and annual banquet for the Bucknell University men's basketball program.

The George M. Kunkel Memorial Equipment Fund for Mechanical Engineering was established to support equipment purchased by the mechanical engineering department.

The Charles J. and Isabelle Kushell Music Endowment Fund was established by Charles J. and Isabelle Kushell, of Chicago, Ill., graduates of Bucknell University in the Classes of 1927 and 1926, respectively. The purpose of the fund is to augment both the instructional and the performance offerings of the department of music of Bucknell University by providing funds for bringing to the campus professional musicians, distinguished scholars, performing artists, or music educators of nationally recognized merit.

The Robert A. Latour Varsity Swimming and Diving Endowment was established in 2002 by William D. Dearstyne '62 to honor Bucknell's former head swimming and diving coach, Robert A. Latour, by supporting the University's Robert A. Latour Head Swimming and Diving Coach, and the University's varsity swimming and diving program.

The Lattal Family Opera Endowment was established in 2009 by Frank A. and Gretta M. Lattal in memory of Frank and Ann Lattal. The fund is intended to enhance Bucknell's opera program by increasing the resources available for its faculty, staff, students, performances, staging, outside experiences, extraordinary adjunct education, and in other ways that enhance opera education and performance.

The Leinbach Family Library Fund was established by Annabelle Rich Leinbach in honor of her son, Paul W. Leinbach, Class of 1954, and her daughter-in-law, Jeannette Grove Leinbach, Class of 1955. The income derived from this fund is used at the discretion of Bucknell's head librarian for acquisitions or other purposes related to the provision of services and materials to Bucknell's academic community.

The Library Technology Fund was established in 1999 by a member of the Class of 1980. The income derived from this fund is to be used at the discretion of the chief administrator of the University's library to keep the library current with changing technology.

The J. Wesley Little Memorial Art Fund was established in 1985 by Dr. Thomas M. Little, Class of 1931, in memory of his father, J. Wesley Little. Income from the endowment is to be used for the exhibition and acquisition of regional art.

The Dorothy "Bugs" Harvey Lloyd '53 Field Hockey Endowment was established by family and friends in memory of Dorothy Harvey Lloyd, Class of 1953. The endowment shall benefit the Bucknell women's varsity field hockey program.

The MacDonald Family Fund for the Institute for Leadership in Technology and Management was established by J. Randall and Kathleen MacDonald of Greenwich, Conn. Income from the fund shall be used at the discretion of the co-directors of the Institute for Leadership in Technology and Management. This income may be used to support any or all of the following components of the program: faculty salaries, program enhancement, support for guest speakers, student stipends, or curriculum development.

The Mildred A. Martin Fund for Poetry was established by Miss Martin, a Bucknell faculty member from 1940-1972. Income from the fund will be used to promote the writing, study, and teaching of poetry, and for support of the programs and facilities of the Poetry Center.

The William C. McMurray Accounting Fund was established by William C. McMurray, Class of 1946, to support travel in the accounting program, especially travel by professors.

The John Miller MG 101 Program Endowment was established by his students in honor of John Miller. The fund supports, and is intended to provide resources, to advance the MG 101 experience.

The Vivian Miller Fund for English was established under an agreement completed in 2002 and funded by a gift from Vivian Miller, mother of Amy P. Miller, Class of 1989. Income from the fund shall be used to support the Bucknell English department's efforts to enhance the artistic and intellectual atmosphere of the University.

The Tim Nesvig '96 Memorial Athletic Awards Program Endowment was established in 2010 by the family of Timothy W. Nesvig, a member of Bucknell's Class of 1996, and Honorable Mention All-American member of Bucknell's varsity men's water polo team. The fund is intended to support recognition events, programs and awards for Bucknell's student athletes.

The Bob Odell Head Football Coaching Endowment was established by Norman E. Garrity '63 and Mary Lou Roppel Garrity '64 to honor Bucknell's former head football coach, Robert Odell. The endowment is intended to provide perpetual budget support for the head football coach.

The O'Keeffe Family Fund was created with a gift from Peter R. O'Keeffe, Class of 1972. Income from the fund supports the programmatic needs and objectives of Bucknell's Posse Program. The program assists students with extraordinary academic and leadership potential who may have been overlooked by the traditional college selection process. Students receive training in leadership, team-building, communication, and academic excellence.

The Oliver/Walters Family Endowment for Mechanical Engineering was established by Richard E. Oliver, Class of 1970; his wife, Christine S. Oliver; his son, Stephen S. Oliver, Class of 2003; his daughter, Wendy Oliver Walters, Class of 1994; and his son-in-law, Russell H. Walters, Class of 1993. The fund shall be used to support student projects, field trips, and other activities that directly involve and benefit students in the mechanical engineering degree program.

The W. Guy Payne Fund was established by W. Guy Payne, Class of 1909, to help defray the expenses of students who attend religious conferences.

The Earle B. Pierson Jr. Fund was established by a testamentary gift from Ada T. Pierson, wife of Earle B. Pierson Jr., Class of 1938. The fund will be used to support the general purpose of the University.

The President's Discretionary Fund was funded by the Eugene A. and Suzanne H. Gorab Foundation to provide financial support for special projects and initiatives that the University's President determines warrant strategic resources.

The PricewaterhouseCoopers Research Fund was established in 2008 by John E. "Jeb" '78 and Sara S. "Sally" Bachman '78 with a preference for accounting faculty, for research, associated travel, professional development, and student scholarship.

The Reed-Garman Award Fund for Engineering Entrepreneurship was established as an endowed fund with gifts from Robert F. Sykes '47. Named in honor of Professors John Clifford Reed and Warren De Witt Garman, income from the fund supports awards for male and female students in engineering who have demonstrated the most promising entrepreneurial spirit and mindset. Awards will be made as stipends for an entrepreneurially

minded project to be conducted with the support of a Bucknell faculty member during the summer between the junior and senior years. Student recipients will be chosen by the Dean of Engineering and honored by the University annually.

The Reserve Officers Training Corps Scholarship Program was established by the United States Congress by enactment of the ROTC Vitalization Act of 1964. Through this act, one-, two-, or three-year scholarships are awarded to students who have distinguished themselves academically at Bucknell and who may be considering a military career.

The Rooke Chapel Organ Assistants Fund was established by Natalie D. and Robert C. Rooke, the income to be awarded to one or more students taking organ lessons and/or working with the chapel organist to provide music for chapel functions.

The Rothschild/Johnson Art Experience Endowment was established in 2005 by Richard Rothschild '78 and his wife, Barbara, and Leslie Knox Johnson '83, in memory of Van Johnson '77. The endowment provides support for students, selected by competition, to explore the visual arts in New York City or other locations.

The James A. Russell Memorial Fund was established by James R. Russell in memory of his son, James A. Russell, Class of 1967. The fund shall be used for the acquisition of books, periodicals and other instructional materials for the Bertrand Library. In addition, the fund shall be used to support exhibitions that are scheduled in the special collections exhibit area of the Bertrand Library, which has been named in memory of his son, James A. Russell, Class of 1967.

The Russell Endowment was established in 2009 by Daniel R. '78 and Christine Peterjohn Richards '76 to provide a lasting memorial honoring the lifetime contributions of Coach Dick Russell to Bucknell's varsity water polo and swimming programs. The fund provides resources to support Bucknell's coaches, teams, and athletes in men's and women's varsity water polo.

The Schlegel-Deibler Memorial Endowment was established by Richard LaMar Schlegel in memory of his parents, Roy F. and Margaret Deibler Schlegel. The fund supports staffing, programming, and activities that foster a supportive environment in which gay/lesbian/bisexual students, as part of their education, can confidentially and in an atmosphere of tolerance explore their identities. Further, the fund supports University outreach into related non-gay agendas.

The Schotz Family Fund was established as an endowed fund with gifts from Jon Schotz P'11, Patricia Wheeler P'11, and Katherine Wheeler Schotz, Class of 2011. Income from the fund supports faculty and student work in Interdisciplinary Studies.

The Robert E. Slonaker Jr. Memorial Fund was established in 2009 by his wife, Gloria Slonaker, Class of 1956, former colleagues, students and friends of Professor Slonaker. The fund honors the memory of Robert E. Slonaker Jr., a member of the Class of 1956, and a longtime member of the chemical engineering faculty. The fund provides an annual prize to a distinguished graduating senior chemical engineering student who has demonstrated outstanding achievement within the field of materials science and engineering, and supports the department of chemical engineering, especially through funding research conducted by undergraduate chemical engineering majors.

The Frederick Arthur Snell Music Endowment was established in 2005 by Frederick E. Snell, Class of 1965, in honor of his father, a graduate of the Class of 1943. The fund supports Bucknell's music department.

The Gary A. and Sandra K. Sojka Equipment and Instrumentation Fund was established in 1998 by Bucknell's 13th president and his wife, Gary and Sandy Sojka, in support of faculty research in the life sciences. Income from the fund shall be used to purchase laboratory equipment, instrumentation, and supplies for research undertaken by faculty members and their associates in the department of biology.

The Gary A. and Sandra K. Sojka Fund for Research, Teaching and Scholarship in Developmental Disabilities, Neuroscience and Human Health was established with gifts from Gary A. and Sandra K. Sojka. Income from the fund will be used with first preference given to supporting research, teaching and scholarship, conducted by Bucknell faculty and students working with medical professionals at Geisinger Health System, in the fields of neuroscience and developmental disabilities. Other research and scholarship in the field of human health, conducted by Bucknell faculty and students with Geisinger professionals, may also be supported. The fund honors Bucknell's 13th president and his wife, both of whom are engaged supporters of the intellectual, social, and cultural life of the Bucknell community.

The Sandra and Gary Sojka Visiting Poet Series in the Stadler Center for Poetry at Bucknell was inaugurated in 1995. Established through the generosity of the former president of Bucknell University and his wife, the series consists of a short visit by a distinguished poet during the fall semester each year. While on the campus, the poet offers a poetry reading, meets informally with those interested in conversation about the writing of poetry, and visits a poetry-writing workshop. The series is designed to contribute to the development of young writers while it also enriches the life of the University as a whole and of the larger community.

The Jack and Ralynn Stadler Poetry Endowment was established by Jack Stadler, Class of 1940, and his wife, Ralynn, in 1980 in recognition of the power of poetry and the importance of poetry's role in the cultural landscape. The endowment supports the activities and programs of the Stadler Center for Poetry.

The Gordon and Joan Stetz Management Endowment was established by Gordon M. Stetz, Class of 1983, and Joan M. Stetz, Class of 1980. The fund supports students, faculty, and programs within the discipline of management.

The Francis D. Stillman '60 Bucknell Public Interest Program (BPIP) Internship Fund was established in 2005 by Francis D. Stillman Jr., Class of 1960. The fund shall support internship opportunities through the Bucknell Public Interest Program.

The Stroup Family Fund for Conscious Awareness was established as an endowed fund with gifts from Catherine J. Stroup, Class of 1983, and her husband, Chris Stroup. Income from the fund will be used by the University to support academic and student-life programs that promote mindfulness and conscious awareness at the University, including stress-relief programs that focus on health and wellness, meditation, or courses on mindful behaviors.

The Student Management Investment Endowment was established in 2011 with gifts from anonymous parents. Income from the fund supports faculty, research, teaching, and conduct of student investments in the University's endowment, through the Student Managed Investment Fund Program.

The Robert F. Sykes '47 Engineering Endowment was established in 2009 by alumnus Robert F. Sykes, Class of 1947. The fund supports the development of innovative curricular programs in the College of Engineering, with particular emphasis on the first- and second-year programs and other programs in support of student retention in the College of Engineering.

The Teacher Education Fund supports initiatives intended to improve the preparation of the next generation of teachers.

The Rita Bergner Terry '63 Library Fund was established in 2011 by Lynne Hooper in memory of her mother, Rita Bergner Terry, a member of the Class of 1963, and a faithful supporter of the University and the Bertrand Library. The fund provides support for the Bertrand Library.

The Isaac Tressler Fund for Astronomy was established by Isaac J. Tressler, Class of 1940, father of Connie Tressler '62 and Lloyd E. Tressler '63, and grandfather of Kimberly J. McClymont '90. Income from the fund shall be used to support the study of astronomy at Bucknell University.

The Leanne Freas Trout Fund for Research and Teaching French and Francophone Studies was established in 2012 with a gift from Leanne Freas Trout, Class of 1950. The fund supports faculty academic projects and travel to enhance research, scholarship and teaching; lectureships and residencies for visiting scholars; research and travel for faculty-student collaborative work; and need-based grants to students for off-campus participation in French and Francophone Studies programs.

The James H. and Elizabeth F. Turnure Purchase Fund for the Gallery was established in 1994 by James H. and Elizabeth F. Turnure. Income from the endowment may be used to purchase examples of western art and related artifacts created before the year 500 AD, specifically Egyptian, Mesopotamian, Aegean, and Greco-Roman, with Egyptian art and artifacts given priority.

The Vizas Family Fund was established in 2006 by Kathryn Vizas, Class of 1979, and her husband, Robert Vizas. Income from the fund shall be used to support the programmatic needs of Bucknell's Posse Program. The program assists public high school students with extraordinary academic and leadership potential, but whom the traditional college selection process may overlook. Students receive training in leadership, team-building, communication, and academic excellence.

The Fitz Roy and Mary Jane Walling Management Endowment was established in 2006 by Fitz Roy '46 and Mary Jane Walling. The fund supports management education at Bucknell, especially by funding the visits and lectures of scholars and experts in management to Bucknell students and faculty.

The Wean Foundation Fund for Library Electronic Resources was established in 1999 by The Raymond John Wean Foundation. The income derived from this fund is to be used at the discretion of the chief administrator of the University's library for the acquisition of computer workstations and related hardware for the library, in order to keep current with changing technology.

The Janet C. Weis Writing Program Endowment was established in 2011 by the estate of Janet C. Weis.

The Janet C. Weis Endowment for the Sigfried Weis Music Building was established in 2011 by the estate of Janet C. Weis.

The Janet C. Weis Performance Endowment for the Sigmund and Claire Weis Center for the Performing Arts was established in 2011 by the estate of Janet C. Weis.

The Sigfried Weis Endowment for the Performing Arts was established in 1995 by a bequest from the estate of Sigfried Weis, former chairman of Bucknell's Board of Trustees and longtime friend of the University. Income from the endowment is used to compensate artists performing in the Weis Center, and to maintain, renovate, or improve the Weis Center facilities.

The William M. '46 and Marion W. Wilkinson '43 Annual Fund Endowment was established by William M. Wilkinson, Class of 1946 and trustee emeritus, and Marion W. Wilkinson, Class of 1943, to perpetuate their annual gift to Bucknell University. Expenditures are unrestricted and shall be used for the general purposes of the University.

The Ellen P. and Samuel L. Williams Endowed Music Research Fund was created in 2009 through a bequest gift from Ellen Peterson Williams, Class of 1919, to honor the time she spent at Bucknell and the memory of her husband, Samuel L. Williams. The endowment provides funds to music faculty conducting research.

Loan Funds

The Alumni Loyalty Loan Fund was established by gifts from alumni and friends. The principal of this fund is to be loaned to worthy students of the University.

The Roy Grier Bostwick Student Assistance Fund was established by a bequest from the estate of Mrs. Roy G. Bostwick, the income to be used as loans to deserving young men and women.

The Koppers Company Loan Fund was established by the Koppers Company, with preference to be given to students who are majoring in chemistry or in chemical, civil, electrical, or mechanical engineering.

The Marjorie E. Mosher Loan Fund was established through a bequest by Marjorie E. Mosher, Class of 1942, the income of which provides loans to female undergraduate students majoring in the fields of English or chemistry.

Student Research Funds

The Michael Baker Jr. Inc. Fund for Undergraduate Research in Civil and Environmental Engineering was established in 2000. The research stipends shall be awarded to undergraduate students conducting research in civil and environmental engineering, with preference given to students studying transportation systems.

The David Burpee Plant Genetics Fund was established in 1975 by David Burpee, a member of Bucknell's Board of Trustees, to provide summer research scholarships to encourage and prepare promising undergraduate students for advanced graduate studies and careers in plant genetics.

The Douglas K. Candland Undergraduate Research Fund was established in 1997 by Glen E. Tullman, Class of 1981, and his wife, Trish, to honor Professor Candland's years of service as teacher, scholar and mentor. The fund is designed to encourage imagination, innovation, and the development of problem-solving skills among students majoring in the humanities and social sciences.

The Chemistry Graduate Research Fund was established under an agreement completed in 2000. Stipends from the fund shall be awarded as fellowships to MS graduate students conducting research in the department of chemistry. Research fellows will be selected by the then chair of the department of chemistry, upon recommendation by faculty members directing the research of the fellows.

The Stephen Glenn Hobar Memorial Research Award was established by Mr. and Mrs. Stephen Hobar and sons Donald, Jon, Robert, and James in memory of their son and brother, Glenn, Class of 1975, who lost his life while wilderness back-packing. The award is to go to a student of chemistry who has completed the sophomore year to provide the student with an opportunity to do summer research with the intent of clarifying whether or not chemical research is the proper academic field for the recipient. The recipient will be selected by the chemistry department.

The John M. Hustler Undergraduate Research Fund was established in 2002 by John M. Hustler, Class of 1941. The research stipends shall be awarded to undergraduate students majoring in chemistry.

The Drs. Anthony and Joyce D. Kales Undergraduate Research Fund was established in 1984 by Dr. Anthony Kales and his wife, Dr. Joyce D. Kales, in recognition that student participation in independent undergraduate research is crucial for developing their ability to perform at the highest level as medical or other graduate students. The fund will provide support for research and publication opportunities for Bucknell students, particularly those working under the supervision of faculty members in the biology and chemistry departments.

The Kalman Fund for Biomedical Education was established in 1999 by Ernest M. Kalman, Class of 1956, and his wife, Joan, in recognition of the benefits which accrue to all people through advances in medical science. The fund makes possible faculty-mentored summer research through its Fellows Program, helps acquire and maintain equipment and instrumentation required in the study of the life sciences, and supports off-campus learning opportunities for exceptional Bucknell students. The fund is designed to support the work of undergraduates who plan to pursue post-graduate education, and through the support of activities that might not otherwise be available, to enhance students' chances for acceptance into premier medical and graduate schools.

The Kalman Fund for Undergraduate Research in the Sciences was established in 1999 by Ernest M. Kalman '56 and his wife, Joan, in recognition of the benefits which accrue to all people through advances in the sciences. The fund makes possible faculty-mentored research projects in the sciences for exceptional Bucknell students.

The Wayne E. and Margaret S. Manning Internship in the Botanical Sciences was established through a bequest from Wayne E. Manning, professor emeritus of botany, and member of Bucknell's faculty from 1945-68, and his wife, Peg, who provided years of service to the collection. Awards from this fund shall be used for students engaged in summer research programs in the department of biology in order to encourage and prepare promising students for advanced graduate studies and careers in the botanical sciences.

The PPL Utilities Undergraduate Research Fund was established by PPL Utilities in 1997. The research stipends shall be awarded to undergraduate students majoring in electrical engineering or management.

The James L.D. and Rebecca Roser Research Fellowship was established under an agreement completed in 2000 and funded with deferred gifts made by James L.D. Roser '50. Stipends from the fund shall be awarded as fellowships to undergraduate students conducting research under direction of

faculty. The vice president for academic affairs, or his or her successor, will name research fellows on recommendation of the deans of the College of Arts and Sciences and the College of Engineering.

The Helen E. Royer Undergraduate Research Fund was established in 2008 by Dr. Helen E. Royer, Class of 1944, in appreciation for the research opportunities made available to her at Bucknell. The fund shall support faculty-mentored research projects by undergraduate students with demonstrated financial need.

The Juliet Shield-Taylor Fund for Undergraduate Research was established in 2003. First preference for research stipends shall be given to undergraduate students undertaking summer projects in the performing arts. Secondary preference shall be given to projects in the visual arts.

The Wendell I. Smith Internships in Psychology were established by gifts from former students, friends, and colleagues of Provost Smith, Class of 1946, who, as a member of the Bucknell faculty from 1946-86, served his academic discipline and his alma mater with distinction. The internships, awarded to students who show promise of doing distinguished work in the profession, provide opportunities to work with faculty members as teaching and/or research assistants in a program administered by the head of the department.

The Thomas R. Spitzer Undergraduate Research Fund was established in 1999 by Thomas R. Spitzer, Class of 1970. The research stipends shall be awarded to undergraduate students majoring in any academic discipline, who wish to participate in a medically related research position in an off-campus environment.

The Tague Family Fund for Undergraduate Research in Biomedical, Biological, and Biochemical Sciences was established in 2000. The research stipends shall be awarded to undergraduate students conducting research in studies concerning breast cancer.

The Fund for Undergraduate Research in Biological and Chemical Sciences was established in 1999. The research stipends shall be awarded to undergraduate students majoring in any biological or chemical science. Research fellows are selected by competitive application.

The Robert P. Vidinghoff Memorial Summer Internship was established by Raymond A. and Virginia Vidinghoff, to preserve the memory of their son, Robert, Class of 1969. Awards from the fund will be used for students engaged in summer research programs administered by the science departments at Bucknell.

Lectureships

The Charles Martin and Elizabeth Stults Bond Lectureship on the meaning of religion was established in 1967 by colleagues, alumni, and friends. It is filled from time to time, upon the invitation of the department of religion, by a person who has made significant contributions in the general area of religious interpretation, thought, and action.

The Class of 1953 Lectureship was established by the class as a 25th Reunion gift to the University. Its purpose is to bring to the campus for a brief residency every other year one or more distinguished visitors representing a broad spectrum of interests and disciplines.

The Class of 1956 Lectureship was established in recognition of inspirational teaching. The lecture is to be given annually by a member of the faculty of Bucknell University. The committee that selects the recipient of this lectureship consists of the provost, deans, two faculty representatives, and two student representatives.

The Ralph B. Derr Memorial Lectureship was established with funds from the estate of Ralph B. Derr, Class of 1917, in his memory. The speaker for the annual lecture will be a person of note from the field of chemical engineering, selected by the chemical engineering faculty to speak on an area of particular current interest in the profession.

The James A. Gathings Lectureship in International Politics, established in 1971 by students, colleagues, and friends of Professor Gathings, annually presents a significant analyst in this field. The designated lecturer, to be selected by the Department of Political Science, shall possess a particular knowledge of international politics, together with a concern for the political education of all, regardless of academic training or specialty.

The O. V. W. Hawkins Lectureship was established by the Board of Trustees with funds provided by Mr. Hawkins, who was, himself, a trustee for many years. The lecture is to be in the field of public policy, but not limited to politics or government, and is to be given by a respected person of national prominence.

The Meerwarth Sociology and Anthropology Departmental Speaker Fund was established in 2006 by Tracy L. Meerwarth, Class of 1996, and her mother, Lurena M. Meerwarth. The fund's goal is to enliven and enrich students' understanding of anthropology and sociology by bringing such external speakers' presentations to departmental classes, seminars, and other events organized by the department. Topics can be academic and/or practitioner oriented, engaging students in current anthropological or sociological theory and/or practice.

The Putterman Lecture was established by Arnold L. Putterman, Class of 1960. The lecture is intended to address prominent current issues with a specific focus on politics, government, and/or the economy.

The Harry Wolcott Robbins Lectureship was established in 1957 in honor of Harry Wolcott Robbins, John P. Crozer Professor of English and chairman of the Department of English from 1923-54. Funded originally by the University and now endowed with a bequest from Mrs. Robbins, the lecture is given annually by a person who has made significant contributions to English and American literary scholarship.

The Roy Wood Sellars Lectureship commemorates the productive collaboration of Sellars, founder of the critical realist movement in American philosophy, and William Preston Warren, historian of the movement and editor of Sellars' writings. Initiated by Sellars, the lectureship was augmented by students and colleagues of Warren, former professor of philosophy at Bucknell. A distinguished scholar in American philosophy lectures annually.

The Ralph Spielman Memorial Lectureship was established by the relatives, colleagues, students, and friends of Professor Spielman in memory of his service to the University from 1958 until his death in 1978. The lectureship emphasizes "Frontiers in Social Science" by bringing to the campus when possible, but at least every second year, a lecturer to describe promising attempts to interpret and open new fields in social science.

The Douglas Sturm Dialogue on Ethics and Social Justice was established in 1992 in honor of Dr. Sturm, who served Bucknell for more than 35 years as a teacher and scholar. The dialogue is intended to honor Dr. Sturm's substantive concerns with ethics and social justice issues, and his commitment to the honest exchange of ideas on those matters.

The Virginia Travis Lectureship in Social Justice was endowed by her family and friends to commemorate her life and convictions. The lecturer ordinarily will be a member of the Bucknell or Lewisburg communities who has worked compassionately and diligently to promote justice and social change at the local, national, or international level. The annual lecture will articulate a vision of justice and a strategy of social change to achieve it.

The Charles H. Watts II Humanities Institute was established in 2006 by the CTW Foundation and its officers, to honor the memory of Charles H. Watts II, Bucknell's 11th president from 1964-76 and trustee from 1997-2001. The fund honors President Watts' love of the humanities, his dedication to learning, and his exceptional leadership at Bucknell. The fund will provide annual support for the interdisciplinary study of a selected topic of interest in the humanities at Bucknell.

The Janet Weis Fellowship in Contemporary Letters, an award established at Bucknell University through a generous grant from the Degenstein Foundation in honor of Janet Weis, is named annually to honor and recognize an individual who represents the very highest level of achievement in the craft of writing within the realms of fiction, nonfiction, or biography. Each recipient of this fellowship is an author whose work has been accessible to a wide audience and has resulted in a broadly based record of public recognition and appreciation.

Student Prizes and Academic Awards

The following prizes and academic awards have been established, but no prize is given unless a high degree of merit is achieved. Awards from these funds shall be made in compliance with the University's policy of nondiscrimination.

The Alpha Chi Sigma Fraternity Prizes are awarded to the most deserving chemistry graduate chosen at the discretion of the chemistry department and to the most deserving chemical engineering graduate chosen at the discretion of the chemical engineering department.

The American Chemical Society Undergraduate Award in Analytical Chemistry is awarded annually to a student who has displayed interest in and aptitude for a career in analytical chemistry during the first, sophomore, and junior years.

The Stephen A. Barowsky Prize, established by friends of Stephen Barowsky and by the Barowsky family in recognition of exceptional leadership qualities, to a student who has completed the junior year.

The Herbert Goodman Barrows Prizes were established by the Reverend William Barrows, A.M., Class of 1897, in memory of his son, for one or two seniors with the highest standing in, respectively, the Latin language and literature, and the Greek language and literature.

The William P. Boger Jr., M.D. Award was established in 2006 by William P. Boger Jr., M.D., Class of 1934, in memory of his parents, Ester Good Boger and William Pierce Boger, who, in the depth of the Depression, made so many personal sacrifices to make his education possible. The prize shall be awarded to an outstanding senior, who has indicated a desire to spend their career in medicine or the biological sciences.

The Bucknell Prizes for Women were founded by William Bucknell, and consist of:

- A prize for that woman of the graduating class who has the highest four-year average.
- A prize for that woman of the graduating class who, being excellent in scholarship during her senior year, shows the greatest proficiency in English composition and literature.
- A prize for that woman of the junior class who, being excellent in scholarship during her junior year, shows the greatest proficiency in English composition and literature.
- A prize for that woman of the sophomore class who, being excellent in scholarship during her sophomore year, shows the greatest proficiency in English composition and literature.
- A prize for that woman of the first-year class who makes the greatest advance in English composition and literature during the first year.
- The University offers similar prizes for men called the **University Prize for Men**.

The Bucknell Prize in Women's and Gender Studies honors a graduating senior majoring in Women's and Gender Studies for outstanding academic achievement.

The Bucknell University Prize in Art History, inaugurated in 2014 and given each year, is awarded to the member of the graduating class who has done the most outstanding work in art history.

The Bucknell Women's and Gender Studies Feminist Impact Award recognizes a Women's and Gender Studies graduating major for academic achievement, significant contributions to the University and larger communities, and dedication to feminist principles.

The CBS/Sony Prize in Japanese Studies, established by CBS/Sony, Incorporated, is awarded to a member of the graduating class who gives promise of further contributions to the understanding between Japan and the United States.

The Ernest and Josephine Christensen Award, established to honor Mr. and Mrs. Ernest Christensen, is given to an outstanding graduate in engineering.

The Class of 1905 Art Prize, endowed by Edith Kelly Fetherston in honor of the 50th Reunion of the Class of 1905, is given to the member of the graduating class whose work in creative art has been outstanding.

The David R. Crossgrove Prize, established by Sara Deck Crossgrove '28, is awarded to a senior pursuing a career in the legal profession, who combines scholastic achievement and campus leadership with a strong code of ethics and a vision of attaining fairness in the legal profession.

The John R. Crossgrove Prize is awarded to a senior majoring in business or economics who combines scholastic achievement in the business curriculum with exceptional leadership qualities in the campus community.

The Walter M. and Florence K. Davis Prize was established in 2008 by Walter M. Davis, Class of 1947, and Florence K. Davis, Class of 1948. The prize shall be awarded to an outstanding senior graduating in religious studies.

The Eleanor D. Decker Prize for Women was endowed by Dr. Oliver J. Decker in memory of his wife; it is given to the woman of the graduating class who best represents the ideals fostered by Bucknell University: intellectual maturity, personal conviction, and strength of character. The University offers a similar prize for men called the **University Prize for Men**.

The Oliver J. Decker Prizes were established by Oliver J. Decker, LL.D., Class of 1889, and consist of a prize for that member of the graduating class not in an engineering department who has attained the highest average, all courses having been taken at Bucknell University; and a prize for that member of the graduating class from the College of Engineering who has attained the highest average, all courses having been taken at Bucknell University.

Distinguished Military Graduate. A Distinguished Military Graduate, selected by the professor of military science, or by higher command, is one who has been a Distinguished Military Student; who has completed the Advanced Course, Senior Division, of the Reserve Officers Training Corps; who is a member of the graduating class and is receiving a baccalaureate degree; and who has maintained the standards required of a Distinguished Military Student during the period between such designation and the date of graduation.

Distinguished Military Student. A Distinguished Military Student, selected by the professor of military science, is one who possesses outstanding qualities of military leadership, a high moral character, and a definite aptitude for the military service; whose academic record or demonstrated leadership shows distinction; and who has completed, or will complete within one year, the Advanced Course, Senior Division, of the Reserve Officers Training Corps.

The Eastern College Athletic Conference Medallion is awarded to a man and a woman, at the end of their junior year, in recognition of excellence in scholarship and athletics.

The George R. Faint Prize, established by his colleagues in recognition of his services to the University as Registrar, is awarded to a student in liberal arts whose work during the first, sophomore, and junior years is of generally high quality and gives promise of future excellence.

The William C. Gretzinger Prize was established in honor of William C. Gretzinger, A.M., Class of 1889, the first Registrar of the University, by the heirs of Mr. Gretzinger, and by the University, for the senior with the highest standing in economics.

The Barbara Watson Grever Prize was endowed by family and friends in memory of Barbara Watson Grever, Class of 1967, and is to be awarded to an outstanding musician with preference being given to a student of voice or piano. A junior student will be designated by the department of music as the intended recipient. The Grever Prize will be awarded at the end of the senior year.

The Professor William T. Grier Prize was established by the Class of 1871 for the first-year student with the highest standing in Latin.

The Allan Gates Halline Prize in American Literature, the proceeds of a fund contributed by the friends of Dr. Halline, will be awarded annually to the student who makes the best record in one year's work in American literature.

The Jeffrey James Harold Prize was established in memory of Jeffrey James Harold, Class of 1978, for the student in electrical engineering who achieves the highest cumulative grade point average for the first year.

The H. Boardman Hopper Prize, given by Mrs. H. Boardman Hopper in memory of her husband, is awarded to the graduating senior whose degree is achieved by unusual perseverance.

The Professor George Allison Irland Prize, established in memory of her husband by Lillian S. Irland, is awarded annually to that member of the graduating class who has the highest standing in electrical engineering.

The Alvin F. Jackson Jr. '59 Memorial Scholar-Athlete Award, which honors the memory of an alumnus and father of a member of the Class of 1989, is given for excellence in athletics and academics, leadership, loyalty, and courage.

The Michael D. LaGrega Award for Excellence in Environmental Engineering is awarded to a member of the graduating class in civil and environmental engineering whose academic achievements and interests show outstanding promise for a career in environmental engineering.

The Maria Leonard Senior Book Award is given to the graduating senior members of Alpha Lambda Delta with the highest GPA in their class.

The Jeannine C. Liutkus Prize was established to honor the memory of Jeannine C. Liutkus, Class of 1993. It is given to the Bucknell *en France* student who, through individual initiative and perseverance, improved their proficiency in French, made the most of the opportunity to live in the French culture, and showed significant personal growth.

The John T. Lowry Jr. Prize is awarded to the outstanding graduate in biology.

The W. Norwood Lowry Prize is awarded to that member of the graduating class enrolled in physics who shows the greatest achievement and promise in physics.

The Dorothy Walls McCormick Prize was established by William C. Walls in honor of his daughter, Dorothy Walls McCormick, to be awarded to that student in the graduating class from Union County or a designated portion of Northumberland County who, during their senior year, has demonstrated qualities by which other students have been helped in their daily living and in their personal development.

The Hugh F. McKeegan Prize is awarded to a graduating senior, preferably with a major or concentration in English or social studies, who has earned teaching certification and who, in the judgment of the department of education, best exemplifies those qualities of character, scholarship, skill in teaching, and commitment to young people required for effective service in the teaching profession.

The Harold W. Miller Prize has been established by the University Honors Council through contributions from friends and alumni to honor the memory of Professor Miller, who founded the Honors Program at Bucknell, and to encourage excellence in honors work.

The Vivian Miller Prize in British and Irish Literature, established from the proceeds of a fund contributed by Vivian Miller, is awarded annually to the student who makes the best record in one year's work in British or Irish literature.

The Moles Civil Engineering Award, established by The Moles Society, is awarded to the civil engineering student whose academic achievement and application for the first three years show outstanding promise for a career in construction engineering and management.

The J. William Moore Prize was established by gifts from students, friends, family, and colleagues of Professor Moore. The prize is awarded to the senior who most completely exemplifies the original goal of a historic Bucknell education. First and foremost, they demonstrated in their life, in a significant way, traditional values, including courage, honesty, and compassion for others. They also have achieved high academic success in coursework in education.

The William H. and Carl W. Neff Prize is awarded to a member of the graduating class in mechanical engineering who, through positive attitude, desire and determination, has shown exceptional academic and personal growth during their academic career at Bucknell.

The Richard P. Nickelsen Prize is awarded to a senior demonstrating outstanding performance in geology.

The Elizabeth M. Oliphant Prize was established by Professor J. Orin Oliphant in memory of his wife, and is to be awarded annually to that woman of the graduating class who, being generally excellent in scholarship, has obtained in the courses required for a major in chemistry, or in any subject in biological science, the highest average of those women of her class whose majors are within these fields. The University offers a similar prize for men called the **University Prize for Men**.

The J. Orin Oliphant Graduation Prize was established by J. Orin Oliphant, professor emeritus of history, to be awarded to that senior attaining the highest average among those receiving the degree of Bachelor of Arts.

The Phi Beta Kappa Award is given to the undergraduate who, by work of art, research, or scholarship, shows, in any discipline, conspicuous achievement.

The Professor George Morris Philips Prize was established by the Class of 1871 for the first-year student with the highest standing in mathematics.

The Pi Mu Epsilon Society Prize is awarded to that member of the graduating class whose work in mathematics has been outstanding.

The President's Award for Distinguished Academic Achievement is awarded annually to those students who demonstrate the highest level of academic achievement by attaining a cumulative GPA of 4.00 on a scale of 4.00.

The Matthew B. Ridgway Jr. Award, established in memory of the late Matthew B. Ridgway Jr., Class of 1971, is given by the George C. Marshall Research Foundation to the member of the graduating class who best exemplifies the character, selflessness, integrity, and dedication to country demonstrated by General Marshall and by Matthew Ridgway Jr.

The Louis W. Robey Prize, endowed by friends in honor of Louis W. Robey, A.D., LL.B., LL.D., Class of 1904, is given to the man and woman in the senior class who best exemplify the aims of a Bucknell education.

The Walter H. Sauvain Prize, endowed by friends of Professor Sauvain, for 36 years professor of education at Bucknell and an adviser of many undergraduate and graduate students in education, is awarded to the senior majoring in education who shows the greatest achievement and promise for professional growth and service.

The Thelma Johnson Showalter Prize was established by the Pennsylvania Federation of Women's Clubs in honor of Thelma Johnson Showalter, Class of 1929, for that member of the graduating class who, in the judgment of the president of the University or such committee as may be appointed, shall have shown the greatest potential in the field of public and community affairs.

The Robert E. Slonaker Jr. Memorial Award is given to a graduating chemical engineering student who has demonstrated outstanding achievement within the field of materials science and engineering.

The Julia Fonville Smithson Memorial Prizes, one for poetry, one for nonfiction, and one for fiction, are to be awarded annually for excellence in undergraduate writing, to students whose dedication to the sharing and the making of literature carries into the future the spirit of Julia Smithson.

The Helen E. Sprague Prize was established by Frank A. Sprague, professor of Spanish, in memory of his wife, and is to be awarded annually to that member of the graduating class who demonstrates exceptional ability in Spanish.

The Ralph A. Still and Anne B. Still Prize was established by the Class of 1913, and is to be awarded annually to that member of the junior class majoring in English who has the highest standing in English.

The Susan Hensinger Thomas Prize, established in her memory by members of Alpha Phi, is awarded to the graduating senior who best promotes goodwill by applying an understanding of psychological principles to daily living.

The Herbert Tustin Prize was established by Professor Francis Wayland Tustin, Ph.D., Class of 1856, in memory of his son, for the senior with the highest standing in philosophy and psychology.

The Anna Slifer Walls Prize was established by William C. Walls, A.B., A.M., Class of 1873, in memory of his wife, Anna Slifer Walls, for that student from Union County or a designated portion of Northumberland County majoring in history who presents during their senior year the best paper concerned with American history.

The Dr. E. Slifer Walls Prize was established by William C. Walls in memory of his son, Dr. E. Slifer Walls, Class of 1903, to be awarded upon graduation to the premedical student or public health student from Union County or a designated portion of Northumberland County who has shown during their junior year the highest standards of combined will and devotion to the ideals of the profession for which they are making preparation.

The John A. Walls Prize was established by William C. Walls in honor of his son, John A. Walls, Sc.D., to be awarded to that student from Union County or a designated portion of Northumberland County who, during their sophomore year, has performed outstanding work in literature, history, the physical sciences, or engineering.

The Agnes Archer Warren Award, established in honor of the wife of Dr. W. Preston Warren, professor emeritus of philosophy, consists of selected books awarded to a student in the College of Arts and Sciences for a written work demonstrating well-informed use of a range of sources in several disciplines.

The W. Preston Warren Prize, endowed by friends in honor of Professor Warren, for 26 years a distinguished professor of philosophy at Bucknell, is awarded to that senior majoring in philosophy who shows the greatest achievement and promise in philosophy.

The Charles F. White Memorial Prize for Scholar-Athletes was established in 1991 to honor and reward a student or students recognized by the University as earning the designation "Scholar-Athlete" as defined by the University and who intends or intend to pursue graduate studies either immediately or in the future.

The Yarnall Prize in Environmental Affairs, endowed by Dr. John L. Yarnall in memory of his father, mother, and brother, is awarded to a junior or senior who has a high academic standing and has demonstrated leadership in and contribution to environmental affairs.

The Samuel Lewis Ziegler Prizes were established by the late Samuel Lewis Ziegler, M.D., LL.D., Class of 1880, and consist of a prize for the first-year student whose preliminary examinations in English show the greatest proficiency in the elements of English composition; a prize for the junior who shows the greatest proficiency in English composition and literature; a prize for the member of the class in French conversation who excels in this subject; and a prize for the senior who best exemplifies the goals of a premedical education.

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President, John C. Bravman, Ph.D.

Director, Office of the President, Carol McLaughlin Kennedy, B.A.

General Counsel

General Counsel, Amy C. Foerster, J.D.

Assistant General Counsel, Alison Epting Razet, J.D.

Director, Risk Management and Insurance, Clint D. Wevodau, B.S.

Assistant Director, Risk Management/Environmental Health and Safety, Gregg Rokavec, B.S.

Environmental Health and Safety Program Assistant, Carol Pavlick, B.S.

Finance and Administration

Vice President for Finance and Administration, David J. Surgala, B.S., C.P.A.

Director of Business Planning, Edward James Loftus, B.S., M.B.A.

Bucknell Dining Services

District Manager, David Freeland

Resident District Manager, Ty Paup

Executive Chef, Kyle Murphy

Executive Sous Chef, Shawn Lively

Executive Sous Chef, Jon Sherwood

Executive Sous Chef-Retail, Sarah Lincicome

General Manager of Resident Dining, John Cummins

Assistant Director of Resident Dining, Jeff VanSant

Director of Catering, Allen Reichley

Assistant Director of Catering, Michelle Kerstetter

Assistant Director of Retail Operations, Chris VanSant

Executive Sous Chef-Retail, Pete Zerbe

Business Manager, Cathy Klinger

Marketing Manager, Brittany Lynch

Director of Retail Operations, Jay Breeding

Events Management

Executive Director, Dana Mims

Director of Events, Pat Ringkamp

Director of Non-University Events, Gina Stockdale

Assistant Director, Lisa Hemrick

Assistant Director, Jennifer L. Wagner

Manager, Scheduling and Event Planning, Lindsay Shively

Facilities

Associate Vice President for Facilities, to be named
Director of Construction and Design, to be named
Director of Facility Services, Michael Joseph Patterson, M. of Eng.
Director for Energy and Utilities, James C. Knight, B.S.M.E.
Director for Maintenance, Jeffrey Wayne Loss, B.S.E.E., CEFP
Senior Associate Director for Business Services and Operations, Chris S. Small, B.S.
Director for Operations, Merritt Wesley Pedrick, M.S.
Associate Director for Utilities Maintenance, Gregory Richard Koontz, B.S.M.E.
Senior Project Manager, Dominic Silvers, R.A.
Senior Project Manager, Angelo Vieceli, B.Arch, M.S.C.E.
Project Manager, Robert John Rapp Jr., B.S.M.E.T.
Project Manager, James S. Rebuck, B.A.E.
Project Manager, Justin Lee Salyards, B.Arch.Eng.
Project Coordinator, Kimberly J. Wagner, M.Arch, Associate AIA
Campus Energy Manager, Stephen Durfee, A.A.S., CEM
Campus Planner, Amy Smalt, LEED AP BD+C
Assistant Director, Building Maintenance and Projects, Brian Fritz, M.Arch. Engr, LEED AP, CEFP
Manager of Electrical Systems and Projects, David Eckley, Certificate of Electrical Construction

Finance

Associate Vice President for Finance, Dennis W. Swank, B.S.B.A.
Director of Business Services, Lori J. Wilson, B.S.B.A.
Business Services Analyst, Steven T. Hoover, B.B.A.
Associate Budget Director, Andrea M. Featherstone, B.S.
Treasurer and Controller, Michael S. Cover, B.S., C.P.A.
Assistant Controller, Michelle M. Hendricks, B.A., C.P.A.
Associate Controller-Accounting Services, William D. George, B.S.B.A.
Accounting Manager-Grants, Dorothy J. Johnson, B.B.A., C.P.A., C.R.A., C.F.R.A.
Director of Financial Information Systems, Pamela K. Noone, B.A.
Staff Accountant, Teresa A. Harvey
Director of Internal Audit, Robert L. Hoster, B.S., C.P.A., C.I.S.A., C.F.I.R.S., C.F.S.A.
Associate Controller-Financial Services, Ronald E. Stauffer II, B.S., C.P.A.
Bursar Services Manager, Carol A. Yost
Director of Disbursement Services, Jody D. Graybill, B.S.
Payroll Manager, Jill S. Taylor, M.B.A., C.P.P.
Chief Investment Officer, to be named
Director of Investments, John R. Luthi, B.S.B.A., C.F.A.
Investment Operations Analyst, Angela M. Motto, B.S., M.B.A.
Investment Analyst, Derek W. Varner, B.S.B.A., C.F.A.

Human Resources

Vice President for Human Resources, Pierre D. Joanis, M.B.A., SPHR
Director, Recruitment and Compensation, Affirmative Action Officer, Marcia Cooney, B.S., SPHR
Director, HRIS and Benefits, Cindy L. Bilger, A.A., CWPM
Recruitment Consultant, Brandy Collins, B.S.
Recruitment Consultant, Kelly Dinan, M.S., PHR
Compensation Manager, Amy Britton, B.S., CCP
Training and Organizational Development Consultant, Lisa M. Adams-Verge, M.S.
Benefits and Wellness Manager, Kelley Adams-Verge, GBA, CWPM, CEBS
HR Generalist, Amanda Fanning, B.A.

Procurement Services

Director, Donald Allan Krech, M.Litt.
Assistant Director, Valerie F. Cook, A.A.S.

Public Safety

Chief, Stephen J. Barilar, B.A.
Operations Captain, Douglas I. Lauver
Lieutenant, Corey T. Jones

University Bookstore

Director, Don Royal, B.S.B.A.

Provost

Provost, Barbara K. Altmann, Ph.D.

Associate Provost, Registrar, Dean of Graduate Studies and Summer Session, Robert McKinley Midkiff Jr., Ph.D.

Associate Provost, Karen M. Morin, Ph.D.

Associate Provost for Diversity, Bridget M. Newell, Ph.D.

Director, Center for the Study of Race, Ethnicity, and Gender, Susan Reed, Ph.D.

Director of Business Operations, Pamela A. Benfer, B.S.B.A.

Director of the Office of Accessibility Resources, Heather L. Fowler, M.A., LPC

Assistant Registrar for Academic Scheduling, Vincent A. Pellegrini, B.A.

Academic Affairs

College of Arts and Sciences

Dean, George C. Shields, Ph.D.

Associate Dean of Arts and Humanities, Karline McLain, Ph.D.

Associate Dean of Natural Sciences and Mathematics, Karl Voss, Ph.D.

Associate Dean of Social Sciences, Linden Forbes Lewis, Ph.D.

Associate Dean, M. Lynn Breyfogle, Ph.D.

Associate Dean, Richard Robbins, Ph.D.

College Core Curriculum Coordinator, to be named

Director, School of Management, Michael E. Johnson-Cramer, D.B.A.

Assistant Director, School of Management, Ivy R. Kepner, B.A.

Operations Manager, Nicole L. Persun, B.S.B.A.

College of Engineering

Dean, to be named

Associate Dean and Executive Director, Engineering Success Alliance, Karen T. Marosi, Ph.D.

Associate Dean, to be named

Engineering Operations Administrator, Lois A. Engle, A.A.S.

Director, Engineering Success Alliance, Jason B. Milner, M.S.

Director, Small Business Development Center, Steven Stumbris, B.S.

Center for Civic Engagement

Director of Civic Engagement and Service-Learning, Janice R. Butler, M.S.

Assistant Director, Community Service, Lynn Pierson, M.A.

Assistant Director, Service Learning, Kyle Bray, M.P.A.

Graduate Studies

Dean, Robert McKinley Midkiff Jr., Ph.D.

Global and Off-campus Education

Director, Stephen K. Appiah-Padi, Ph.D.

Associate Director, Jennifer E. Fritz, M.P.A.

Operations Manager, Julie Rowe, M.P.S.

Global Education Adviser, Marguerite Santorine, B.A.

Global Education Adviser, Anita Casper, M.I.A.

Global Education Adviser, M. Trace Coats, M.A.

Institutional Research and Planning

Assistant Provost for Institutional Research & Assessment, Kevork Horissian, M.A., M.B.A.

Assistant Director of Institutional Research, Xiaoyan Liu, Ph.D.

Registrar's Office

Registrar, Robert McKinley Midkiff Jr., Ph.D.

Associate Registrar, to be named

Associate Registrar, Melissa A. Weber, M.S.

Assistant Registrar for Degree Audit, April M. Dills, B.S.

Residential Colleges

Program Coordinator, Kelly R. Finley, M.A.

Samek Art Museum

Director, Richard Rinehart, M.A.

Preparator and Operations Coordinator, Andy Gabrysiak, B.F.A.

Public Programs and Outreach Manager, Gregory Stuart, M.A.

Registrar, Erin Bradford, M.A.

Stadler Center for Poetry

Director, Shara McCallum, Ph.D.

Director, Bucknell Seminar for Younger Poets, Katie Hays, M.F.A.

Program Manager, Andrew Ciotola, M.A.

Summer Session

Dean, Robert McKinley Midkiff Jr., Ph.D.

University Press

Director, Greg Clingham, Ph.D.

Editorial Associate, Pam Dailey, M.A.

Weis Center for the Performing Arts

Executive Director, Kathryn Maguet, M.A.

Marketing and Outreach Director, Lisa Leighton, B.A.

Artist Liaison, Rachel Martine, B.A.

Assistant Director of Operations, Johanna Kodlick, B.M.

Technical Director/Audio Engineer, to be named

Technical Director/Lighting Supervisor, Kalen Sowul, A.S.

Campus Box Office Manager, Jamie L. Brouse, A.A.

Campus Box Office Assistant Manager, Greg Marconi, B.S.

Writing Center

Writing Center Director/Writing and Teaching Consultant, Deirdre O'Connor, M.F.A.

Writing Program Director, Abe Feuerstein, Ph.D.

Writing and Teaching Consultant, Margaret Cronin, M.A.

Writing and Teaching Consultant, Loren Gustafson, Ph.D.

Writing and Teaching Consultant, Sabrina Kirby, M.A.

Writing Consultant, Megan Mulligan, M.A.

Corporate and Foundation Relations

Director, Corporate and Foundation Relations, to be named

Associate Director, Corporate and Foundation Relations, Brenda S. Thomas, B.A.

Student Affairs

Dean of Students, Amy A. Badal, Ph.D.

Student Conduct

Assistant Dean of Students, Lewis A. Marrara II, M.Ed.

Chaplains and Religious Life

University Chaplain, John P. Colatch, D.Min.
Chaplain to the Jewish Community, to be named
Chaplain to the Catholic Community, Bernard Wamayose, B.A.
Assistant Catholic Campus Minister, Suzanne M. Domzalski, M.Ed.

Campus Activities and Programs

Associate Dean of Students, Kari Conrad, M.A.
Director of Campus Activities and Programs, Michael Duignan, M.S.
Assistant Director, Chelsea Brown, M.Ed.
Director of Outdoor Education and Leadership, Anthony Stafford, M.A., M.S.
Student Media Adviser, 7th Street Studio Coordinator, Gretchen P. Heuges, B.F.A.

On Campus and Off Campus Housing Services

Associate Dean of Students, Daniel C. Remley, M.S.
Director, Stephen J. Apanel, M.A.
Director of Card Services and Student Transit, Glenn R. Fisher, B.S.

Intercultural Equity and Advocacy OR Diversity and Inclusion

Associate Dean of Students for Diversity, to be named
Director of International Student Services, Jennifer Figueroa, M.Ed.
Director of Lesbian/Gay/Bisexual/Trans*/Queer Resources, William McCoy, M.A.
Director of Multicultural Student Services, Rosalie Rodriguez, M.A.
Director of Women's Resource Center, Tracy Russell, M.S.

Counseling and Student Development Center

Acting Director, Kelly Kettlewell, Ph.D.
Assistant Director, Coordinator of Outreach and Consultation Services, Marie E. Shaw, Ph.D.
Staff Psychologist, Shallary F. Simmons Duncan, Ph.D.
Staff Psychologist, Marina Shafran, Ph.D.
Staff Psychologist and Alcohol and Other Drug Specialist, Paul Rizzo, Psy.D.
Staff Psychologist, Christopher Connacher, Ph.D.
Staff Psychologist, Suzanne M. Domzalski, M.Ed.

Community and Leadership

Director of New Student Orientation and Student Leadership Program, Beth Bouchard, M.Ed.
Director of Residential Education, Joshua Hartman, Ed.S.
Associate Director of Residential Education, Jacqueline Cetera, M.A.
Community Director, Theresa Brostowitz, M.Ed.
Community Director, Alexander James, M.S.
Community Director, Natalie Liston, M.S.
Community Director, Shannon DeCormier, M.S.
Community Director, Andrea Riebel, M.S.
Director of Fraternity and Sorority Affairs, to be named
Assistant Director of Fraternity and Sorority Affairs & Community Development, Mary Klebon, M.Ed.
Assistant Director of Fraternity and Sorority Affairs, Ashley Rastetter, M.Ed.

Bucknell Student Health

Medical Director, Catherine O'Neil, M.D.
Staff Physician, Roseline R. Reed, M.D.
Physician Assistant, Kevin R. Robatin, PA-C
Physician Assistant, Laura E. Richardson PA-C
Nurse Practitioner for Women's Health, Rozalyn L. Yannaccone, C.R.N.P.
Operations Manager, Jacqueline M. Miller, R.N.C.

Title IX Coordinator & Clery Act Compliance Officer, Kathleen Grimes, J.D.

Interpersonal Violence Prevention Coordinator, Rachel Stewart, M.A.

Development and Alumni Relations

Vice President for Development and Alumni Relations, Scott G. Rosevear, Ph.D.
Associate Vice President for Development and Alumni Relations, Kathleen Graham, J.D.
Assistant Director of Development, Campaign Proposals and Endowment Agreements, Rhonda K. Miller, M.S.
Senior Development Adviser, Mark Elliott, B.A.
Senior Development Officer, Patrick J. Flannery, M.S.
Campaign Volunteer Manager, Kimberly B. Allen, A.S.B.
Assistant Director of Business Services, Nancy Hoyt
Development Administrative Support Manager, Rebecca M. Meng

Advancement and Information Services

Executive Director, Advancement Services, Cindy Belknap, B.A.
Director, Advancement Services, Barbara A. Hartman, B.A.
Associate Director, Advancement and Information Services, Gregory Amarante, B.A.
Associate Director, Advancement and Information Services, Bryan Koch, B.S.
Assistant Director, Records and Gift Processing, Michele Sloyer
Senior Advancement Information Services Specialist, Gretchen Croteau, B.S.
Assistant Director, Donor and Volunteer Relations, Brianne Croteau, B.A.
Assistant Director, Donor and Volunteer Relations, Amy Levan, B.S.
Assistant Director, Donor and Volunteer Relations, Janet Yordy, A.S.
Development Administrative Support Manager, Crystal J. Klase
Donor and Volunteer Relations Manager, Linda K. Reinaker, B.S.

Alumni Relations

Executive Director, Alumni Relations, Joshua L. Grill, M.A.
Senior Associate Director, Alumni Relations, Off-Campus Programs, Kristin Stetler, B.A.
Senior Associate Director, Alumni Relations, On-Campus Programs, Chris Watters, M.B.A.
Associate Director, Alumni Relations for Operations, Kimberly A. Thompson, B.A.
Associate Director, Alumni Relations for Online Engagement, Jamie Donahue, B.S.
Senior Assistant Director, Bucknell Professional Networks, Alumni Relations, Isaac L. Moore, B.S., M.P.A.
Assistant Director, Alumni Relations for Alumni Admissions Programs, Patricia Flannery, M.Ed.
Assistant Director, Alumni Relations for Off-Campus Programs, Todd Leister, B.S.
Assistant Director, Alumni Relations, Off-Campus Programs, Megan L. Shingara, B.A.
Assistant Director, Alumni Relations, On-Campus Programs, Kaitlin C. Wagner, B.A.
Assistant Director, Major Campus Engagements, Heather Dawson, B.S.

Annual Fund

Executive Director, Annual Fund, Lucille M. Tarin, B.S.
Assistant Director, Annual Fund, Ronald A. Marquette, A.A.S.
Assistant Director, Annual Fund Leadership Gifts, Abbey Scheckter, B.A.
Assistant Director, Annual Fund Student Programs, Angela E. Myers
Development Officer, Thaddeus A. Davis, B.A.
Reunion Giving Associate, Annual Fund, Lu Ann Kerstetter
Annual Fund Manager, Grace Ragold, B.A.

Athletics Development

Director of Athletics Development, Thomas E. Harvey, M.S.
Manager of Athletics Development, Cara A. Hanrahan, B.A.

Career Services

Executive Director, Career Services, Pamela Grow Keiser, M.S.
Senior Associate Director, Counseling, Sarah Elizabeth Bell, M.S.
Associate Director, Alumni Career Services, Julee Bertsch, Ph.D.
Associate Director, Program Director Internships, Alison Ordenez, B.S.
Senior Assistant Director, Bucknell Professional Networks, Melissa Gutkowski, M.S.W.
Assistant Director Alumni Career Services, Rachel M. Redmond, M.S.
Assistant Director, Program Director BPIP, Marilyn Shull, M.S.
Assistant Director, Marketing, Megan Wolleben, M.A.

Program Manager for Externships, Emily Dietrich, B.A.
Program Director Recruiting, Megan Adams, B.A.
Pre-Health Professions Adviser, Alison Patterson, Ph.D.
Pre-Law Professions Adviser, Dianne McDonald, J.D.

Gift Planning

Director, Gift Planning, Melissa M. Diehl, B.S.
Associate Director, Gift Planning, Daniel F. Clark, J.D.
Assistant Director, Gift Planning, Karen Flanagan
Gift Planning Officer, Lisa Marquette

Leadership Gifts

Interim Executive Director, Leadership Gifts, Mark Elliott, B.A.
Associate Director, Leadership Gifts, Mary Ann Stanton, B.A.
Senior Regional Director, Leadership Gifts, Molly Butzer, M.S.
Senior Regional Director, Leadership Gifts, Kathleen D. Jameson, Ed.D.
Senior Regional Director, Leadership Gifts, Elizabeth Swank Richer, B.S.
Senior Regional Director, Leadership Gifts, Barbara McGuire Hart Sturges, B.A.
Regional Director, Leadership Gifts, Angela Brouse, B.A.
Regional Director, Leadership Gifts, Barbara G. Martin, J.D.

Parents Fund and Family Programs

Director, Parents Fund and Family Programs, Ann L. DiStefano
Manager, Family Communications, Amy H. Baker
Manager of Family Outreach Programs, Aleece J. Drumm, B.A.

Prospect Research and Management

Director, Prospect Research and Management, Cynthia Janesch, B.S.
Assistant Director, Prospect Research and Management, Ann Benvenuto, M.A., M.F.A.
Assistant Director, Prospect Research and Management, Michelle Imm, M.A.
Assistant Director, Prospect Research and Management, Sarah Kline, M.S.
Assistant Director, Data Acquisition, Joseph Dzwonchyk, B.A.
Development Research Specialist, Bryan Campbell, M.L.I.S.

Library and Information Technology

Vice President for Library and Information Technology, Param Bedi, M.S., M.B.A.

Information Security

Chief Information Security Officer, to be named

Enterprise Systems, Project Management, and Budgets

Chief Technology Officer, Mark E. Yerger, M.B.A.
Director of Enterprise Systems, Kevin C. Willey, M.S.
IT Budget and Procurement Manager, Kelly E. Stover
Associate Director, Project & Initiative Management, Mary Lisa Veloz, B.A.
Project Manager, Susanna K. Jackson, M.S.
Associate Director Technology Infrastructure and User Services, Jennifer M. Harper, A.B.
Systems Integrator - Linux, Ian Wat, B.S.
Systems Integrator, Michael E. Dahlberg, B.S.
Systems Integrator, Lorraine R. Eisenhuth, B.S.
Systems Integrator, Jeremy W. Fertig
Systems Integrator, Dianne D. Guffey
Assistant Director Development, Daniel Mancusi, B.S.
Programmer Analyst, Leonardo Botinelly
Programmer Analyst, Greg Daub, B.S.
Programmer Analyst, Arpita Dev, M.S.
Programmer Analyst, Rita Malick, M.S.
Programmer Analyst, Vincent Evans, B.S.

Assistant Director Operations, Robert Kaleta, B.S.
Database Administrator, Kyle Herb, B.S.
Application Administrator, to be named
Programmer Analyst, Garry L. Miller, B.A.
Support Coordinator, Kirsten Walter, B.S.
Business Intelligence Analyst-Cognos Report Developer, Douglas A. LeBlanc, B.S.
Business Intelligence Analyst-Functional Architect, to be named
Business Intelligence Analyst, Michael Latorre, B.S

Special Collections/University Archives

Head of Special Collections & University Archivist, Isabella O'Neill, M.S.
Assistant University Archivist & Records Management Coordinator, Crystal Matjasic, M.L.S.

Instructional Technology

Director Instructional Technology, Matthew K. Gardzina, M.A.
Assistant Director Instructional Technology, Emily Sherwood, Ph.D.
GIS Specialist, Janine Glathar, M.E.S.
GIS/Web Application Developer, Luyang Ren, M.S.
Instructional Technologist for Students, Debra Cook-Balducci, B.F.A.
Instructional Technology Support Specialist, Leslie D. Harris, Ph.D.
Instructional Technology Video Production Specialist, Brianna Derr, B.A.
Digital Scholarship Coordinator, Diane Jakacki, Ph.D.
CLIR Post-Doctoral Fellow in Digital Scholarship, Carrie Johnston, Ph.D.

Discovery and Access Services

Head of Discovery & Access Services, Daniel Heuer, M.A.
Equipment Services Specialist, Schelly Homan, M.S.Ed.
Access Services Manager, Cami L. Fink, B.S.
Specialist of Cataloging, Acquisition and Metadata Services, to be named

Research Services and Information Literacy

Director Research Services and Information Literacy, Kathleen M. McQuiston, M.S.
Manager Reference/Information Services, Martha Holland, M.A.
Librarian for the Arts & Humanities, Courtney Paddick, M.S., M.A.
Blended Learning Librarian, Jill Hallam-Miller, M.L.S.
Instructional Services Librarian, Nancy Frazier, M.L.S.
Librarian and Outreach Manager, Jason Snyder, M.A., M.L.S.
Librarian for the Sciences and Engineering, James Van Fleet, M.L.S.
Social Sciences Librarian, Carrie Pirmann, M.L.S., M.L.I.S.
Evening Library Services Specialist, Benjamin A. Hoover, M.S.

Technology Infrastructure and User Services

Assistant Chief Technology Officer, John Christopher Weber, B.S.
Director Events Technology Services, George Albert Lincoln III, M.A.
Senior Event Technology Support Specialist, Jeffrey R. Campbell, B.S.
Event Technology Support Specialist, Jesse Greenawalt
Assistant Director Classroom Technology Support, Cynthia A. Ray, B.A.
Classroom and Event Support Specialist, Thomas Carl
Senior Classroom and Event Support Specialist and Project Leader, Richard Pauling
Senior Classroom Technology Support Specialist, Michael R. Pursley, B.A.
Assistant Director Network and Telephony, Dan Malick
Network Administrator, Stephanie Ann Farnsworth, B.S.C.S.
Network Administrator, Guston Bird, M.B.A
Network Administrator, Brandon Seymore, B.S.
Technical Operations Analyst, Harold Kerlin
Telecommunications Specialist and Desk Manager, Peggy Straub
Assistant Director Technology Support, Mary Ann Burkland, M.A.
Manager Technology Desk, Donald "Bud" R. Hiller, M.Ed.
Manager Technology Training Programs, Melissa E. Rycroft, M.A.

Senior Technology Support Specialist, Todd E. Fogle
Senior Technology Support Specialist, Robert Guissanie Jr., B.S.
Technology Support Specialist, Gerald "Jey" Bailey, B.S.
Technology Support Specialist, George M. Casper, B.S.
Technology Support Specialist, Russel C. Eisenhuth
Technology Support Specialist, Jonathan Hagofsky, B.S.
Technology Support Specialist, David B. Kline, B.S.
Technology Support Specialist, Jamie E. Piperberg, B.S.C.S.
Technology Support Specialist, Scott Ritter
Technology Support Specialist, Robert Zorn, M.S.

Enrollment Management

Vice President for Enrollment Management, William T. Conley, M.Ed.
Assistant Vice President for Enrollment Management & Director of Partnerships, Mark D. Davies, M.S.

Admissions

Dean of Admissions, Robert G. Springall, M.Ed.
Senior Associate Dean, Marylyn A. Scott, M.Ed.
Associate Dean, Barbara N. Cassels, M.S.
Associate Dean, Christine M. Findlay, M.S.
Senior Associate Director, Gayle W. Pollock, B.A.
Assistant Director, Information Systems Coordinator, Danielle Kiesinger, B.A.
Associate Director, Jane Daly Seaberg, B.A.
Manager Int'l Student Recruitment, Diva Shrestha, M.S.
Assistant Director, Christopher Clinton, B.S.
Assistant Director, Jenny Kim, M.A.
Assistant Director, Candace Leake, M.Ed.
Associate Director, Ben H. Kavanaugh III, B.A.
Assistant Director, Lauren A. Rambo, B.A.
Admissions Counselor, Molly Mulderrig, B.A.
Admissions Counselor, Alexandra Singer, B.A.

Financial Aid

Director of Financial Aid, Andrea C.A. Leithner Stauffer, B.S.
Associate Director, Jamie A. Lowthert, M.S.Ed.
Associate Director, Raymond M. Randall, M.Ed.
Associate Director, Wendy S. Mahonski, B.A.
Assistant Director, Allison L. Kuhn, B.A.

Communications

Communications

Chief Communications Officer, Andy Hirsch, B.S.

Interim Director of Digital Communications, Ryan LeBreton, B.A.

Director of University Marketing and Web Content, Molly O'Brien-Foelsch, M.A.

Editor, *Bucknell Magazine*, Sherri Kimmel, M.A.

Senior Writer, Matthew Beltz, M.S.

Senior Video and New Media Developer, Steve Gibson

Web Project Manager/Web Support Specialist, Karen Holstead, B.A.

Senior Writer and Assistant Editor, *Bucknell Magazine*, Matthew Hughes, M.A.

Assistant Director for Media Communications, Heather Johns, B.A.

Senior Writer for Admissions Communications, Paula Cogan Myers, M.Ed.

Video Production Specialist, Daniel Nienhuis, M.A.

Web Support Assistant, Ellen Robinson, M.S.

Associate Director of Photography, Brett Simpson, M. Ed.

Web Support Specialist, Jesse Turri, B.S.

Associate Director for University Marketing and Web Content, Christina Masciere Wallace, B.A.

Video and Motion Graphics Designer, Daniel Walsh

Web Support Specialist, Stephanie Zettlemyer, A.A.S.

Publications, Print and Mail

Director, Lisa D. Hoover, A.S.B., B.A.

Assistant Director, Thomas Lydon, B.A.

Graphics and Publications Design Team Leader, Sharon M. Campbell

Graphic Designer, Adrienne L. Beaver, A.A.S.

Graphic Designer, Josie Fertig, B.F.A.

Graphic Designer, Donna L. Glass, B.F.A.

Graphic Designer, Debbie A. Hirsch, A.A.I.

Faculty

Officers of the Faculty

Chair, William Kenny, Professor of Music, Ed.D. Illinois at Urbana-Champaign

Secretary, Gary Steiner, Professor of Philosophy, Ph.D. Yale

Emeriti

Warren Gene Abrahamson II, David Burpee Professor of Plant Genetics, emeritus, Ph.D. Harvard

Carmen Olga Acuña, Associate Professor of Mathematics, emerita, Ph.D. Massachusetts

John Christopher Allen Jr., Professor of Geology, emeritus, Ph.D. Princeton

John Whiting Anderson, Professor of Economics, emeritus, Ph.D. Pennsylvania

Neil Raymond Anderson, Professor of Art, emeritus, M.F.A. Iowa

Owen Thomas Anderson, Professor of Physics, emeritus, Ph.D. Wisconsin

Marianna Mustacchi Archambault, Professor of French, emerita, Ph.D. Pennsylvania

Dennis Baumwoll, Professor of English, emeritus, Ph.D. Oklahoma

Robert Earl Beard, Professor of Russian and Linguistics, emeritus, Ph.D. Michigan

Stephen Fraley Becker, Associate Professor of Physics, emeritus, Ph.D. Rutgers

William Hartshorne Becker, Professor of Religion, emeritus, Ph.D. Harvard

Harry Wallace Blair, Professor of Political Science, emeritus, Ph.D. Duke

Jeffrey Mann Bowen, Associate Professor of Physics, emeritus, Ph.D. North Carolina at Chapel Hill

Robert J. Brungraber, Professor of Civil Engineering, emeritus, Ph.D. Carnegie Mellon

Douglas Keith Candland, Professor of Psychology and Animal Behavior, emeritus, Ph.D. Princeton

David John Cartwright, Professor of Mechanical Engineering, emeritus, Ph.D. Southampton

Maurice Gene Chenoweth, Professor of Political Science, emeritus, Ph.D. Minnesota

John Neale Cooper, Professor of Chemistry, emeritus, Ph.D. California-Berkeley

Edward Cotter, Professor of Geology, emeritus, Ph.D. Princeton

Manuel Delgado, Professor of Spanish, emeritus, Ph.D. Texas at Austin

Mills Fox Edgerton Jr., Professor of Modern Languages and Linguistics, emeritus, Ph.D. Princeton

Richard John Ellis, Professor of Biology, emeritus, Ph.D. California-Berkeley

Nora Giavelli Elze, Assistant Professor of Physical Education, emerita, M.A. Bucknell

Joseph Phineas Fell, John Howard Harris Professor of Philosophy, emeritus, Ph.D. Columbia

Susan Leibowitz Fischer, Professor of Spanish and Comparative Literature, emerita, Ph.D. Duke

David John Crispian Fletcher, Professor of Biology and Animal Behavior, emeritus, Ph.D. Natal

Pauline C. Fletcher, Professor of English, emerita, Ph.D. Rochester
 Owen Robert Floody, Professor of Psychology, emeritus, Ph.D. Rockefeller
 George Fulton Folkers, Professor of German, emeritus, Ph.D. Princeton
 Robert Gainer, Associate Professor of Theatre, emeritus, M.F.A. Yale School of Drama
 John Edward Gale, Associate Professor of French, emeritus, Ph.D. Colorado
 Harry Raphael Garvin, John P. Crozer Professor of English Literature, emeritus, Ph.D. Michigan
 Eugenia Proctor Gerdes, Professor of Psychology and Dean of the College of Arts and Sciences, emerita, Ph.D. Duke
 Thomas C. Greaves, Professor of Anthropology, emeritus, Ph.D. Cornell
 Allan Wilbur Grundstrom, Professor of French and Linguistics, emeritus, Ph.D. Michigan
 Gary Haggard, Professor of Computer Science, emeritus, Ph.D. Purdue
 Michael Edward Hanyak Jr., Professor of Chemical Engineering, emeritus, Ph.D. Pennsylvania
 Jack Edgar Harclerode, Herbert L. Spencer Professor of Biology, emeritus, Ph.D. Pennsylvania State
 William Edward Hauck, Professor of Education, emeritus, Ph.D. Wisconsin
 James Maguire Heath, Associate Professor of Classics, emeritus, Ph.D. Princeton
 Harold Warren Heine, Professor of Chemistry, emeritus, Ph.D. Rutgers
 Mary Armfield Hill, Professor of History and Women's Studies, emerita, Ph.D. McGill
 Stephen Jackson Hill, Professor of Music, emeritus, Ph.D. North Carolina at Chapel Hill
 Daniel Lewis Hoffman, Associate Professor of Biology, emeritus, Ph.D. Washington
 William George Holzberger, Professor of English, emeritus, Ph.D. Northwestern
 Marion Lois Huffines, Professor of German and Linguistics and Associate Vice President for Academic Affairs, emerita, Ph.D. Indiana
 Sidney Irwin Jamieson, Assistant Professor of Physical Education, emeritus, B.S. Cortland State
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 John Murray Kendrick, Professor of Sociology, emeritus, Ph.D. Northwestern
 Jai Bin Kim, Professor of Civil and Environmental Engineering, emeritus, Ph.D. Maryland
 Hong Wha Kim, Professor of Mathematics, emeritus, Ph.D. New York
 John Dermont Kirkland, Professor of History, emeritus, Ph.D. Duke
 Peter Karl Kresl, Professor of Economics and International Relations and Charles P. Vaughan Chair in Economics, emeritus, Ph.D. Texas at Austin
 William Abraham Lasansky, Professor of Art, emeritus, M.F.A. Iowa
 David John Lu, Professor of History and Japanese and East Asian Studies, emeritus, Ph.D. Columbia
 Janet MacGaffey, Associate Professor of Anthropology, emerita, Ph.D. Bryn Mawr
 Madhu Malik, Associate Professor Russian, emerita, Ph.D. Virginia
 Edward John Mastascusa, Professor of Electrical Engineering, emeritus, Ph.D. Carnegie Mellon
 Wayne Francis McDiffett, Professor of Biology, emeritus, Ph.D. Georgia
 Elizabeth Taylor McLaughlin, Associate Professor of English, emerita, Ph.D. Harvard
 Jerud Jonathan Mead, Associate Professor of Computer Science, emeritus, Ph.D. Iowa
 John A. Miller, Professor of Management, emeritus, Ph.D. Rochester
 John William Moore, Professor of Education, emeritus, Ed.D. Pennsylvania State
 Sally Dyer Morrison, Associate Professor of Mathematics, emerita, Ph.D. Rochester
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 John Vincent Murphy, Professor of English, emeritus, Ph.D. Michigan
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 Paul Hideyo Noguchi, Professor of Anthropology and East Asian Studies, emeritus, Ph.D. Pittsburgh
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 Theodore Tucker Orbison, Professor of English, emeritus, Ph.D. Boston
 Karl Watson Patten Jr., Professor of English, emeritus, Ph.D. Boston
 William Austin Payn, Professor of Music, emeritus, D.M.A. West Virginia
 Michael David Payne, Professor of English, emeritus, Ph.D. Oregon
 David Duane Pearson, Associate Professor of Biology, emeritus, Ph.D. Kansas
 John Allen Peeler, Professor of Political Science, emeritus, Ph.D. North Carolina at Chapel Hill
 Richard Joseph Peterec, Professor of Geography and International Relations, emeritus, Ph.D. Columbia
 Herbert August Peterson, Professor of Mechanical Engineering, emeritus, Ph.D. Pennsylvania State
 Charles Claude Pinter, Professor of Mathematics, emeritus, Sc.D. Paris
 James Martin Pommersheim, Professor of Chemical Engineering, emeritus, Ph.D. Pittsburgh
 LaVonne Camille Poteet, Associate Professor of Spanish, emerita, Ph.D. Bryn Mawr College
 Anne Wang Pusey, Adjunct Associate Professor of East Asian Studies, emerita, M.A., M.S.B.A. Bucknell
 James Reeve Pusey, Associate Professor of East Asian Studies, emeritus, Ph.D. Harvard
 Craig Anthony Reynolds, Associate Professor of Physical Education, emeritus, M.Ed. Pittsburgh
 Thomas Paul Rich, Professor of Mechanical Engineering and Dean, College of Engineering, emeritus, Ph.D. Lehigh
 Rosalyn Ann Richards, Professor of Art, emerita, M.F.A. Yale
 Charles Arthur Root, Professor of Chemistry, emeritus, Ph.D. Ohio State
 Charles Melvin Sackrey, Associate Professor of Economics, emeritus, Ph.D. Texas at Austin
 Marc R. Schloss, Associate Professor of Anthropology, emeritus, Ph.D. Virginia

Allen Ross Schweinsberg, Professor of Mathematics, emeritus, Ph.D. Pittsburgh
 Jean Ann Shackelford, Professor of Economics, emerita, Ph.D. Kentucky
 Paul Shrivastava, Professor of Management, emeritus, Ph.D. Pittsburgh
 Matthew Silberman, Professor of Sociology, emeritus, Ph.D. Michigan
 Howard Smith, Professor of Mathematics, emeritus, Ph.D. Wales
 Gary Allen Sojka, Professor of Biology, emeritus, and President, emeritus, Ph.D. Purdue
 Stephen Chris Stamos Jr., Professor of International Relations, emeritus, Ph.D. Antioch
 Lois A. Svard, Professor of Music, emerita, D.M.A. Peabody Institute of Johns Hopkins
 Timothy William Sweeney, Professor of Management, emeritus, Ph.D. Pennsylvania State
 Robert Love Taylor Jr., Professor of English, emeritus, Ph.D. Ohio
 John Tonzetich, Associate Professor of Biology, emeritus, Ph.D. Duke
 Thomas Allen Travis, Professor of Political Science and International Relations, emeritus, Ph.D. Syracuse
 Darina Judith Tuhy, Associate Professor of Music, emerita, Mus.M. Michigan
 James Harvey Turnure, Samuel H. Kress Professor of Art History, emeritus, Ph.D. Princeton
 Martha Helen Verbrugge, Professor of History, emerita, Ph.D. Harvard
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 Richard Denham Waller, Associate Professor of History and International Relations, emeritus, Ph.D. Cambridge
 Thomas Everett Warner, Professor of Music, emeritus, Ph.D. New York
 Hilbourne Alban Watson, Professor of International Relations, emeritus, Ph.D. Howard
 Nancy Coughlin Weida, Associate Professor of Management, emerita, Ph.D. Delaware
 Patricia Ann Wenner, Associate Professor of Computer Science, emerita, Sc.D. George Washington
 Mary Martens Wetzel, Adjunct Assistant Professor of Education, emerita, M.S. Bucknell University
 John Stewart Wheatcroft, Professor of English, emeritus, Ph.D. Rutgers
 David Howard Wilder, Assistant Professor of Psychology and Director of Psychological Services, emeritus, Ph.D. Boston
 Bennett Rufus Willeford, Professor of Chemistry, emeritus, Ph.D. Wisconsin
 Larry Myrle Younkin, Professor of Civil Engineering, emeritus, Ph.D. Virginia Polytechnic Institute and State University
 James Norman Zaiser, Professor of Mechanical Engineering, emeritus, Ph.D. Delaware

Active Faculty

The date in parentheses following each name is the year of initial appointment to the Bucknell faculty. Listings are accurate as of the publication deadline of this catalog.

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 Maurice Felix Aburdene (1981), Professor of Electrical Engineering and Computer Science, Ph.D. Connecticut
 Gregory Thomas Adams (1987), Professor of Mathematics, Ph.D. Indiana
 Douglas Edward Allen (1995), Associate Professor of Management, Ph.D. Pennsylvania State
 Katelyn Allers (2009), Associate Professor of Physics and Astronomy, Ph.D. Texas at Austin
 Karen Altendorf (2013), Visiting Assistant Professor of Sociology and Anthropology, Ph.D. Oklahoma State
 Matthew Amthor (2012), Assistant Professor of Physics, Ph.D. Michigan State
 Christiane Dagmar Andersson (1996), Professor of Art, Ph.D. Stanford
 Marcellus Andrews (2013), Professor of Economics, Ph.D. Yale
 Nino Antadze (2015), Visiting Assistant Professor of Environmental Studies, University of Waterloo
 Maria Anita Antonaccio (1994), Professor of Religion, Ph.D. Chicago
 Elizabeth L. Armstrong (1999), Adjunct Associate Professor of East Asian Studies, M.A. Indiana
 Philip Asare (2015), Assistant Professor of Electrical and Computer Engineering, Ph.D., Virginia
 Andrew W. Baggett (2016), Visiting Assistant Professor of Chemistry, Ph.D. Boston College
 Matthew D. Bailey (2007), Howard I. Scott Professor of Management, Ph.D. Michigan
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 Ashli Baker (2013), Assistant Professor of Classics, Ph.D. Washington
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 Jonathan Bean (2013), Assistant Professor of Markets, Innovation and Design, Ph.D. California-Berkeley
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Catherine Cymone Fourshey (2015), Associate Professor and the John D. MacArthur Chair of History and International Relations, Ph.D. California, Los Angeles
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 John C. Hunter (2000), Associate Professor of Comparative Humanities, Ph.D. Duke
 Anjalee Deshpande Hutchinson (2008), Associate Professor of Theatre and Dance, M.F.A. Northwestern
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 Daniel Clair Hyde (1975), Associate Professor of Computer Science, Ph.D. Illinois at Urbana-Champaign
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 Ann Myatt James (2015), Visiting Assistant Professor of Geography, Ph.D. Pennsylvania State
 Michael R. James (1999), Associate Professor of Political Science, Ph.D. Duke
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 Agnieszka Jasinska (2014), Visiting Assistant Professor of Psychology, Ph.D. Michigan
 David Edward Jensen (1986), Associate Professor of Management, Ph.D. Pennsylvania State
 Joseph S. Johnson (2014), Visiting Assistant Professor of Biology, Ph.D. Kentucky
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 Michelle C. Johnson (2002), Associate Professor of Sociology, Ph.D. Illinois at Urbana-Champaign
 Janet Duncan Jones (1989), Professor of Classics, Ph.D. North Carolina at Chapel Hill
 Nicholas R. Jones (2015), Assistant Professor of Spanish, Ph.D. New York
 Stephen D. Jordan (2003), Associate Professor of Biology, Ph.D. Connecticut
 Peter G. Judge (2000), Professor of Psychology and Animal Behavior, Ph.D. Georgia
 Amal Kabalana (2014), Assistant Professor of Electrical and Computer Engineering, Ph.D. Villanova
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 William D. Kerber (2007), Assistant Professor of Chemistry, Ph.D. North Carolina at Chapel Hill
 Charles J. Kim (2005), Associate Professor of Mechanical Engineering, Ph.D. Michigan
 Brian R. King (2010), Assistant Professor of Computer Science, Ph.D. State University of New York, Albany
 William Emmett King Jr. (1983), Professor of Chemical and Biomedical Engineering, Ph.D. Pennsylvania
 Angèle M. Kingué (1988), Professor of French and Francophone Studies, Ph.D. Pennsylvania State
 Thomas Christopher Kinnaman (1994), Professor of Economics, Ph.D. Virginia
 Carl Scott Kirby (1993), Professor of Geology, Ph.D. Virginia Polytechnic Institute and State University
 Charles William Knisely (1990), Professor of Mechanical Engineering, Ph.D. Lehigh
 Janet Therese Knoedler (1992), Professor of Economics, Ph.D. Tennessee
 Kelly Knox (2003), Associate Professor of Theatre and Dance, M.F.A. Washington
 R. Craig Kochel (1990), Professor of Geology, Ph.D. Texas at Austin
 Jennifer F. Kosmin (2015), Assistant Professor of History, Ph.D. North Carolina at Chapel Hill
 Sally Koutsoliotas (1996), Professor of Physics, Ph.D. Melbourne
 Richard James Kozick (1993), Professor of Electrical Engineering, Ph.D. Pennsylvania
 David Kristjanson-Gural (2002), Associate Professor of Economics, Ph.D. Massachusetts at Amherst
 Gregory Alan Krohn (1983), Associate Professor of Economics, Ph.D. Wisconsin
 Michael R. Krout (2012), Assistant Professor of Chemistry, Ph.D. California Institute of Technology
 Gregory P. Krukonis (2015), Visiting Assistant Professor of Biology, Ph.D. Arizona
 Bernhard Kuhn (2000), Associate Professor of Italian, Ph.D. Otto-Friedrich-Universität, Bamberg, Germany
 Edwin Fremont Ladd (1997), Professor of Physics, Ph.D. Harvard
 Jean Lamont (2013), Visiting Assistant Professor of Psychology, Ph.D. Pennsylvania State
 Jeffrey Langford (2013), Assistant Professor of Mathematics, Ph.D. Washington-St. Louis
 Stephanie Larson (2002), Associate Professor of Classics, Ph.D. Texas at Austin

James E. Lavine (2001), Professor of Linguistics and Ruth Everett Sierzega Chair in Linguistics, Ph.D. Princeton
Ludmila S. Lavine (2005), Associate Professor of Russian, Ph.D. Princeton
Katarzyna Lecky (2015), Assistant Professor of English, Ph.D. Colorado at Boulder
Jason Leddington (2008), Associate Professor of Philosophy, Ph.D. Southern California
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Linden Forbes Lewis (1988, 1991), Professor of Sociology and Associate Dean of Social Sciences, Ph.D. American
Martin Kenneth Ligare (1988), Associate Professor of Physics, Ph.D. Columbia
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Sheila M. Lintott (2006), Associate Professor of Philosophy and John Howard Harris Chair in Philosophy, Ph.D. Wisconsin
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 Berhanu Nega (2008), Associate Professor of Economics, Ph.D. New School for Social Research
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Military Science Program

Major Michael Kavadias, M.A. Webster University

Athletics and Recreation

Director, John P. Hardt, J.D.
Deputy Director, Timothy N. Pavlechko, M.S.
Coordinator of Fitness and Conditioning, Jerry L. Shreck, B.A.
Fitness and Strength Trainer, Cassandra Baier, M.S.
Strength and Conditioning Assistant, John Field, M.S.
Assistant Strength and Conditioning Coach, Cody Miller, B.S.
Senior Associate Director/Senior Woman Administrator, Maisha Kelly, M.Ed.
Senior Associate Director for External Affairs and Bison Club, Todd A. Newcomb, B.A.
Director of Athletics Development, Thomas Harvey, M.S.
Manager of Athletics Development, Cara Hanrahan, B.A.
Manager of Athletics Development, to be named
Associate Director for Athletic Communications, Jonathan M. Terry, B.A.
Associate Director of Athletic Communications, Todd Merriett, B.S.
Assistant Director Athletic Communications, Mathew Jackson, B.A.
Athletic Communications Assistant, Matthew Torres, M.A.
Radio and TV Coordinator and Marketing Specialist, Douglas Birdsong, B.A.
Associate Director for Business and Team Services, Terrie Grieb, B.S.
Associate Director for Compliance and Student Services, Daniel Isaf, J.D.
Coordinator of Compliance, Annamarie Ammen, J.D.
Associate Director for Facilities and Operations, Chad Mason, M.B.A.
Assistant Director for Events, Leslie Moore, M.S.
Associate Director for Recreation Services, Karen Landis, M.S.
Assistant Director for Recreation Services, Laurel Kopecky, B.S.
Program Coordinator Late Night KLARC/Special Events, Matthew Seibert, B.S.
Head Men's Club-Varsity Crew Coach, Dan Wolleben, B.A.
Assistant Men's Club-Varsity Crew Coach, Kyle Dowd, M.Ed.
Associate Director for Sports Medicine, Mark V. Keppler, M.S.
Associate Athletic Trainer, Kristin Klinger, M.A.
Assistant Athletic Trainer, Brendan Abbey, M.S.
Assistant Athletic Trainer, Kaiti Hager, M.S.
Assistant Athletic Trainer, Kaitlin Kelly, B.S.
Assistant Athletic Trainer, Emily Madrak, M.S.
Assistant Athletic Trainer, Aya Morioka, M.S.
Athletic Training Clinical Assistant, Cheri Orndorf, M.Ed.
Assistant Athletic Trainer, Pam Staso, M.A.
Assistant Athletic Trainer, Fafa Tsikata, B.S.
Assistant Director of Athletics-Coordinator of Aquatics, Pam Arnold, M.S.

Head Baseball Coach, Scott Heather, B.S.
Assistant Baseball Coach, Jason Neitz, B.S.
Head Men's Basketball Coach, Nathan Davis, B.A.
Assistant Men's Basketball Coach, Paul Harrison, J.D.
Assistant Men's Basketball Coach, John Griffin, B.A.
Assistant Men's Basketball Coach, Ryan Ayers, B.B.A.
Manager Men's Basketball Operations, Joe Meehan, B. A.

Head Women's Basketball Coach, Aaron Rousell, M.A.
Assistant Women's Basketball Coach, Mike Lane, B.B.A.
Assistant Women's Basketball Coach, Carissa Nord, M.S.
Assistant Women's Basketball Coach, Martina Wood, M.A.
Manager Women's Basketball Operations, Abby Jump, B.S.
Head Cross Country and Track Coach, Kevin M. Donner, B.S.
Assistant Cross Country and Track Coach, Richard Alexander, M.B.A.
Assistant Cross Country and Track Coach, Bryan Delsite, B.S.
Assistant Cross Country and Track Coach, Daniel Frake, M.S.
Assistant Cross Country and Track Coach, Amy Mantush, M.S.
Head Field Hockey Coach, Jeremy Cook, B.S.
Assistant Field Hockey Coach, Hannah Allison, B.S.
Assistant Field Hockey Coach, Hannah Richard, B.S.
Head Football Coach, Joseph Susan Jr., M.S.
Assistant Football Coach, Matthew Borich, B.A.
Assistant Football Coach, John Bowes, B.S.B.A.
Assistant Football Coach, Brad Fordyce, M.S.
Assistant Football Coach, Rick Jackson, M.S.
Assistant Football Coach, Ronald Montgomery, B.A.
Assistant Football Coach, Mike O'Connor, B.A.
Assistant Football Coach, Darnell Stapleton, B.A.
Assistant Football Coach, Eric Wicks, B.S.
Director of Football Operations, Tim Wait, B.S.
Head Men's Golf Coach, Michael Binney, M.A.
Head Women's Golf Coach, Kevin Ronald Jamieson, B.A.
Men's Lacrosse Coach, Frank Fedorjaka, M.S.
Assistant Men's Lacrosse Coach, Joe Conner, M.B.A.
Assistant Men's Lacrosse Coach, Nicholas Marks, B.A.
Head Women's Lacrosse Coach, Randall Swope, B.S.
Assistant Women's Lacrosse Coach, Jenna Petrucelli, B.S.
Assistant Women's Lacrosse Coach, Frankie Caridi, B.A.
Head Women's Rowing Coach, Stephen R. Kish, B.A.
Assistant Women's Rowing Coach, Peter Morgan, M.F.A.
Assistant Women's Rowing Coach, Devon Carroll, M.A.
Assistant Women's Rowing Coach, Abby Klicker, B.A.
Men's Soccer Coach, Brendan Nash, M.Ed.
Assistant Men's Soccer Coach, Patrick Long, M.S.
Head Women's Soccer Coach, Kelly Kuss, M.Ed.
Assistant Women's Soccer Coach, David Madsen, M.S.
Assistant Women's Soccer Coach, Leigh Howard, M.A.
Head Women's Softball Coach, Courtney Foster, B.A.
Assistant Softball Coach, Marissa Myers, B.S.
Assistant Softball Coach, Brie Carmack, B.S.
Head Men's and Women's Swimming Coach, Daniel Schinnerer, B.A.
Assistant Men's and Women's Swimming Coach, Mike Ginder, M.P.S.
Assistant Men's and Women's Swimming Coach, Kristine Mann, B.A.
Assistant Diving Coach, Errol Carter, B.S.
Head Men's Tennis Coach, Craig Schwartz, B.B.A.
Head Women's Tennis Coach/Coordinator of Tennis, Rebecca Ann Helt, B.A.
Volleyball Coach, Anna Allison, B.S.
Assistant Women's Volleyball Coach, Ryan Adams, B.A.
Assistant Women's Volleyball Coach, Eric Ragan, B.A.
Head Men's and Women's Water Polo Coach, John McBride, B.A.
Assistant Men's and Women's Water Polo Coach, Bret Lathrope, B.A.
Head Wrestling Coach, Daniel Wirnsberger, B.S.
Assistant Wrestling Coach, James Gibson, M.S.
Assistant Wrestling Coach, Kevin LeValley, M.Ed.

ABOUT THE CATALOG

- Abbreviations and Codes (p. 315)
- Previous Catalogs (p. 316)

Abbreviations and Codes

Code	Subject
ACFM	Accounting and Financial Management
AFST	Africana Studies
ANBE	Animal Behavior
ANTH	Anthropology
ARBC	Arabic Studies
ARST	Studio Art
ARTH	Art History
ASTR	Astronomy
BICH	Cell Biology/Biochemistry
BIOL	Biology
BMEG	Biomedical Engineering
CEEG	Civil and Environmental Engineering
CHEG	Chemical Engineering
CHEM	Chemistry
CHIN	Chinese Language
CLAS	Classics and Ancient Mediterranean Studies
COLL	College Major
CSCI	Computer Science
CSEG	Computer Science and Engineering
DANC	Dance
DLCL	Languages, Cultures and Linguistics
EAST	East Asian Studies
ECEG	Electrical and Computer Engineering
ECMA	Interdisciplinary Studies in Economics and Mathematics
ECON	Economics
EDUC	Education
ENCW	Creative Writing
ENFS	Film/Media Studies
ENGR	Engineering
ENLS	Literary Studies
ENST	Environmental Studies
FOUN	Foundation Seminar
FREN	French and Francophone Studies
GEOG	Geography
GEOL	Geology and Environmental Geosciences
GLBM	Global Management
GREK	Greek
GRMN	German Studies
HIST	History
HUMN	Comparative Humanities
IDPT	Interdepartmental
IREL	International Relations
ITAL	Italian Studies
JAPN	Japanese Language

LAMS	Latin American Studies
LATN	Latin
LING	Linguistics
MATH	Mathematics
MECH	Mechanical Engineering
MGMT	School of Management
MIDE	Markets, Innovation and Design
MILS	Military Science
MSUS	Managing for Sustainability
MUSC	Music
NDPT	Non-departmental
NEUR	Neuroscience
NTST	Nontraditional Study
OCST	Off-campus Studies
PHAS	Physics and Astronomy
PHIL	Philosophy
PHYS	Physics
POLS	Political Science
PSYC	Psychology
RELI	Religious Studies
RESC	Residential College
RUSS	Russian Studies
SIGN	Sign Language, American
SOCI	Sociology
SPAN	Spanish
THEA	Theatre
THDN	Theatre and Dance
UNIV	University Course
WMST	Women's and Gender Studies

Courses numbered below 200 are elementary and introductory courses; those numbered from 200 to 299 are more advanced, usually based upon prerequisites fulfilled either in secondary school or in college; courses numbered 300 and above are advanced courses usually having prerequisites at the college level.

Previous Catalogs

Previous years can be downloaded below.

2015-2016 Course Catalog (<http://coursecatalog.bucknell.edu/pdf/2015-16.pdf>) for the Class of 2019 (5,230 kb); archived html available here (<http://coursecatalog.bucknell.edu/archive/2015-2016>).

2014-2015 Course Catalog (<http://coursecatalog.bucknell.edu/pdf/2014-15.pdf>) for the Class of 2018 (5,230 kb); archived html available here (<http://coursecatalog.bucknell.edu/archive/2014-2015>).

2013-2014 Course Catalog (https://www.bucknell.edu/Documents/catalog/Catalog13_14.pdf) for the Class of 2017 (1,765 kb)

2012-2013 Course Catalog (https://www.bucknell.edu/Documents/catalog/Catalog12_13.pdf) for the Class of 2016 (1,588 kb)

2011-2012 Course Catalog (https://www.bucknell.edu/Documents/catalog/Catalog11_12.pdf) for the Class of 2015 (2,094 kb)

2010-2011 Course Catalog (https://www.bucknell.edu/Documents/catalog/Catalog10_11.pdf) for the Class of 2014 (1,636 kb)

2009-2010 Course Catalog (https://www.bucknell.edu/Documents/catalog/Catalog09_10.pdf) for the Class of 2013 (1,700 kb)

2008-2009 Course Catalog (<https://www.bucknell.edu/documents/catalog/BucknellCatalog08-09.pdf>) for the Class of 2012 (1,517 kb)

2007-2008 Course Catalog (<https://www.bucknell.edu/documents/catalog/BucknellCatalog07-08.pdf>) for the Class of 2011 (1,618 kb)

2006-2007 Course Catalog (<https://www.bucknell.edu/documents/catalog/BucknellCatalog06-07.pdf>) for the Class of 2010 (1,712 kb)

2005-2006 Course Catalog (<https://www.bucknell.edu/documents/catalog/BucknellCatalog05-06.pdf>) for the Class of 2009 (1,581 kb)

COURSE DESCRIPTIONS

Acct & Financial Management (ACFM)

ACFM 220. Business Law I. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

Introduction to business law using lecture and case method. Topics include contracts, the Uniform Commercial Code, agency, and business structures. Not open to first-year students.

ACFM 221. Business Law II. 1 Credit.

Offered Alternating Spring Semester; Lecture hours:3

Analysis of the Uniform Commercial Code in the area of sales and commercial paper; the law of agency, partnerships, and corporations. Prerequisite: ACFM 220.

ACFM 261. Foundations of Accounting and Financial Management II. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Other:1

Covers general purpose financial statements, the theoretical framework that underlies the measurement of income, and asset and liability valuation. Prerequisite: permission of instructor.

ACFM 310. Independent Study in Accounting and Financial Management. .5-2 Credits.

Offered Either Fall or Spring; Lecture hours:Varies; Repeatable

Individual study or projects, supervised by instructor. Prerequisite: permission of the instructor.

ACFM 311. Teaching Assistant in Accounting and Financial Management. .5-1 Credits.

Offered Occasionally; Lecture hours:Varies

Explores pedagogical methodologies and tools, including the development of a deeper understanding of topics in accounting and finance. Permission only course for ACFM majors who have taken MGMT 200. Prerequisite: permission of the instructor.

ACFM 315. Special Topics in Accounting and Financial Management. .5-1 Credits.

Offered Either Fall or Spring; Lecture hours:Varies; Repeatable

A seminar on selected topics in accounting and financial management. Prerequisite: permission of the instructor.

ACFM 340. Business Analytics and Financial Modeling. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:1

Decision making of individuals and groups in organizations, emphasizing the organization's financial dimension. Topics include linear and nonlinear optimization with applications in finance and accounting, fundamentals of portfolio and risk management, and the application of Monte Carlo methods to the pricing of financial derivatives.

ACFM 351. Intermediate Accounting and Financial Management I. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Other:1

Accounting theory and practice applicable to income determination and asset valuation. Develops students' understanding of the accounting and financial reporting environment. Prerequisite: ACFM 261.

ACFM 352. Intermediate Accounting and Financial Management II. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:1

A continuation of ACFM 351. Topics include: investments, debt, leases, pensions, deferred taxes, EPS, equity, and cash flows. Prerequisite: permission of instructor.

ACFM 353. Advanced Accounting. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:1

Accounting theory and practice applicable to business combinations and additional advanced topics related to financial reporting. Prerequisite: ACFM 352 or permission of the instructor.

ACFM 354. Tax Accounting I. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Other:2

Survey of federal income taxes with emphasis on individual tax law, practice, and planning. Prerequisite: junior or senior status or permission of the instructor.

ACFM 355. Tax Accounting II. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3,Other:2

Advanced topics in federal income, gift and estate taxation, with primary emphasis on corporate and pass-through entity tax law, practice, and planning. Prerequisite: ACFM 354.

ACFM 357. Auditing and Assurance. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:1

Most CPA track students head to entry level positions as auditors in public accounting firms. ACFM 357 helps students develop a strong foundation for quality professional judgments to support their future practice of auditing by examining professional and ethical standards and the audit process.

ACFM 358. Computer and Forensic Auditing. .5 Credits.**Offered Spring Semester Only; Lecture hours:2**

Introduction to forensic accounting and auditing. Topics include legal fundamentals; forensic tools and techniques; financial statement fraud; employee, vendor, and other fraud against the organization; tax fraud; bankruptcy, divorce, and identity theft; organized crime and terrorism investigations; business valuation.

ACFM 359. Advanced Seminar in Accounting. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3,Other:1**

An integrative seminar offered once each academic year in fulfillment of the Culminating Experience requirement for all ACFM majors in the CPA track. The course integrates the following disciplinary topics: SEC Regulation; Financial Analysis; Probability and Statistics; Macroeconomics; Psychology; Managerial Finance; Environmental Ethics; Personal Finance; and Crisis Management.

ACFM 365. Advanced Managerial and Cost Accounting. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1**

Examines managerial accounting and cost behavior, specifically, how product cost information is recorded, reported, analyzed and used by managers in decision making. Prerequisite: ACFM 261.

ACFM 370. Corporate Finance. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Concepts, principles, and recent innovations in corporate finance: risk and return, valuation, capital budgeting and structure, dividend policy, financial planning, risk management. Crosslisted as MGMT 370. Prerequisite: MGMT 200. Not open to students who have taken MGMT 203.

ACFM 371. Valuation. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Other:1**

Introduction to fundamental corporate valuation; using reported accounting data then applying tools and techniques to derive the measurements utilized in corporate valuation. The course focuses on valuing the equity securities of publicly-traded companies, as well as exploring the valuation of debt securities and exchange-traded options. Prerequisites: ACFM 370.

ACFM 372. Advanced Corporate Finance. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Students integrate principles and strategies from accounting, statistics, finance, and economics to begin to understand complex financial topics including mergers and acquisitions, valuation, financing, risk management, and corporate governance. Students will also draw from psychology, history, economics, and other disciplines to understand and model the behavior of financial markets.

ACFM 373. Applied Portfolio Management. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Other:1**

Blends portfolio theory with the practicalities of developing and implementing an investment policy, identifying investor objectives and constraints, and evaluating portfolio performance. Prerequisite: ACFM 377.

ACFM 375. Student Managed Investment Fund I. 0 Credits.**Offered Fall Semester Only; Lecture hours:3,Other:1**

The first course of a two semester experiential learning exercise in which students manage a real dollar investment portfolio. Prerequisites: ACFM 377 and permission of the instructor.

ACFM 377. Investments. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Principles of investment practice and theory. Emphasis on the fundamentals of intangible investments (equities, debt and derivative instruments). Prerequisites: MGMT 102 and ACFM 370 or permission of the instructor.

ACFM 378. Investment Banking. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An economic, historical, and social perspective on the industry from its origin to the present with emphasis on current practices. Prerequisite: junior/senior economics or BSBA majors; others by permission.

ACFM 379. Practical Philanthropy. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Blends the academic study of philanthropy with practical experience by running the granting side of a private foundation; includes a service learning project.

ACFM 380. Quantitative Finance. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Explores analytical techniques used in the finance industry to model, price, and analyze financial derivatives. Prerequisites: ACFM 340, ACFM 377, and calculus.

ACFM 390. Honors Course in Accounting and Financial Management. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Special and independent studies for Accounting and Financial Management majors selected under guidelines of the school and the University Honors Council. Honors thesis required. Prerequisites: nomination by the school and permission of the instructor.

ACFM 391. The Mass Investing Society. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Traces how the United States has become an "equity nation" where most citizens own common stock. Also explores pivotal moments in stock market history.

ACFM 476. Student Managed Investment Fund II. 2 Credits.**Offered Spring Semester Only; Lecture hours:3,Other:1**

The second course of a two semester portfolio management course in which students manage a real dollar investment portfolio. Prerequisite: ACFM 375 and permission of the instructor.

Africana Studies (AFST)

AFST 105. Jazz Dance Technique I. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:3**

Beginning level course on jazz as an American vernacular dance form emphasizing its roots in African and Latin cultural rhythms, as well as contemporary technique. Crosslisted as DANC 105.

AFST 199. Introduction to Africana Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

The course introduces students to concepts, theories, and debates of the vibrant discipline of Africana Studies. It surveys major themes, questions, concerns, and events of African, African American, and other African diasporic communities. The course examines the making of the modern world through the lens of black global experience.

AFST 250. Approaches to Africana Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

This course will provide students with an introduction to the key intellectual approaches specific to the multiple disciplines that constitute Africana Studies. The course instruction will be provided by an instructor of record as well as an assemblage of faculty who have expertise in the approaches to Africana Studies.

AFST 266. Black Africans in the Hispanic Black Atlantic: Then and Now. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the variety of artistic, cultural, historical, and literary representations of black Africans and their descendants across the Spanish-speaking world, Africa, and the variety of Afro-Latina/o communities of the United States. Crosslisted as SPAN 266.

AFST 274. Africa and International Relations in Historical Perspective. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

From popular culture: music, film, fashion to digital technologies: cell phones, computers, fit-bits, and GOOGLE-glass to our food: morning coffee, sugar, and spices, we rely on African ideas and resources. Through novels, films, and scholarly articles we examine how International Relations across Africa and with Africa matter in our lives. Crosslisted as Hist 274 and IREL 274.

AFST 399. Independent Study. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4; Repeatable**

Individual study or project, supervised by instructor. Prerequisite: permission of the instructor.

Animal Behavior (ANBE)

ANBE 142. Introduction to Neuroethology. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:1**

This introductory biology course explores the science of neuroethology, a discipline that combines the study of animal behavior and study of neuroscience. This class is appropriate for non-science majors who are interested in learning about animal behavior. Crosslisted as BIOL 142 and NEUR 142.

ANBE 266. Animal Behavior. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

A survey of important theories, issues, and empirical techniques in the interdisciplinary field of animal behavior emphasizing both proximate and ultimate mechanisms and explanations for behavior. Crosslisted as BIOL 266 and PSYC 266.

ANBE 296. Research Methods in Animal Behavior. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; May require dissection or live animal experimentation**

Laboratory and/or field research to accompany ANBE 266, BIOL 266, or PSYC 266. Prerequisites: PSYC 215 or MATH 216, PSYC 216 or BIOL 205 and prerequisite or corequisite ANBE 266, BIOL 266, or PSYC 266. Crosslisted as PSYC 296.

ANBE 2NT. Animal Behavior Non-traditional Study. .5-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies; Repeatable**

Non-traditional course in Animal Behavior. Prerequisite: permission of the instructor.

ANBE 314. Amphibian Biology and Conservation. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:3**

The biology of amphibians, including classification, physiology, reproduction, ecology, evolution, and conservation. Laboratory section will include identification of amphibians and field work to identify conservation issues surrounding local amphibian populations. Prerequisites: BIOL 206, BIOL 208 and permission of the instructor. Crosslisted as BIOL 314 and BIOL 614 and ANBE 614.

ANBE 319. Topics in Animal Behavior. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Occasional seminars on selected topics of current interest in animal behavior. Prerequisites: ANBE 266, BIOL 266, or PSYC 266, junior or senior status and permission of the instructor. Crosslisted as ANBE 619.

ANBE 320. Advanced Topics in Animal Behavior. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Culminating Experience seminar for senior animal behavior majors covering selected topics of current interest in animal behavior. Crosslisted as ANBE 620. Prerequisites: senior animal behavior major status and permission of the instructor.

ANBE 321. Behavioral Ecology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The consideration of behavioral adaptations to various ecological situations. Topics include habitat choice, foraging behavior, defenses against predation, mate choice, and brood care. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as BIOL 321 and BIOL 621 and ANBE 621.

ANBE 341. Evolution. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of evolutionary processes, phenomena, and mechanisms. Topics covered may include natural selection, sexual selection, adaptation, evolutionary constraints, speciation, evolution and development, coevolution, behavioral evolution, and macroevolution. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as ANBE 641 and BIOL 341 and BIOL 641.

ANBE 342. Neuroethology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A course that integrates neurobiology and behavior in natural contexts. Emphasis on signal detection, recognition, discrimination, localization, orientation, and the control of complex acts. Neuronal and hormonal mechanisms, ontogeny and evolution of behavior will be considered. Prerequisites: BIOL 206, BIOL 208 and permission of the instructor. Crosslisted as ANBE 342 and ANBE 642 and BIOL 642.

ANBE 354. Tropical Ecology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Introduction to tropical ecology including life history strategies of vertebrates and invertebrates, biodiversity management and conservation. Emphasis on class and individual projects, data collection, and journal keeping. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as ANBE 654 and BIOL 354 and BIOL 654.

ANBE 355. Social Insects. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:2; May require dissection or live animal experimentation**

Evolution and genetics of social behavior, caste, communication in foraging and colony defense, queen and worker control over reproduction, social homeostasis, and population dynamics. Occasionally may be taught as a laboratory science. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as BIOL 355. Juniors and seniors only.

ANBE 357. Ornithology. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:3**

The biology of birds, including evolution, behavior, anatomy, physiology, ecology, and conservation; lab trips focus on identification of birds in the field. Prerequisites: BIOL 206, BIOL 208 and permission of the instructor. Crosslisted as ANBE 657 and BIOL 357 and BIOL 657.

ANBE 370. Primate Behavior and Ecology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; May require dissection or live animal experimentation**

Introduction to research on prosimians, monkeys, and apes with emphasis on the evolutionary origin of diversity, habitat use, social structure, social behavior, and cognitive abilities. Prerequisites: BIOL 122 or BIOL 208 or ANBE 266 or BIOL 266 or PSYC 266 and permission of the instructor. Crosslisted as ANBE 670 and BIOL 370 and BIOL 670 and PSYC 370 and PSYC 670.

ANBE 371. Primate Cognition. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3; May require dissection or live animal experimentation**

An investigation into the cognitive abilities and capacities of nonhuman primates emphasizing a comparative perspective. Prerequisites: ANBE 266 or BIOL 266 or PSYC 266 and permission of the instructor. Crosslisted as ANBE 671 and PSYC 371 and PSYC 671.

ANBE 372. Comparative Cognition. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Advanced seminar exploring cognition and behavior from evolutionary and comparative perspectives. Topics will include social behavior, memory, communication, spatial cognition, learning, and meta-cognition. Prerequisites: PSYC 266 or ANBE 266, and permission of the instructor. Crosslisted as PSYC 372 and PSYC 672 and ANBE 672.

ANBE 391. Research. .5-1 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies; Repeatable; May require dissection or live animal experimentation
Independent research, with faculty supervision, in the study of animal behavior. Crosslisted as ANBE 691. Prerequisite: permission of the instructor.

ANBE 399. Senior Thesis. 1 Credit.

Offered Fall, Spring, Summer; Lecture hours:2,Other:10; Repeatable; May require dissection or live animal experimentation
Original research leading to a thesis presentation on a topic related to the study of animal behavior. Prerequisite: permission of the instructor.

ANBE 3NT. Animal Behavior Non-traditional Study. 1-2 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies
Non-traditional study in Animal Behavior. Prerequisite: permission of the instructor.

Anthropology (ANTH)

ANTH 109. Introduction to Cultural Anthropology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3
Nature and scope of the field: method and theory, institutions of human beings in cross-cultural perspective, case studies.

ANTH 200. Urban Anthropology. 1 Credit.

Offered Fall Semester Only; Lecture hours:3
Anthropological perspective and the study of the city; problems of methodology, comparative urbanism, case studies, culture of poverty.

ANTH 201. Field Research in Local Communities. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3
Participant-observation, interviewing, and other field research methods. Students will devise and conduct their own ethnographic research projects in a local community. Crosslisted as SOCI 201.

ANTH 202. Rainforests and Ecopolitics in Latin America. 1 Credit.

Offered Spring Semester Only; Lecture hours:3
Focusing on Amazonia as a key region in global environmental politics, the course examines climate policy debates and recent shifts in global environmentalism. Crosslisted as LAMS 202 and ENST 209.

ANTH 205. An Approach to Ethnomusicology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:2,Recitation:1
An anthropological approach to music including a study of history, objects and methods. Prerequisite: permission of the instructor.

ANTH 226. Violence, Culture, and Human Rights. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3
Explores debates over tensions between respect for human rights and cultural differences. Anthropological case studies will consider different understandings of "violence," "culture," and "rights."

ANTH 229. Pilgrimage, Prayer, and Purity: The Anthropology of Religion. 1 Credit.

Offered Spring Semester Only; Lecture hours:3
The anthropological analysis of religion and religious phenomena. The exploration of religious practices across the globe, including initiation, circumcision, death and funerary customs, spirit possession, sacrifice, pilgrimage and saint veneration.

ANTH 231. Communicating Across Cultures. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3
This course will introduce students to an interdisciplinary perspective on understanding the challenges and opportunities posed by cross-cultural interactions. Crosslisted as UNIV 231.

ANTH 232. Gender and Sexuality in South Asia. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3
Explores issues of gender and sexuality in South Asia, primarily India and Sri Lanka. Topics include marriage, family, life cycle, religion and nationalism. Crosslisted as WMST 232.

ANTH 235. Modern Africa. 1 Credit.

Offered Fall Semester Only; Lecture hours:3
Introduction to the complexity, richness, and vitality of contemporary African culture. Interdisciplinary perspectives on issues including economy, politics, family and community, art, literature, religion. Crosslisted as IREL 235.

ANTH 243. Introduction to Southeast Asia Studies. 1 Credit.

Offered Fall Semester Only; Lecture hours:3
Introduction to diversity of contemporary Southeast Asia. Interdisciplinary perspectives on topics including politics, gender, religion, violence, and globalization.

ANTH 248. Latin America: Challenges for the 21st Century. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3
Perspectives on the challenges facing Latin American peoples and nations in the 21st century. Crosslisted as LAMS 250.

ANTH 250. Digital Culture and Cybersocial. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course is a critical examination of digital media—from online games, to social networking sites, to citizen journalism, and more—and how different cultures and societies around the world incorporate them into everyday life and ways of being social.

ANTH 251. Women and Development. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the relationship between women and development, and an ideological, economic, political, and social enterprise. Crosslisted as WMST 251.

ANTH 254. Peoples and Culture of Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to the diversity of cultures and social groups of Latin America. Situates changing politics, economies and cultures within the region, with focus on issues of gender, race, class and religion.

ANTH 256. Anthropology of Native North America. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

This course introduces students to the anthropology of contemporary Native North America. The goal is to teach students the theories, concepts, and methods used by anthropologists to investigate and explain the practices, beliefs, attitudes, and organization of Native peoples.

ANTH 259. Peoples and Cultures of the Caribbean. 1 Credit.**Offered Occasionally; Lecture hours:3**

Introduction to the diversity of cultures and social groups of the Caribbean. Situates changing political economies and cultures within the region, with focus on issues of gender, race, class, and migration.

ANTH 260. Environmental Anthropology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Using anthropological methods and theories as a guide, this course considers the form and content of human interactions with the environment in various regions of the world. Prerequisite: permission of the instructor.

ANTH 265. Food, Eating, and Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Social significance of food and eating. Taboos and ritual, food and identities, eating and political hierarchy, food and gender, global culture. Materialist and symbolic interpretations.

ANTH 266. Money, Markets and Magic. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will provide an introduction to the study of economic systems within specific cultural contexts. We will consider how economic systems interact with other aspects of daily life on the level of the individual, the family, and society.

ANTH 267. Anthropology of Tourism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Tourism is one of the largest industries in the world. The contemporary tourism industry is an outgrowth of global capitalism. We will consider the specific relationships between tourists, toured, service providers, the state, and money.

ANTH 270. Sexuality and Culture. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Explores diverse cultural constructions of sexual identity, power, transformation, and taboo, and examines gender as a primary principle of social and cosmic organization.

ANTH 271. Dance and Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An exploration of dance as a cultural practice. Topics include: the body and movement; gender and sexuality; race and ethnicity; colonialism and nationalism; aesthetics; ritual and healing; globalization; representation. Crosslisted as WMST 271.

ANTH 282. Performance and Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Interdisciplinary approaches to the study of culture and performance; dance, music, theatre and ritual. Explores issues of embodiment, identity, gender, ethnicity, colonialism, nationalism, and globalization.

ANTH 283. Theory in Anthropology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Explores the historical and contemporary theories in cultural anthropology; conceptualizations of culture, society, humankind; history and critical assessment of the concept of culture in anthropology.

ANTH 284. Anthropology of Socialism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the cultures, politics, and economic systems of socialist and post-socialist societies through the investigation of a series of thematic case studies.

ANTH 285. Interdisciplinary Perspective on Latin American Studies. 1 Credit.

Offered Fall Semester Only; Lecture hours:3; Repeatable

Selected topics on Latin America addressed through disciplinary perspectives in the social sciences and the humanities.

ANTH 288. Global Cuisines, Local Contexts: Commensality and Conflict. 1 Credit.

Offered Alternating Spring Semester; Lecture hours:3

We will consider how food both brings people together, and creates divisions between them, through an in-depth examination of the cases of French and Andean (South American) cuisines. Cuisine will be considered through aesthetic, cultural, and economic lenses as a mirror into larger social worlds. Crosslisted as FREN 288 and LAMS 288 and UNIV 288.

ANTH 290. Medical Anthropology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Health and illness are not solely determined by an individual's biology. Their social determinants are the focus of this course. An understanding of health requires an investigation into the cultural meanings of the body, social relations, and the systems of power in which they are embedded.

ANTH 291. Culture and Mind. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course examines the relationship between cultural and mental phenomena through a historical and cross-cultural perspective. What does the study of the mind as a cultural phenomena reveal about social life, conflicts, and movements?.

ANTH 305. Womb to Tomb: Culture and the Life Course. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Explores how members of different cultures imagine and experience major phases of the life course: birth, childhood, adolescence, adulthood, old age and death.

ANTH 306. Culture and Madness. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This seminar examines the mental health and illness in cross-cultural perspective. Questioning commonly held notions about the nature of madness, the course focuses on how categories of deviance and abnormality are assigned to people.

ANTH 310. Culture, Nature and Place. 1 Credit.

Offered Alternating Spring Semester; Lecture hours:3

We examine the intersection of place, nature and culture throughout the world, including our own backyard. Prerequisites: permission of the instructor and ANTH 109 or GEOG 101.

ANTH 311. Mind, Madness and Medicine. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3; Repeatable

The cross-cultural study of mental health and illness, gender and health, pharmaceuticals, and ritual healing, etc. This is a student led seminar.

ANTH 315. Sex and Sexualities. 1 Credit.

Lecture hours:3

An examination of sex and sexualities from the situated vantage points of fieldwork, focusing on the theoretical, methodological and representational issues faced by ethnographers.

ANTH 319. Honors Course in Anthropology. 1 Credit.

Offered Both Fall and Spring; Lecture hours:Varies

Each student selects a project to be developed individually. Prerequisite: permission of the instructor.

ANTH 320. Honors Course in Anthropology. 1 Credit.

Offered Both Fall and Spring; Lecture hours:Varies

Each student selects a project to be developed individually. Prerequisite: permission of the instructor.

ANTH 325. Advanced Reading in Anthropology. .5-2 Credits.

Offered Either Fall or Spring; Lecture hours:Varies,Other:12; Repeatable

Readings developed around the interest of individual students. Prerequisite: permission of the instructor.

ANTH 326. Advanced Reading in Anthropology. .5-2 Credits.

Offered Either Fall or Spring; Lecture hours:Varies,Other:12; Repeatable

Readings developed around the interest of individual students. Prerequisite: permission of the instructor.

ANTH 329. Religions in Africa: Spirits, Saints, and Sufis. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Explores the diversity of religious beliefs and practices in Africa. Religious change, syncretism, and ritual debates. Prerequisite: any anthropology course or permission of the instructor.

ANTH 330. Advanced Seminar in Anthropology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Focuses on selected topics of ethnographic and theoretical interest, varying from year to year according to the professor. This Culminating Experience course is open only to senior anthropology majors, and junior anthropology majors by permission. Prerequisite: ANTH 283 (may be taken concurrently) and permission of the instructor.

ANTH 351. Field Research. .5-2 Credits.**Offered Alternating Spring Semester; Lecture hours:3; Repeatable**

Independent investigation in the field; formulation of hypotheses, construction of measuring instruments, data collection, data analysis, and test of hypotheses.

ANTH 352. Ritual, Resistance, and Rebellion in South America. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

The cultural and social groups inhabiting the South American west coast in historical context; implications for anthropological and social issues concerning Third World societies. Crosslisted as LAMS 252.

ANTH 380. Anthropology of the Body. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course examines how sociocultural and political dynamics shape ideas about the human body and in turn, how these perceptions influence social processes.

Arabic (ARBC)

ARBC 101. Beginning Arabic I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Beginning language skills. Practice in listening, speaking, reading and writing. Elementary grammar. Introduction to Arabic culture.

ARBC 102. Beginning Arabic II. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Continuation of Arabic language skills. Practice in listening, speaking, reading, and writing. Prerequisite: ARBC 101 or equivalent.

ARBC 103. Intermediate Arabic I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

A continuation and review of basic grammar, emphasizing all four language skills and culture. Prerequisite: ARBC 102 or equivalent.

ARBC 104. Intermediate Arabic II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Review of basic grammar with an emphasis on all four language skills and culture. Prerequisite: ARBC 103 or equivalent.

ARBC 105. Intensive Intermediate I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4,Recitation:1**

Continuation of Arabic language skills. Practice in listening, speaking, reading and writing. Prerequisite: ARBC 101 or equivalent.

ARBC 201. Intermediate Arabic Conversation I. .5 Credits.**Offered Fall Semester Only; Lecture hours:2**

Concentration on development of speaking skills. Conducted entirely in Arabic by native speaker. Prerequisite: ARBC 102.

ARBC 202. Intermediate Arabic Conversation II. .5 Credits.**Offered Spring Semester Only; Lecture hours:2**

Concentration on development of speaking skills. Conducted entirely in Arabic by native speaker. Prerequisite: ARBC 201.

ARBC 203. Unveiling the Hijab's Culture. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An introductory cultural course to various aspects of the Muslim and Arab world to get a deep look at the Middle Eastern culture and customs.

ARBC 204. Naming violence: Language, space and power in the Israeli Palestinian conflict. 1 Credit.**Offered Spring or Summer; Lecture hours:3**

This IP course adopts an integrative approach of two fields of knowledge: sociolinguistics and political geography. The course aims to explore the Palestinian-Israeli struggle and how this struggle is constructed and reproduced in various spaces that are directly related and those that are assumed to be related to the struggle. Crosslisted as UNIV 204 and IREL 204.

ARBC 250. Topics in Arabic Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of topics in Arabic language, cultures and societies. Prerequisite: ARBC 102 or equivalent.

ARBC 301. Advanced Topics in Arabic. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Advanced Arabic independent study under the direction and supervision of an instructor. Topics to be selected by the student in consultation with the instructor. Prerequisite: permission of the instructor.

Art History (ARTH)

ARTH 101. World Art I: Caves to Cathedrals. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

This course explores the art and architecture created throughout the world from the prehistoric period to roughly the 14th century. Visual analysis will be the main focus.

ARTH 102. World Art II: Renaissance to Now. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course explores art and architecture from 1400 to the present. Focus on visual analysis and the development of European and American art from the Renaissance to Postmodernism.

ARTH 103. Museums, Galleries, Curators: Working with Real Art @ Samek Museum. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Students will learn all aspects of museum work, using the collection, facilities and staff of the Samek Museum in Langone. Select original artworks, research them and at the end of the semester, organize an exhibition in the Samek of the artworks studied, with a published exhibition catalogue.

ARTH 1NT. Art History Non-traditional Study. 1 Credit.

Offered Both Fall and Spring; Lecture hours:Varies,Other:3

Non-traditional study in art history. Prerequisite: permission of the instructor.

ARTH 201. Renaissance Women:Gender and Sexuality. 1 Credit.

Offered Alternating Spring Semester; Lecture hours:3

Interdisciplinary study of Renaissance Women, their lives and experiences, and their images in art, considered within their historical, social, literary and other contexts.

ARTH 204. Castle, Cathedral and Cloister. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Architecture, sculpture, and painting from the Early Christian period to the beginning of the Renaissance. Monastic, religious and secular arts will be explored.

ARTH 207. Birth of Modern Art: 1850-1915. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Examination of artists and movements from 1850-1915, including Realism, Impressionism, Post-impressionism, Symbolism, Expressionism, Fauvism, Cubism and Abstraction. Focus on innovations in French painting and urban experience.

ARTH 208. Modern to Postmodern Art: 1915 to the Present. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Examination of artists and movements after 1915, including Dadaism, Surrealism, Constructivism, Abstract Expressionism, Minimalism, Conceptual Art, and Performance Art. Issues of class, race and gender will be central.

ARTH 210. Special Topics in Art History. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

Topics will vary each semester.

ARTH 213. History of Global Architecture. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course traces the "Western" architectural tradition with particular attention to technical advances and cultural context.

ARTH 215. Art and Culture in London. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

To undertake the study of the art of England and other countries as presented by and in the city of London and its environs. Prerequisites: London Semester students only and permission of the instructor.

ARTH 218. French Art and Architecture. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Selected topics in painting, sculpture, and architecture from the medieval period to the present time. Prerequisites: Bucknell en France students only and permission of the instructor.

ARTH 221. Visual Cultures of the Mediterranean 1 - 1000 CE. 1 Credit.

Offered Alternating Spring Semester; Lecture hours:3

This class explores the visual art and architecture of the cultures (Romans, Jews, Muslims, Christians, etc.) that lived around the Mediterranean in the first millennium.

ARTH 222. Philosophy of Art. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Analysis of the creative process, the work of art, natural beauty, aesthetic experience, and principles of criticism. Prerequisite: PHIL 100 or permission of the instructor. Crosslisted as PHIL 212.

ARTH 223. African Arts in the Americas. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:3**

This course examines a wide range of art production from African descendants of countries such as Brazil, Cuba, and the U.S.A. Emphasis will be placed on modes of transmission of African artistry to the Americas and the significance of the preservation and (trans)formation of artistic forms from slavery to present.

ARTH 225. Popular Culture and Prints. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Popular culture as expressed in prints: their subjects, history, purpose and social significance from Albrecht Durer to Andy Warhol. Study original prints in Bucknell's and NYC collections.

ARTH 227. Introduction to Visual Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to the interdisciplinary study of visual culture with particular attention to representations and media from popular culture (billboards; slasher films; music video; etc.). Emphasis on issues of class, race and gender.

ARTH 240. The Art of Structural Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Study of the development of the forms of buildings and bridges from scientific, social and symbolic perspectives using historical and modern examples. Students will analyze and critique structures through writing exercises, simple calculations (no calculus), and construction of physical models. Crosslisted as UNIV 240.

ARTH 241. Archaeology of Egypt. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Survey of the material culture, with emphasis on major architectural and artistic developments and their legacy to modern Western civilization. Crosslisted as CLAS 241.

ARTH 242. Archaeology of Greece. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Survey of the material culture of the Greek world from the Bronze Age through the Hellenistic period. Crosslisted as CLAS 242.

ARTH 243. Archaeology of Rome. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Survey of the material culture of the Roman world from the Etruscans through the late Empire. Crosslisted as CLAS 243.

ARTH 264. Museum Studies: Gillray Exhibition. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This seminar will study and mount an exhibition of the caricatures (original prints in Bucknell's Gallery) of James Gillray (1756-1815), the English engraver who invented the genre of British political caricature. Students will learn all aspects of organizing an exhibition.

ARTH 265. Contemporary Philosophy of Art. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An investigation of and focused study of contemporary philosophical issues in the arts and aesthetics more generally. Prerequisite: PHIL 100, or ARTH 207 or ARTH 208. Crosslisted as PHIL 265.

ARTH 271. Leonardo da Vinci and Renaissance Art. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Renaissance art in Italy with emphasis on Raphael, Leonardo, Michelangelo, Titian and others, and studying original paintings in Samek Art Gallery. Essential for students planning to study abroad in Italy.

ARTH 272. Baroque Art - Power and Persuasion. 1 Credit.**Offered Occasionally; Lecture hours:3**

The visual culture of 17th-century Italy, Spain, the Netherlands, France, and Flanders focusing on dynastic, religious, theatrical and naturalist themes.

ARTH 273. Art of Durer, Vermeer, Rembrandt. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Northern European art c.1430-1660 and its interconnections with Italian art, including Albrecht Durer, Holbein, van Eyck, Leonardo and Titian.

ARTH 275. Art and Architecture of the Islamic World. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

A survey of Islamic art and architecture from the inception of the faith in the 7th century through the 16th century.

ARTH 2NT. Art History Non-traditional Study. .5-2 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies**

Non-traditional study in art history. Prerequisite: permission of the instructor.

ARTH 300. Special Topics in Medieval Art. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; Repeatable**

In-depth focus on one of several possible topics in medieval art, including the Cloister, the Portal, pilgrimage, or the saints. Prerequisite: ARTH 101 or ARTH 204 or permission of the instructor.

ARTH 303. Wright's Fallingwater Digital. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:2,Other:1**

This class will use digital approaches to explore Frank Lloyd Wright's Fallingwater. Students will produce an iBook about this famous house. Crosslisted as UNIV 303. Prerequisite: permission of the instructor.

ARTH 319. Independent Study in Art History. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Advanced problems in art history. Prerequisite: permission of the instructor.

ARTH 320. Independent Study in Art History. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Advanced problems in art history. Prerequisite: permission of the instructor.

ARTH 323. Contemporary Art. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of key artists and concepts of the past 30 years. Focus on the transformation from modernism to postmodernism in painting, sculpture, photography, and performance art. Prerequisite: one of the following ARTH 102, ARTH 207, ARTH 208 or permission of the instructor.

ARTH 325. Special Studies in Modern Art. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Seminar focusing on selected aspects of the interaction between the fine arts, popular culture, and contemporary society in the modern world.

Prerequisite: one of the following ARTH 102, ARTH 227 or ARTH 323.

ARTH 370. Italian Renaissance Paintings (Kress). 1 Credit.**Offered Fall Semester Only; Lecture hours:Varies,Other:3**

Study and do research on the Samek Art Gallery's collection of original Italian Renaissance paintings (Kress Collection) and prepare new publication on these pictures.

ARTH 371. Gillray Prints Seminar. 1 Credit.**Offered Spring Semester Only; Lecture hours:Varies,Other:3**

Study the political and social caricatures of English engraver James Gillray in the original prints in the Samek Art Gallery collection; the tradition of caricature, and libel and freedom of speech issues.

ARTH 373. The West Encounters the Rest: Cultural Encounters Around the Globe. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will examine the many ways European artists represented different cultures from around the world sometimes with little knowledge about them. Beginning with the art of the early modern era, class will explore the ways Chinese, Japanese, Muslims, and people from tribal cultures served as the subjects of works.

ARTH 380. Honors Art History. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Independent study leading to the writing of a thesis. Prerequisite: permission of the instructor.

ARTH 381. Honors Art History. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Independent study leading to the writing of a thesis. Prerequisite: permission of the instructor.

ARTH 3NT. Art History Non-traditional Study. 1-3 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies**

Non-traditional study in art history. Prerequisite: permission of the instructor.

ARTH 402. Culminating Experience. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Required for all art history majors. Students will explore individual research projects independently and workshop them in class. The class will culminate in a departmental art history conference where students will present their work. Prerequisite: senior status. Juniors by permission only.

Art Studio (ARST)

ARST 112. Photography I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

An introduction to the theory, practice, and criticism of fine art photography. Not open to seniors.

ARST 120. Painting I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

Studio course to introduce basic techniques and materials of painting, color theory and its application, image and composition. Not open to seniors.

ARST 128. Introduction to Web Design. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

Introduction to designing and developing web content.

ARST 129. Digital Drawing and Print. 1 Credit.**Offered Occasionally; Lecture hours:Varies,Other:3**

Students will use traditional printmaking methods and computer-based approaches to create visual works.

ARST 130. Printmaking I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

An introduction to visual concepts and processes in intaglio, relief, and screen printing. Not open to seniors.

ARST 131. Drawing I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

The tradition of drawing, its practice and theory in various media. Not open to seniors.

ARST 150. Sculpture I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

Students will be introduced to a variety of sculptural materials and methods of fabrication, become familiar with the work of contemporary sculptors, and learn to interpret visual works. Prerequisite: seniors by permission of the instructor.

ARST 1NT. Art Studio Non-traditional Study. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3**

Non-traditional study in studio art. Prerequisite: permission of the instructor.

ARST 230. Printmaking II. 1 Credit.**Offered Fall, Spring, Summer,Offered Both Fall and Spring,Offered Occasionally; Lecture hours:Varies,Other:4**

Individual projects in intaglio and woodblock printing with an emphasis on concept and refinement of image. Prerequisite: permission of the instructor.

ARST 231. Drawing II. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

A continuation of ARST 131 with emphasis on concept and refinement of image. Prerequisite: permission of the instructor.

ARST 234. Digital Photography. 1 Credit.**Offered Spring Semester Only; Lecture hours:Varies,Other:4**

Individual projects in digital photography with an emphasis on concept and refinement of image. Prerequisites: ARST 112, ARST 131 and permission of the instructor.

ARST 238. Painting II. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

An expanded introduction to painting practices. Emphasis on process, materials, content, and individual creativity within the context of structured assignments. Prerequisites: ARST 120 and permission of the instructor.

ARST 239. Digital Fabrication. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

Students will learn to use computer-aided design software in conjunction with 3D printers, 3D scanners, laser cutters, CNC routers, to create sculpture with physical materials. Students will also learn to interpret works of art and research the work of relevant contemporary artists.

ARST 240. Introduction to Animation. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:4**

An introduction to the fundamentals, techniques and history of creating animation. Students will learn to design and develop short animated sequences using traditional approaches as well as current digital technologies.

ARST 243. Graphic Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

An introduction to the theory and practice of graphic design and the principles underlying the visual presentation of information, both verbal and pictorial. Prerequisites: one of the following: ARST 112, ARST 130, ARST 131, ARST 150, or ARST 234 and permission of the instructor.

ARST 247. Photography II. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

This course builds upon skills and knowledge gained in ARST 112, including more complex technical and critical methods and development of a personal direction. Prerequisite: ARST 112 and permission of the instructor.

ARST 250. Sculpture II. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

Building on the fundamental skills acquired in Sculpture I, students will utilize more technically demanding processes, including: steel fabrication, woodworking, and moldmaking. Prerequisite: permission of the instructor.

ARST 2NT. Art Studio Non-traditional Study. .5-2 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies**

Non-traditional study in studio art. Prerequisite: permission of the instructor.

ARST 335. Advanced Work in the Studio. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4; Repeatable**

Advanced projects in each studio area; painting, printmaking photography, sculpture, or graphics. This course may be repeated for additional credit. Prerequisite: permission of the instructor.

ARST 336. Advanced Work in the Studio. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4; Repeatable**

Advanced projects in each studio area: painting, printmaking, photography, sculpture, or graphics. This course may be repeated for additional credit. Prerequisite: permission of the instructor.

ARST 340. Video Art and Installation. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

This course provides a forum for students for self-expression through structured and independent assignments. The course introduces how to employ digital video technologies in contemporary art making and presents practical and theoretical aspects of avant-garde art creation in historical and critical context. Prerequisite: instructor permission.

ARST 345. Painting III. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

A combination of painting projects with an emphasis on individual development of ideas and technique and the vast possibilities of contemporary painting practices. Prerequisites: ARST 238 and permission of the instructor.

ARST 346. Printmaking III. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

Advanced projects in printmaking to develop individual themes and concepts. Prerequisites: permission of the instructor and ARST 230.

ARST 347. Photography III. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

Advanced projects in photography to develop individual themes and concepts. Prerequisites: permission of the instructor and ARST 247.

ARST 348. Sculpture III. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:4**

Advanced projects in sculpture to develop individual themes and concepts. Prerequisites: permission of the instructor and ARST 250.

ARST 349. Digital Sculpture. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

Students will create virtual three-dimensional forms on the computer with CAD software and render photorealistic images of projects. Prerequisite: permission of the instructor.

ARST 350. Honors Studio Art. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Independent study or creative work leading either to the writing of a thesis or the completion of a significant studio project. For courses in theatre production and design, see listings in Theatre and Dance. Prerequisite: permission of the instructor.

ARST 351. Honors Studio Art. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Independent study or creative work leading either to the writing of a thesis or the completion of a significant studio project. For courses in theatre production and design, see listings in Theatre and Dance.

ARST 3NT. Art Studio Non-traditional Study. 1-3 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies**

Non-traditional study in studio art. Prerequisite: permission of the instructor.

ARST 450. Senior Projects in Studio Art. 1 Credit.**Offered Fall Semester Only; Lecture hours:Varies,Other:4**

Studio Art Culminating Experience: in the fall semester majors will take ARST 450 Senior Projects in Studio Art to work towards creating a portfolio of professional standards. In the spring semester, majors will install and exhibit the work created in ARST 450 in the Samek Art Gallery.

Astronomy (ASTR)

ASTR 101. Our Solar System. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:3**

An introduction to astronomy concentrating on our evolving understanding of the solar system. Designed for non-science majors. No prerequisite.

ASTR 102. Stars, Galaxies, and Beyond. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:3**

An introduction to astronomy concentrating on the structure of our universe beyond the solar system. Designed for non-science majors. ASTR 101 is not a prerequisite for ASTR 102.

ASTR 201. Observational Astrophysics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:2,Other:2**

This course covers spherical astronomy and observational techniques, and applications of physics to solar system objects, stars, stellar evolution, galaxies, and cosmology. Some night observing required. Laboratories focus on observational techniques and data reduction. Prerequisite: PHYS 212 or PHYS 212E.

ASTR 301. Astrophysics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

An introduction to general astrophysics covering mechanics of orbiting bodies, radiation laws, stellar spectra, stellar atmospheres, the internal constitution of stars, stellar energy, galaxies, and cosmology. Prerequisites: PHYS 222 and MATH 212 and permission of the instructor. Crosslisted as PHYS 301.

ASTR 337. Independent Study in Astronomy/Astrophysics. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Seminar or independent study in areas of current interest in the astronomy/astrophysics community. Prerequisite: permission of the instructor.

ASTR 338. Contemporary Study in Astronomy/Astrophysics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Seminar in topics of current interest in the astronomy and astrophysics community. Co- and prerequisites are dependent on topic and instructor. Prerequisite: permission of the instructor.

ASTR 350. Undergraduate Research. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Undergraduate research in astronomy/astrophysics. Prerequisite: permission of the instructor.

Biology (BIOL)

BIOL 111. Controversies in Biology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

Introduction for the non-science major. Background on molecules, cells, and genetics. Required recitation will include discussions about current advances and controversies in biology. Not for pre-health students. Will not count toward the biology major. Students who take BIOL 111 may not take BIOL 121.

BIOL 120. Fight or Flight: The Biology of Stress. 1 Credit.**Offered Summer Session Only; Lecture hours:6**

An exploration of biology through the lens of stress, this course will cover topics such as how stress relates to heart attacks, dwarfism, sex drive, memory loss, appetite, and aging. The course concludes with a biological-based discussion on how to effectively manage stress. Open to BCCSP.

BIOL 121. Biology for Non-majors. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3; May require dissection or live animal experimentation**

Introductory course primarily for the non-biology major. Focuses on life at the cellular and biochemical levels, genetics, and biotechnology. This course is not appropriate preparation for the majority of pre-health graduate programs. Please consult with the Pre-health Adviser for more information.

BIOL 122. Biology for Non-majors. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3; May require dissection or live animal experimentation**

Introductory course primarily for the non-biology major. Topics covered include principles of ecology, evolution, animal diversity, behavior, and structure, and function. It is not necessary to take BIOL 121 prior to taking BIOL 122. This course is not appropriate preparation for the majority of pre-health graduate programs. Please consult with the Pre-health Adviser for more information.

BIOL 130. Health and Disease. 1 Credit.**Offered Occasionally; Lecture hours:3**

A biology course, for non-majors only, that explores the basic biological principles underlying normal health and the most common diseases of humans.

BIOL 131. Biology of Food. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:3**

A course for non-majors that investigates fundamental concepts in biology through a focus on food and agriculture. We will debate current issues, such as genetic engineering, fad diets and our national farm policy. Lab involves hands on learning including growing and preparing food.

BIOL 137. Biology of Aging and Longevity. 1 Credit.**Offered Summer Session Only; Lecture hours:6**

This course will explore questions in the biology of aging from a physiological, genetic, and evolutionary framework.

BIOL 142. Introduction to Neuroethology. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:1**

This introductory biology course explores the science of neuroethology, a discipline that combines the study of animal behavior and study of neuroscience. This class is appropriate for non-science majors who are interested in learning about animal behavior. Crosslisted as NEUR 142 and ANBE 142.

BIOL 150. Plants, People, and the Environment. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The diversity and evolution of plants, fungi, and related organisms with special emphasis on flowering plants; their importance for food, fiber, medicine, and psychoactive compounds; origins of agriculture; domestication of plants; and the role of plants in the environment.

BIOL 154. Society and the Environment. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A biology course for non-majors only that explores society's impact on the environment and the environment's biotic and abiotic responses to various insults.

BIOL 1NT. Biology Non-traditional Study. .5-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in Biology. Prerequisite: permission of the instructor.

BIOL 205. Introduction to Molecules and Cells. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:4**

An introductory course which focuses on the molecular biology of cells. Basic biochemical processes, cellular and subcellular structure and function are emphasized. First core course.

BIOL 206. Organismal Biology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:4; May require dissection or live animal experimentation**

An introductory course for biology majors emphasizing organisms as dynamic systems by integrating structure with function. Laboratories introduce scientific method and collaborative learning. Second core course.

BIOL 207. Genetics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:1**

A comprehensive survey of genetic mechanisms and methodologies, including classical genetics, recombinational analysis in bacteria, fungi, and higher eukaryotes, molecular genetics and populational and quantitative genetics. Third core course. Prerequisite: BIOL 205.

BIOL 208. Principles of Ecology and Evolution. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Introduction to systematic biology, evolutionary theory, physiological ecology, behavioral ecology, population and community ecology, and ecosystem structure and function. Fourth core course. BIOL 206 and BIOL 207 strongly recommended as prerequisites.

BIOL 208E. Principles of Ecology and Evolution. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Same topics as BIOL 208 with more emphasis on human influences on living systems and applications of evolutionary biology and ecology to solving environmental problems. This course is intended primarily for students majoring in environmental studies, environmental science, and environmental engineering. Crosslisted as ENST 208.

BIOL 220. Human Anatomy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:3; May require dissection or live animal experimentation**

A course that focuses on the anatomy of and relationship between human muscles, bones, and organs. Lab involves dissection, with the cat as the primary specimen. Does not count toward the biology major. Prerequisite: permission of the instructor.

BIOL 221. Human Physiology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3**

A course that focuses on the functions of and interactions between human organ systems. Does not count toward the biology major. Prerequisite: permission of the instructor.

BIOL 231. Phage Hunters - Part I. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:4**

Students in this investigative laboratory course will isolate viruses that infect bacteria (bacteriophages) from soil samples and characterize the genome using molecular genetics techniques. Prerequisite: BIOL 205 and permission of the instructor. Corequisite: BIOL 207.

BIOL 232. Phage Hunters - Part II. .5 Credits.**Offered Spring Semester Only; Lecture hours:Varies,Other:4**

Continuation of BIOL 231. Students will learn the theory and application of bioinformatics and genomics to analyze the genome sequence of a bacteriophage isolated from soil samples. Prerequisites: BIOL 231 and permission of the instructor.

BIOL 235. Introduction to Microbiology. 1 Credit.**Offered Alternating Summers; Lecture hours:6,Lab:6**

An introduction to microbiology for non-science majors. Course will focus on the interaction between humans and microbes, not limited to disease.

BIOL 245. Tropical Marine Biology. 1 Credit.**Offered Summer Session Only; Lecture hours:10,Other:18**

A field course in marine biology of coral reefs in the Virgin Islands for non-science majors. Prerequisite: permission of the instructor.

BIOL 266. Animal Behavior. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

A survey of important theories, issues, and empirical techniques in the interdisciplinary field of animal behavior emphasizing both proximate and ultimate mechanisms and explanations for behavior. Crosslisted as ANBE 266 and PSYC 266.

BIOL 302. Microbiology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:4**

Ultra-structure, behavior, metabolism, molecular biology, and development of micro-organisms. Roles in disease and food production. Laboratory will emphasize cultivation and identification. Prerequisites: BIOL 205 and BIOL 207, and permission of the instructor. Crosslisted as BIOL 602.

BIOL 304. Biology of Cancer. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The study of the molecular and cellular mechanisms that create cancer. Prerequisites: BIOL 205, BIOL 207, and permission of the instructor. Crosslisted as BIOL 604.

BIOL 309. Wildlife and Emerging Diseases. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Biology of wildlife diseases, especially zoonoses (infections that jump to humans). Course will integrate popular and scientific sources. Prerequisites: BIOL 206 and permission of the instructor. Crosslisted as BIOL 609.

BIOL 310. Neurobiology of Learning and Memory. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

Focus will be on the cellular mechanisms underlying synaptic plasticity, modification of synapses, signaling cascades, and consolidation of synaptic changes during learning and memory formation. Primary literature will be used extensively. Prerequisites: BIOL 205 and BIOL 206 and permission of the instructor.

BIOL 312. Comparative Vertebrate Anatomy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:3; May require dissection or live animal experimentation**

Gross morphology with emphasis on functional and evolutionary modifications of animal structure. Gross dissection and techniques used in morphology. Prerequisites: BIOL 122 or BIOL 206 and permission of the instructor. Crosslisted as BIOL 612.

BIOL 313. Mammalogy. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:3; May require dissection or live animal experimentation**

Biology of mammals, including evolution, classification, biodiversity, behavior, anatomy, physiology, ecology, and conservation. Lab will include specimen identification, preparation, and field studies. Prerequisite: permission of the instructor. Crosslisted as BIOL 613.

BIOL 314. Amphibian Biology and Conservation. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:3**

The biology of amphibians, including classification, physiology, reproduction, ecology, evolution, and conservation. Laboratory section will include identification of amphibians and field work to identify conservation issues surrounding local amphibian populations. Prerequisites: BIOL 206, BIOL 208 and permission of the instructor. Crosslisted as ANBE 314 and BIOL 614 and ANBE 614.

BIOL 316. Plant Growth and Development. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:3**

The physiological and molecular bases of growth and development at the organ, tissue, and cellular levels. Effects of environmental stimuli and hormones on gene expression and the resultant changes at higher levels of organization. Prerequisite: BIOL 205, BIOL 206, and permission of the instructor. Crosslisted as BIOL 616.

BIOL 318. Principles of Physiology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:3**

Emphasizes the breadth of physiology and explores physiological principles of animals from a cellular, organismal, medical, and ecological framework. Laboratory focuses on experimental design and independent research. Prerequisites: BIOL 205, BIOL 206 and permission of the instructor. Crosslisted as BIOL 618.

BIOL 319. Seminar. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

Topics vary. Crosslisted as BIOL 619.

BIOL 320. Seminar. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

Topics vary. Crosslisted as BIOL 620.

BIOL 321. Behavioral Ecology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The consideration of behavioral adaptations to various ecological situations. Topics include habitat choice, foraging behavior, defenses against predation, mate choice, and brood care. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as BIOL 621 and ANBE 321 and ANBE 621.

BIOL 322. Physiological Mechanisms. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Integration of cell and organ physiology; emphasis on protein, ion transport, nerve and muscle physiology, cardiovascular, renal, and respiratory systems. Prerequisites: BIOL 205 and BIOL 206. Crosslisted as BIOL 622.

BIOL 323. Mammalian Histology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3**

A detailed study of the microscopic architecture and associated physiology of mammalian cells, tissues and organ systems. Prerequisites: BIOL 205 and BIOL 206 and permission of the instructor. Crosslisted as BIOL 623.

BIOL 324. Neurophysiology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A study of neural signaling via stimulus-response, with an emphasis on cellular integration. Sensory-motor as well as more complex brain systems will be explored. Prerequisites: BIOL 205 and BIOL 206 and permission of the instructor. Crosslisted as BIOL 624.

BIOL 326. Cytogenetics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3**

Study of chromosome structure, organization, aberrations, and behavior. Multiple eukaryotic systems will be considered with links to human disease. Prerequisites: BIOL 205 and BIOL 207 and permission of the instructor. Crosslisted as BIOL 626.

BIOL 327. Molecular Biology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

Synthesis of DNA, RNA, and protein, and the regulation of these processes in both prokaryotic and eukaryotic cells; laboratory experience in the manipulation and analysis of genes. Prerequisites: BIOL 205 and BIOL 207 and permission of the instructor. Crosslisted as BIOL 627.

BIOL 328. Endocrinology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Problem Session:2**

Regulation and function of hormones and their receptors from molecular to organismal levels. Role of hormones in development, physiology, and behavior; endocrine disease. Prerequisites: BIOL 205 and BIOL 206 and permission of the instructor. Crosslisted as BIOL 628.

BIOL 330. Plant Systematics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:4**

Exploration of the diversity of plant life on Earth through lectures, labs, and field trips; includes biogeography, natural history, evolutionary relationships, ethnobotanical uses, and identification. Prerequisite: BIOL 206 or permission of the instructor. Crosslisted as BIOL 630.

BIOL 331. Genomics. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:2**

A computer research-based course in which students study the structure, content, expression and evolution of genomes. Prerequisites: BIOL 207 and permission of the instructor. Crosslisted as BIOL 631.

BIOL 332. Developmental Neurobiology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Primary literature-based senior seminar on topics in developmental neurobiology. Prerequisites: BIOL 205, BIOL 207, and either BIOL 206 or NEUR 100, junior or senior status, and permission of the instructor. Crosslisted as BIOL 632 and NEUR 332.

BIOL 334. Limnology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:3**

The physical, chemical, and biological characteristics of fresh-water communities are studied. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as BIOL 634.

BIOL 336. Anatomy and Microscopy of Plants. 1 Credit.**Offered Occasionally; Lecture hours:3,Lab:3**

Introduction to the internal structure of plants, including subcellular anatomy, plant cell types, tissue types, and the diversity of these types across the plant kingdom. Significant experience with multiple forms of microscopy involved. Prerequisites: BIOL 205 and BIOL 206 and permission of the instructor.

BIOL 337. Biology of Aging. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course will explore questions in the biology of aging from a physiological, genetic, and evolutionary framework, with an emphasis on critical reading of primary literature. Prerequisites: BIOL 206 and permission of the instructor. Crosslisted as BIOL 637.

BIOL 339. Developmental Biology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3; May require dissection or live animal experimentation**

This course provides an introduction to early animal development with emphasis on the molecular, cellular and genetic mechanisms that drive the formation of the embryo. Prerequisites: BIOL 205 and BIOL 206 and permission of the instructor. Crosslisted as BIOL 639.

BIOL 340. Biochemical Methods. 1 Credit.**Offered Spring Semester Only; Lecture hours:2,Other:6**

A course in laboratory techniques including cell fractionation and analysis of proteins and nucleic acids. Spectrophotometry, chromatography, centrifugation, electrophoresis, and methods of molecular cloning are emphasized. Prerequisites: BIOL 205 and CHEM 351 and permission of the instructor. Crosslisted as CHEM 358.

BIOL 341. Evolution. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of evolutionary processes, phenomena, and mechanisms. Topics covered may include natural selection, sexual selection, adaptation, evolutionary constraints, speciation, evolution and development, coevolution, behavioral evolution, and macroevolution. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as ANBE 341 and ANBE 641 and BIOL 641.

BIOL 342. Neuroethology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A course that integrates neurobiology and behavior in natural contexts. Emphasis on signal detection, recognition, discrimination, localization, orientation, and the control of complex acts. Neuronal and hormonal mechanisms, ontogeny and evolution of behavior will be considered. Prerequisites: BIOL 206 and BIOL 208 and permission of the instructor. Crosslisted as ANBE 342 and ANBE 642 and BIOL 642.

BIOL 347. Virology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

The study of virus structure, genome organization, replication and host-interactions. Emphasis will be on animal and bacterial viruses. Prerequisites: BIOL 205, BIOL 207, and permission of the instructor. Crosslisted as BIOL 647.

BIOL 348. Immunology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3; May require dissection or live animal experimentation**

Development and function of the immune system in animals. The immune response in health and disease. Techniques in immunology. Prerequisites: BIOL 205 and BIOL 206 and permission of the instructor. Crosslisted as BIOL 648.

BIOL 351. Field Botany. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:1**

Outdoor field experience in plant diversity and ecology. Excursions to natural areas focused on identification, community dynamics, and ecological interactions/adaptations. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as BIOL 651.

BIOL 352. Cell Biology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3**

Covers biomembranes, cell growth patterns, cell signaling, the cytoskeleton, cell organelles, and microscopic techniques. Laboratory includes experience with cell culture. Prerequisites: BIOL 205 and permission of the instructor. Crosslisted as BIOL 652.

BIOL 353. Ecosystem Ecology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Interactions between organisms and the physical and chemical environment including nutrient cycling and energy flow, biogeochemistry, and temporal and spatial dynamics of ecosystems. Prerequisites: BIOL 208, junior or senior status, and permission of the instructor. Crosslisted as BIOL 653 and ENST 353.

BIOL 354. Tropical Ecology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to tropical ecology including life history strategies of vertebrates and invertebrates, biodiversity management and conservation. Emphasis on class and individual projects, data collection, and journal keeping. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as ANBE 354 and ANBE 654 and BIOL 654.

BIOL 355. Social Insects. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:2**

Evolution and genetics of social behavior, caste, communication in foraging and colony defense, queen and worker control over reproduction, social homeostasis and population dynamics. Occasionally may be taught as a laboratory science. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as ANBE 355. Juniors and seniors only.

BIOL 357. Ornithology. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:3**

The biology of birds, including evolution, behavior, anatomy, physiology, ecology, and conservation; lab trips focus on identification of birds in the field. Prerequisites: BIOL 206, BIOL 208 and permission of the instructor. Crosslisted as ANBE 357 and ANBE 657 and BIOL 657.

BIOL 358. Invertebrate Zoology. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:3**

A survey of the invertebrate phyla covering phylogenetic relationships, functional morphology, ecology, life histories, symbiosis, ontogeny, and behavior. Includes hands-on study of organisms in lab and field. Prerequisites: BIOL 206, BIOL 208, and permission of the instructor. Crosslisted as BIOL 658.

BIOL 359. General Entomology. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:3**

The biology of insects and their kin: anatomy, physiology, ecology, behavior, development, evolution, systematics, and diversity. Prerequisites: BIOL 206, BIOL 208, and permission of the instructor. Crosslisted as BIOL 659.

BIOL 360. Applications of Calculus to Medicine and Biology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Biology has been described as the most mathematical science. Researchers in biology use mathematical models to design strategies for controlling epidemics, administering drugs, and managing ecosystems. In this class you will learn how to develop your own models, approximate solutions to your models, and compare these solutions to real data. Crosslisted as BIOL 662 or MATH 260.

BIOL 361. Systematic Biology. 1 Credit.**Offered Occasionally; Lecture hours:3**

Seminar in systematics, the study of the classification, diversity, and evolutionary relationships of all life. Emphasis placed on molecular data and the importance of systematics to all fields of biology. Prerequisites: BIOL 207, BIOL 208 and permission of the instructor. Crosslisted as BIOL 661.

BIOL 362. Topics in Cell Biology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:1.5**

Selected topics in cell biology will be covered in a format (lecture, discussion, demonstration, seminar) that may vary from year to year. Topics may include membrane structure and dynamics, cell signaling, the cytoskeleton, protein synthesis and targeting, the cell cycle, mitosis, cell-cell interactions and cell-substrate interactions, among others.

BIOL 365. Introduction to Microscopy. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3**

This course is designed as an overview of light and electron microscopy, with emphasis placed on the use of instrumentation. Prerequisites: BIOL 352 and permission of the instructor. Crosslisted as BIOL 665.

BIOL 370. Primate Behavior and Ecology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; May require dissection or live animal experimentation**

Introduction to research on prosimians, monkeys, and apes with emphasis on the evolutionary origin of diversity, habitat use, social structure, social behavior, and cognitive abilities. Prerequisites: BIOL 122 or BIOL 208 or ANBE 266 or BIOL 266 or PSYC 266 and permission of the instructor. Crosslisted as ANBE 370 and ANBE 670 and BIOL 670 and PSYC 370 and PSYC 670.

BIOL 371. Field Entomology. 1 Credit.**Offered Fall Semester Only; Lecture hours:2,Other:2**

Introduction to insects in their natural habitats, with emphasis on insect collecting, taxonomy, identification, ecology, and natural history. Students will make a professional-quality insect collection and acquire skills appropriate for biodiversity surveys. Prerequisites: BIOL 208 and permission of the instructor. Crosslisted as BIOL 671.

BIOL 399. Undergraduate Research. .5-2 Credits.**Offered Fall, Spring or Summer; Lecture hours:Varies,Other:Varies; Repeatable; May require dissection or live animal experimentation**

Undergraduate research. Prerequisite: permission of the instructor.

Biomedical Engineering (BMEG)

BMEG 205. Bioinstrumentation I. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Introduction to analog and digital circuits with applications to medicine and biology. Corequisite: MATH 212. Prerequisite: MATH 202. Open to biomedical engineering majors only.

BMEG 210. Fundamentals of Biomedical Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Introduction to the application of fluid mechanics, mass transfer, instrumentation, mechanics, and societal issues to biomedical problems. Hands-on laboratory experiences integrated with lecture. Prerequisites: MATH 201 and PHYS 211. Open to biomedical engineering majors only.

BMEG 220. Introduction to Engineering Computing. .5 Credits.**Offered Spring Semester Only; Lecture hours:2,Other:1**

Introduction to numerical methods and programming fundamentals. Problems drawn from mathematics, engineering, and biomedical engineering. Corequisite: MATH 212. Not open to students who have taken ENGR 211, ENGR 212, ENGR 214. Open to biomedical engineering majors only.

BMEG 226. Statistical Methods in Biomedical Engineering. .5 Credits.**Offered Spring Semester Only; Lecture hours:2,Other:1**

Introduction to concepts in experimental design and data analysis with application to biomedical engineering, medicine, and biology. Prerequisite: MATH 201. Not open to students who have taken ENGR 215, MATH 216 or MATH 226. Open to biomedical engineering majors only.

BMEG 250. Fundamentals of Biomechanics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Application of mechanical analyses to solve biomechanical problems including: equilibrium of rigid bodies, anthropometric analysis, link segment analysis, internal loads, combined loading, failure theory. Prerequisites: PHYS 211 and MATH 201. Not open to students who have taken ENGR 220, ENGR 221 or MECH 220. Open to biomedical engineering majors only.

BMEG 300. Biotransport I. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

First biotransport course. Fluid mechanics principles applied to biological systems and medical devices. Properties of biological fluids, energy and momentum balances, computational modeling. Prerequisite: MATH 212. Not open to students who have taken CHEG 300, ENGR 222, or ENGR 233. Open to biomedical engineering majors only.

BMEG 350. Fundamental of Biomedical Signals and Systems. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Time and frequency analysis, filter design and feedback control as applied to biomedical signals and systems. Prerequisites: BMEG 205 and MATH 212. Open to biomedical engineering majors only.

BMEG 400. Biotransport II. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Second biotransport course focusing on the advanced application of fundamental heat and mass transport concepts to biological systems and medical devices. Conduction, convection, thermal properties of materials, mass diffusion, compartmental modeling. Prerequisite: BMEG 300. Open to biomedical engineering majors only.

BMEG 401. Biomedical Engineering Capstone I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Senior design course emphasizing the biomedical engineering design process including problem identification and medical motivation, background research, medical regulations and ethics, design and project proposal presentation. Prerequisite: BMEG 408. Open to biomedical engineering majors only.

BMEG 402. Biomedical Engineering Capstone II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Second semester of the biomedical engineering design sequence emphasizing fabrication, instrumentation, testing and evaluation, and final presentation of projects. Prerequisites: BMEG 401. Open to biomedical engineering majors only.

BMEG 408. Medical Device Assessment and Development. .5 Credits.**Offered Spring Semester Only; Lecture hours:2,Other:1**

An examination of medical device design including benchmarking, intellectual property, regulatory pathways, industry standards, project planning, project management, and individual and team professionalism. Topics will be applied to currently marketed medical devices. Prerequisites: BMEG 205. Open to biomedical engineering majors only.

BMEG 409. Fabrication and Experimental Design. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Other:1**

A hands-on course focusing on skills relevant to biomedical engineers, such as computer-aided design and documentation, fabrication, materials, selection and biocompatibility. Cell culture and experimental design. Class will be a mixture of lectures and hands-on activities. Prerequisite: BMEG 226. Open to biomedical engineering majors only.

BMEG 421. Light-activated Therapy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Introduction of biophotonics or the use of light to treat both oncologic and non-oncologic diseases. Analysis of critical transport phenomena related to drug distribution, laser-tissue interactions, and oxygen supply. Investigation of mechanisms of photodynamic action. Prerequisite: permission of the instructor.

BMEG 431. Biomimetic Materials. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Introduction to topics in biomimetics, studying nature as an inspiration for engineering design. Topics include relationships between microstructure and physical properties of natural materials and tissue engineering approaches to biomaterials design. Prerequisite: permission of the instructor.

BMEG 441. Neural Signals and Systems. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Introduction to neural systems and signaling. Topics include neural physiology, models of action potential generation and synapse dynamics, neural networks and techniques of neural waveform analysis. Prerequisite: permission of the instructor. Crosslisted as ECEG 411 and ECEG 611.

BMEG 451. Biomechanics and Injury Prevention. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Survey course for field of biomechanics and research for injury prevention (lowering risk and/or severity). Mixture of lectures, labs, and projects. Prerequisite: permission of the instructor.

BMEG 452. Human Factors. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Introduction to human factors and occupational biomechanics. Topics include: work-related musculoskeletal disorders, hand tool design, anthropometry, low back biomechanics. Prerequisite: permission of the instructor.

BMEG 461. Brain, Mind and Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

The goal of this course is to use the tools of biomedical technologies, network and game theory to address enduring cultural questions. Prerequisite: permission of the instructor.

BMEG 465. Biomedical Modeling. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Application of computational models to understanding normal and pathological biological function and to the design of diagnostic tools and therapeutic interventions. Prerequisite: permission of the instructor.

BMEG 471. Advanced Topics in Biomedical Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1; Repeatable**

Advanced, in-depth course developed from areas of biomedical engineering. Topics will vary. Prerequisite: permission of the instructor.

BMEG 472. Advanced Topics in Biomedical Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1; Repeatable**

Advanced, in-depth course developed from areas of biomedical engineering. Topics will vary. Prerequisite: permission of the instructor.

BMEG 480. Biomedical Engineering Project. .5 Credits.**Offered Fall Semester Only; Lecture hours:1,Other:5; Repeatable**

Individual work with a faculty adviser on development, design, or research project beginning with a written plan and culminating with a written or oral presentation. Prerequisite: permission of the instructor.

BMEG 481. Biomedical Engineering Project. .5 Credits.**Offered Spring Semester Only; Lecture hours:1,Other:5; Repeatable**

Individual work with a faculty adviser on development, design, or research project beginning with a written plan and culminating with a written or oral presentation. Prerequisite: permission of the instructor.

BMEG 490. Biomedical Engineering Research. 1 Credit.**Offered Fall Semester Only; Lecture hours:1,Other:10; Repeatable**

Independent study with a faculty adviser on a research or design project. Submit a proposal for group review, conduct the work, and culminate with a written report and an oral presentation before a faculty group. Prerequisite: permission of the instructor.

BMEG 491. Biomedical Engineering Research. 1 Credit.**Offered Spring Semester Only; Lecture hours:1,Other:10; Repeatable**

Independent study with a faculty adviser on a research or design project. Submit a project proposal for group review, conduct the work, and culminate with a written report and an oral presentation before a faculty group. Prerequisite: permission of the instructor.

Chemical Engineering (CHEG)

CHEG 101. Chemical Engineering Seminar. 0 Credits.**Offered Spring Semester Only; Lecture hours:1**

A joint seminar for all chemical engineering students and faculty. Variety of engineering-related topics presented by industrial, academic, alumni, and student speakers. Presentations and discussions on professional development and interpersonal skills in the work place, ethics, and societal issues, professional society activities, and other topics relevant to the profession.

CHEG 102. Chemical Engineering Seminar. 0 Credits.**Offered Spring Semester Only; Lecture hours:1**

A joint seminar for all chemical engineering students and faculty. Variety of engineering-related topics presented by industrial, academic, alumni, and student speakers. Presentations and discussions on professional development and interpersonal skills in the work place, ethics, and societal issues, professional society activities, and other topics relevant to the profession.

CHEG 103. Chemical Engineering Seminar. 0 Credits.**Offered Spring Semester Only; Lecture hours:1**

A joint seminar for all chemical engineering students and faculty. Variety of engineering-related topics presented by industrial, academic, alumni, and student speakers. Presentations and discussions on professional development and interpersonal skills in the work place, ethics, and societal issues, professional society activities, and other topics relevant to the profession.

CHEG 104. Chemical Engineering Seminar. 0 Credits.**Offered Spring Semester Only; Lecture hours:1**

A joint seminar for all chemical engineering students and faculty. Variety of engineering-related topics presented by industrial, academic, alumni, and student speakers. Presentations and discussions on professional development and interpersonal skills in the work place, ethics, and societal issues, professional society activities, and other topics relevant to the profession.

CHEG 200. Chemical Engineering Principles. 1 Credit.**Offered Fall Semester Only; Lecture hours:4,Lab:2**

Introduction to the concepts of material and energy balances and phase equilibria for chemical engineering processes. Introduction to problem solving methodologies and computer simulation. With experimental laboratory. Prerequisite: MATH 201.

CHEG 210. Applied Mathematics for Chemical Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:1**

Mathematical modeling and methods. Topics include ordinary and partial differential equations, Laplace transforms, and matrices with analytical and computer solutions. With computational laboratory. Prerequisite: MATH 211 or equivalent.

CHEG 2NT. Chemical Engineering Non-traditional Study. .25-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study course in chemical engineering. Prerequisite: permission of the instructor.

CHEG 300. Heat and Mass Transfer. 1 Credit.**Offered Fall Semester Only; Lecture hours:4,Lab:2**

Conductive, convective and radiation heat transfer; analytical and numerical solutions of heat transfer problems, estimation of heat transfer coefficients, and heat exchanger design. Fundamentals of mass transfer (diffusion and convection) with applications to unit operations. With experimental laboratory. Prerequisites: ENGR 233, CHEG 200 and CHEG 210 or MATH 212.

CHEG 301. Transport of Heat and Mass. 1 Credit.**Offered Occasionally; Lecture hours:4**

Conductive, convective and radiation heat transfer; analytical and numerical solutions of heat transfer problems, estimation of heat transfer coefficients, and heat exchanger design. Fundamentals of mass transfer. Corequisite: CHEG 303. Prerequisites: ENGR 233, CHEG 200, and CHEG 210 or MATH 212.

CHEG 302. Equilibrium Stage Processes. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Lab:1**

Analysis of binary and multicomponent separations by analytical, graphical, and computer methods. Topics include gas absorption, distillation, liquid-liquid extraction as well as selected novel separation processes. With computational laboratory. Prerequisite: CHEG 200. Corequisite: CHEG 300.

CHEG 303. Separation Processes. .5 Credits.**Offered Occasionally; Lecture hours:2**

Analysis of binary and multicomponent separations by analytical, graphical, and computer methods. Topics includes gas absorption, distillation, liquid-liquid extraction as well as selected novel separation processes. Corequisite: CHEG 301. Prerequisites: ENGR 233, CHEG 200 and CHEG 210. Minimum grade of a D.

CHEG 310. Chemical Engineering Thermodynamics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:1**

Laws of thermodynamics, thermodynamic properties of materials, equations of state, refrigeration and engine cycles, physical and chemical reaction equilibrium, and solution thermodynamics. With computational laboratory. Prerequisites: CHEG 302 and CHEM 341 or CHEM 343.

CHEG 315. Unit Operations Laboratory. .5 Credits.**Offered Spring Semester Only; Lecture hours:1,Lab:3**

A laboratory course in pilot-scale processes involving momentum, heat and mass transfer. Project definition, experimental operation, analytical procedures, data analysis, technical reports and oral presentations. Prerequisite: CHEG 302. Corequisite: CHEG 310.

CHEG 320. Chemical Reaction Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Rate forms for homogeneous and catalytic reactions; isothermal and nonisothermal reactor design and analysis; interpretation of laboratory data; introduction to nonideal flow and residence-time distributions. With experimental laboratory. Prerequisites: CHEM 341 or CHEM 343, CHEG 210, and CHEG 310.

CHEG 330. Process Control. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Dynamics of open and closed-loop processes. Design, analysis and tuning of PID feedback control based on transient, Laplace domain, and frequency response methods. Instrumentation and computer-based data acquisition and control for chemical processes. With experimental laboratory. Introduction to feedforward, cascade and advanced control strategies. Prerequisites: CHEG 300 and CHEG 302.

CHEG 3NT. Chemical Engineering Non-traditional Study. .25-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study course in chemical engineering. Prerequisite: permission of the instructor.

CHEG 400. Process Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Applications of engineering, economic, environmental, and ethical principles in preliminary process design using computer aids such as process simulators. Problem definition literature survey, flowsheet development, material and energy balances, equipment design, profitability analysis, oral and written communication. With design laboratory. Prerequisites: CHEG 310 and CHEG 315. Crosslisted as CHEG 600.

CHEG 410. Project Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Second of two capstone experiences. Students refine a general problem statement in order to plan, execute and assess a project that achieves specific goals. Design, construction, and testing of an apparatus, system, or simulation. Problem-solving, teamwork, communication, professional development, and laboratory work are emphasized. With design laboratory. Prerequisite: CHEG 400. Crosslisted as CHEG 610.

CHEG 430. Chemical Engineering Project. .5 Credits.**Offered Either Fall or Spring; Lecture hours:1,Other:5; Repeatable**

Individual work with a faculty adviser on a development or design project beginning with a written plan and culminating with a deliverable product and a written report. Problem analysis involving information synthesis, experimentation, mathematical modeling or software development. Prerequisite: permission of the instructor. Crosslisted as CHEG 630.

CHEG 431. Chemical Engineering Project. .5 Credits.**Offered Either Fall or Spring; Lecture hours:1,Other:5; Repeatable**

Individual work with a faculty adviser on a development or design project beginning with a written plan and culminating with a deliverable product and a written report. Problem analysis involving information synthesis, experimentation, mathematical modeling, or software development. Prerequisite: permission of the instructor.

CHEG 440. Chemical Engineering Research. 1 Credit.**Offered Both Fall and Spring; Lecture hours:1,Other:9; Repeatable**

Independent study with a faculty adviser on a research project. Submit a project proposal for group review, conduct the work, and culminate with a written report and an oral presentation before a faculty group. Prerequisite: permission of the instructor. Crosslisted as CHEG 441 and CHEG 640 and CHEG 641.

CHEG 441. Chemical Engineering Research. 1 Credit.**Offered Both Fall and Spring; Lecture hours:1,Other:10; Repeatable**

Independent study with a faculty adviser on a research project. Submit a project proposal for group review, conduct the work, and culminate with a written and an oral presentation before a faculty group. Prerequisite: permission of the instructor. Crosslisted as CHEG 440 and CHEG 640 and CHEG 641.

CHEG 445. Experiments in Polymer Science and Technology. .5 Credits.**Offered Occasionally; Lecture hours:1**

Laboratory investigation into problems involving the synthesis, characterization, and processing of polymeric materials. Prerequisite: ENGR 240 or ENGR 242. Not open to students who have taken CHEG 450 prior to Fall 2012.

CHEG 448. Electrochemical Energy Conversion. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Principles of electrochemistry including electrochemical thermodynamics, kinetics, and catalysis. Related emerging energy applications such as fuel cells and advanced batteries. Prerequisite: CHEM 201, CHEM 221 or CHEM 222.

CHEG 450. Polymer Science. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4,Recitation:1**

Structure, characterization and properties of polymeric materials. Chemistry and kinetics of polymerization. Processing and application of polymers. Prerequisite: CHEM 341 or CHEM 343. Crosslisted as CHEG 650.

CHEG 452. Bioprocess Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Survey course in biochemical engineering. Introduction to microbiology, biochemistry, cell metabolism and genetic control. Enzyme structure and function; enzyme kinetic mechanisms. Emphasis on the design of biochemical reactors and separation processes utilizing fundamental principles of kinetics, thermodynamics and heat, mass and momentum transfer. Prerequisite: CHEG 302. Corequisite: CHEG 320. Crosslisted as CHEG 652.

CHEG 453. Product and Process Chemistry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Examination of the internal structure of the chemical industry. The roles of key chemicals and intermediates in chemical synthesis are emphasized to provide an overview of current industrial production methods. Product and process history, design and improvement are covered through discussions, simulations and case studies. Prerequisite: permission of the instructor. Crosslisted as CHEG 653.

CHEG 454. Pharmaceutical Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Applications of core chemical engineering concepts to pharmaceutical processes. Development of fundamentals used in the pharmaceutical industry. Introduction to the development and approval of pharmaceutical process, along with social, regulatory, historical and ethical issues present in the pharmaceutical industry. Prerequisite: CHEG 300 or BMEG 400 or permission of the instructor. Crosslisted as CHEG 654.

CHEG 455. Atmospheric Chemistry and Physics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Addresses the relationships of chemistry, physics, and engineering principles in understanding processes in the Earth's atmosphere. Topics include overview of the Earth's atmospheric history and problems of current environmental concerns including urban ozone, acid rain, particulate pollution, and global change. Prerequisite: permission of the instructor. Crosslisted as CHEG 655.

CHEG 457. Applied Colloid, Surface, and Nanoscience. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

We will explore the ways in which surfaces are different from bulk substances, and how this impacts processes such as illness, chemical processing, contaminant transport, and enzymatic activity. The topics discussed in class will be shaped by student interest. Prerequisite: permission of the instructor. Corequisite: CHEM 341 or CHEM 343. Crosslisted as CHEG 657.

CHEG 460. Biomaterials: Materials in Medicine. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4,Recitation:1**

Classes of biomaterials, their applications, and current trends in biomaterials research and technology. Medical/ethical implications of biomaterials development and research. Open to seniors in chemical engineering, others by permission of the instructor. Crosslisted as CHEG 660.

CHEG 465. Advanced Materials Science and Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4,Recitation:1**

Advanced, in-depth exploration of processing - structure - property - performance relationships of materials through real-world examples and case studies. Prerequisite: ENGR 240, ENGR 242, or equivalent. Crosslisted as CHEG 665.

CHEG 470. Special Topics in Chemical Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4; Repeatable**

Advanced, in-depth courses developed from areas of chemical engineering science or technology. Prerequisite: permission of the instructor. Crosslisted as CHEG 670.

CHEG 472. Special Topics in Chemical Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4; Repeatable**

Advanced, in-depth courses developed from areas of chemical engineering science or technology. Prerequisite: permission of the instructor. Crosslisted as CHEG 672.

CHEG 481. Topics in Reaction Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Reactor design and analysis applied to specific systems. Complex chemical reaction networks with emphasis on nonideal flow and transport effects on heterogenous reactors. Prerequisite: permission of the instructor. Crosslisted as CHEG 681.

CHEG 482. Topics in Chemical Engineering Applied Mathematics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Analytical and numerical methods for ordinary and partial differential equations with problems drawn from chemical engineering. Topics include transform methods, matrix methods, weighted-residual methods, and finite differences. Prerequisite: permission of the instructor. Crosslisted as CHEG 682.

CHEG 483. Topics in Chemical Engineering Thermodynamics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Advanced study of thermodynamics applied to fluid flow, heat transfer, gas compression, air conditioning, refrigeration, and chemical equilibria. Prerequisite: permission of the instructor. Crosslisted as CHEG 683.

CHEG 485. Topics in Transport Theory. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Mass, energy, and momentum transfer in continuous media. General equations of transfer developed and used to analyze physical systems. Development and application of mathematical techniques appropriate to the topic. Prerequisite: permission of the instructor. Crosslisted as CHEG 685.

CHEG 495. Advanced Topics in Engineering Mathematics. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Linear algebra and analytical/computational techniques for solving ordinary and partial differential equations relevant to engineering applications. Prerequisite: permission of the instructor. Crosslisted as CEEG 495 and ECEG 495 and ECEG 695 and MECH 495 and ENGR 695.

CHEG 4NT. Chemical Engineering Non-traditional Study. .5-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in chemical engineering. Prerequisite: permission of the instructor.

Chemistry (CHEM)

CHEM 105. Introduction to Chemistry. 1 Credit.

Offered Fall Semester Only; Lecture hours:3,Lab:3

A terminal elementary course covering in-depth selected topics, which may vary from year to year. Satisfies science requirement for Bachelor of Arts students not majoring in science or engineering. Not open to students who have taken CHEM 160. Prerequisite: seniors by permission only.

CHEM 160. Introduction to Environmental Chemistry. 1 Credit.

Offered Spring Semester Only; Lecture hours:3,Lab:3

One semester terminal course in chemistry. Introduction to the basic chemistry principles that govern natural processes and anthropogenic effects on the environment. Satisfies laboratory science requirement for Bachelor of Arts students not majoring in science or engineering. Crosslisted as ENST 160.

CHEM 201. General Chemistry I. 1 Credit.

Offered Fall Semester Only; Lecture hours:3,Other:5

Fundamental principles in inorganic chemistry including aqueous reactions, atomic and molecular structure, coordination compounds, solids, liquids, and gases, and basic equilibrium. Laboratory experiments are both qualitative and quantitative. Credit not given for both CHEM 201 and CHEM 221.

CHEM 202. General Chemistry II. 1 Credit.

Offered Spring Semester Only; Lecture hours:3,Other:4

A continuation of CHEM 201 with a focus on equilibrium, thermodynamics, kinetics, and acid-base chemistry. Laboratory experiments emphasize quantitative procedures. CHEM 201 is a prerequisite for CHEM 202. Credit not given for CHEM 202 and CHEM 221 or CHEM 231.

CHEM 211. Organic Chemistry I. 1 Credit.

Offered Fall Semester Only; Lecture hours:4,Other:5

First-year, first-semester course for students majoring in chemistry, biochemistry, and biology. Bonding and structure in organic compounds, resonance, organic acid/base reactions, basic nomenclature, conformational analysis, stereochemistry, properties and reactions of functional groups. Prerequisite: high school chemistry or equivalent.

CHEM 212. Organic Chemistry II. 1 Credit.

Offered Spring Semester Only; Lecture hours:4,Other:5

A continuation of CHEM 211 with focus on properties and reactions of functional groups, synthesis, and spectroscopic analysis. Prerequisite: CHEM 211.

CHEM 221. Inorganic Chemistry I. 1 Credit.

Offered Fall Semester Only; Lecture hours:2,Other:4

Introduction to structures and reactivity of inorganic systems. Introductory thermodynamics and kinetics. Emphasizes hands-on, experiential learning in workshops and laboratory. Prerequisite: CHEM 212 or permission of the instructor.

CHEM 222. Accelerated General Chemistry: Inorganic. 1 Credit.

Offered Spring Semester Only; Lecture hours:3,Other:5

Atomic structure and introductory quantum mechanics. Molecular structure and theories of bonding. Introductory thermodynamics and kinetics. Introduction to coordination chemistry. Laboratory: introduction to quantitative techniques. Prerequisite: Chemical Engineering students. All others by permission of the instructor.

CHEM 231. Analytical Chemistry. 1 Credit.

Offered Spring Semester Only; Lecture hours:3,Other:5

Chemical equilibrium and modern analysis with an emphasis on acid-base systems, solubility, metal ion determinations, electroanalytical chemistry, spectrophotometry, and separation methods. Prerequisite: CHEM 221 or CHEM 222.

CHEM 2NT. Chemistry Non-traditional Study. 1-2 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies

Non-traditional study in chemistry. Prerequisite: permission of the instructor.

CHEM 313. Synthetic Organic Chemistry. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Recitation:1

Modern synthetic organic chemistry, with examples involving complex natural products. Application of organic mechanism, synthetic strategy, and advanced transformations to total synthesis. Prerequisite: CHEM 212. Crosslisted as CHEM 613.

CHEM 314. Mechanistic Organic Chemistry. 1 Credit.

Offered Either Fall or Spring; Lecture hours:4,Recitation:2

Thermal and kinetic aspects of organic reactions are discussed along with the effect of substituents, solvents, and stereochemistry on reaction pathways. Qualitative molecular orbital theory of organic compounds is covered in depth. Weekly problem sessions are held. Prerequisites: CHEM 211 and CHEM 212. Crosslisted as CHEM 614.

CHEM 317. Special Topics in Organic Chemistry. 1 Credit.

Offered Either Fall or Spring; Lecture hours:4; Repeatable

Available by independent study. Prerequisites: CHEM 212 and permission of the instructor.

CHEM 322. Inorganic Chemistry II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:4**

Survey course in modern inorganic chemistry covering transition metal, coordination, organometallic, and bioinorganic chemistry. Laboratory will consist of synthetic and physical measurements as well as the manipulation of air sensitive materials. Prerequisite: CHEM 231. Crosslisted as CHEM 622.

CHEM 327. Special Topics in Inorganic Chemistry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4; Repeatable**

Topics vary. Available by independent study. Prerequisite: CHEM 221. Crosslisted as CHEM 627.

CHEM 332. Analytical Chemistry II. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:4**

Theory and practice of techniques of instrumental analysis including spectrophotometry, fluorescence, mass spectrometry, atomic absorption, chromatography, capillary electrophoresis, and dynamic electrochemistry. Prerequisite: CHEM 231. Crosslisted as CHEM 632.

CHEM 337. Special Topics in Analytical Chemistry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Available by independent study. Prerequisite: CHEM 231 and permission of the instructor. Crosslisted as CHEM 637.

CHEM 340. Biological Physical Chemistry. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:6**

Introduction to physical chemistry for life science students, with emphasis on thermodynamics, hydrodynamics and spectroscopy. Not open to B.S. chemistry majors. Prerequisites: CHEM 231, MATH 201, and PHYS 211. MATH 202 and PHYS 212 are recommended. Crosslisted as CHEM 640.

CHEM 341. Physical Chemistry I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:5**

Introductory physical chemistry with emphasis on thermodynamics, kinetics and electrochemistry. Prerequisites: CHEM 231, MATH 211, and PHYS 212. Not open to engineering majors. Crosslisted as CHEM 641.

CHEM 342. Physical Chemistry II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:5**

Introductory physical chemistry with emphasis on quantum mechanics, structure and bonding, molecular spectroscopy and statistical mechanics. The customized laboratory experience will emphasize applications of spectroscopy and computational methods. Prerequisite: CHEM 341. Crosslisted as CHEM 642.

CHEM 343. Physical Chemistry for Engineers. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

Introductory physical chemistry for engineers, with emphasis on thermodynamics, chemical kinetics and electrochemistry. Prerequisites: CHEM 231, MATH 211, PHYS 211. Only open to engineering majors.

CHEM 347. Special Topics in Physical Chemistry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Available by independent study. Prerequisites: CHEM 231 and permission of the instructor. Crosslisted as CHEM 647.

CHEM 351. Biochemistry I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

Introduction to biological chemistry with emphasis on the structure and function of proteins, lipids, carbohydrates and nucleic acids, kinetics and mechanisms of enzymes, bioenergetics, and metabolism. Prerequisites: CHEM 212 and either CHEM 231 or CHEM 202. Crosslisted as CHEM 651.

CHEM 352. Biochemistry II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Advanced topics in protein structure and function, protein folding, enzyme mechanisms, electron transport and free-energy coupling mechanisms, biosynthesis, metabolic regulation, and supramolecular assemblies. Prerequisite: CHEM 351 or permission of the instructor. Crosslisted as CHEM 652.

CHEM 357. Special Topics In Biochemistry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1**

Structure/function relationships and dynamics of biomolecules. Prerequisite: permission of the instructor.

CHEM 358. Biochemical Methods. 1 Credit.**Offered Spring Semester Only; Lecture hours:2,Other:6**

A course in laboratory techniques including cell fractionation, protein, and nucleic acid analysis. Spectrophotometry, chromatography, centrifugation, electrophoresis, and mass spectrometry are emphasized. Prerequisites: BIOL 205 and CHEM 351 and permission of the instructor. Crosslisted as BIOL 340.

CHEM 360. Advanced Environmental Chemistry. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Chemistry of the atmosphere, hydrosphere, and lithosphere. Natural processes and anthropogenic effects will be discussed. Prerequisite: CHEM 231 or permission of the instructor. Crosslisted as CHEM 660.

CHEM 365. Atmospheric Chemistry and Physics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Addresses the relationships of chemistry, physics, and engineering principles in understanding processes in the Earth's atmosphere. Topics include overview of the Earth's atmospheric history and problems of current environmental concerns including urban ozone, acid rain, particulate pollution, and global change. Crosslisted as CHEG 455.

CHEM 371. Chemistry Lecture Series. .25 Credits.**Offered Both Fall and Spring; Lecture hours:1; Repeatable**

Formal oral presentations on current research will be given by students, faculty and visiting scientists. Prerequisites: participation in an approved research project or independent study for seniors or second term juniors only.

CHEM 375. Undergraduate Research. .5-2 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Original investigations in analytical, biological, organic, physical, environmental or inorganic chemistry.

CHEM 376. Undergraduate Research. .5-2 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Original investigations in analytical, biological, organic, physical, environmental or inorganic chemistry.

CHEM 385. Seminar. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2; Repeatable**

Topics vary. Crosslisted as CHEM 685.

CHEM 386. Seminar. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2; Repeatable**

Topics vary. Crosslisted as CHEM 686.

Chinese (CHIN)

CHIN 101. Chinese I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:2**

Intensive introduction to spoken and written "Mandarin" Chinese, the puutonghuah (common language) of modern China.

CHIN 102. Chinese I. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:2**

Intensive introduction to spoken and written "Mandarin" Chinese, the puutonghuah (common language) of modern China. Prerequisite: CHIN 101.

CHIN 103. Chinese II. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:2**

Continued rigorous study of spoken and written "Mandarin" Chinese now called puutonghuah (the common language). Prerequisite: CHIN 102 or equivalent.

CHIN 104. Chinese II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:2**

Continued rigorous study of spoken and written "Mandarin" Chinese now called puutonghuah (the common language). Prerequisite: CHIN 103 or equivalent.

CHIN 201. Chinese III. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Continued study of modern "Mandarin." Contemporary essays, movie scripts, short stories and newspaper articles. Equal emphasis on reading and speaking. Conducted in Chinese. Prerequisite: CHIN 104 or equivalent.

CHIN 202. Chinese III. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Continued study of modern "Mandarin." Contemporary essays, movie scripts, short stories and newspaper articles. Equal emphasis on reading and speaking. Conducted in Chinese. Prerequisite: CHIN 201 or equivalent.

CHIN 203. Chinese IV. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Reading and discussion of selected modern Chinese texts: newspaper and magazine articles, essays, short stories, and film scripts. Conducted in Chinese. Prerequisite: CHIN 202 or equivalent.

CHIN 204. Chinese IV. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Reading and discussion of selected modern Chinese texts: newspaper and magazine articles, essays, short stories, and film scripts. Conducted in Chinese. Prerequisite: CHIN 203 or equivalent.

CHIN 210. Business Chinese. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced Chinese language course in reading and writing business related texts, with specialized vocabulary and phrases. Case studies of global corporations established in China and historical background of the Economic Reform and Open Door Policy started in 1978. Prerequisites: CHIN 202 plus one semester abroad or equivalent; permission of instructor.

CHIN 301. Chinese V. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Study of Chinese films and film scripts and an introduction to Classical Chinese. Besides reading and speaking, interpreting and writing essays are emphasized. Prerequisite: CHIN 204 or equivalent.

CHIN 302. Chinese V. 1 Credit.**Offered Spring Semester Only; Lecture hours:4**

Study of Chinese films and film scripts and an introduction to Classical Chinese. Besides reading and speaking, interpreting and writing essays are emphasized. Prerequisite: CHIN 301 or equivalent.

CHIN 310. Advanced Seminar in Chinese Study. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Selected topics in Chinese studies. In Chinese. Course topic varies. Prerequisite: permission of the instructor.

CHIN 319. Independent Studies in Chinese. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Independent projects conducted in Chinese in the student's area of special interest. Prerequisite: permission of the instructor.

CHIN 320. Independent Studies in Chinese. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Independent projects conducted in Chinese in the student's area of special interest. Prerequisite: permission of the instructor.

Civil & Environmental Engr. (CEEG)

CEEG 2NT. Civil and Environmental Non-traditional Study. .25-4 Credits.**Offered Occasionally; Lecture hours:Varies**

Non-traditional study in civil engineering.

CEEG 300. Introduction to Structural Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Introduction to behavior, analysis and design of structures; including design criteria, loads, modeling of structural systems, design with various material types (e.g. steel, concrete, timber, masonry). Discussion of the design process, and societal/global context of structural design. Case studies used throughout the course. Prerequisites: ENGR 230 and ENGR 242.

CEEG 320. Water Resources Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3**

Planning, design, and operation of water resources projects with emphasis on hydrology, hydraulic structures, and open and closed conduits; applications in stormwater management and water supply. Prerequisite: ENGR 222.

CEEG 330. Introduction to Transportation. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Transportation systems, operations, planning, and design for highways and other modes; sustainability, safety, social, and economic issues; traffic studies in the local community.

CEEG 340. Environmental Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Introduction to fundamentals of environmental engineering and science including chemistry, microbiology, mass balance, and reactor theory. Application of concepts to environmental engineering includes water quality, water and waste-water treatment, solid and hazardous waste, air pollution, greenhouse gases and climate change. Includes hands-on lab. Prerequisite: ENGR 222 or Instructor Permission.

CEEG 350. Geotechnical Engineering I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Origin, composition, structure, and properties of soils. Identification, classification, strength, permeability, and compressibility characteristics. Introduction to foundation engineering. Laboratory determination of soil properties. Prerequisites: ENGR 222 and ENGR 230 or permission of the instructor.

CEEG 3NT. Civil and Environmental Engineering Non-traditional Study. .25-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in civil engineering. Prerequisite: permission of the instructor.

CEEG 401. Structural Analysis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Analysis of structures including: review of essential mechanics; sketching deflection, moment, and force diagrams for indeterminate systems; influence lines; application of virtual force and displacement principles; and a comprehensive study of the direct stiffness method with a focus on matrix analysis. Prerequisites: CEEG 300 and ENGR 212 or permission of the instructor.

CEEG 403. Wood Engineering Design Principles. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Wood properties as construction material; design of beams, columns, fasteners, and connections. Glued-laminated timber and many other uses for structures in accordance with the National Design Specifications. Form work for concrete structures, plywood and plywood diaphragms. Prerequisite: CEEG 300 or permission of the instructor.

CEEG 405. Design of Steel Structures. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Introduction to behavior and design of steel structures and elements, including tension members, compression members, beams, beam-columns and connections. Limit states design philosophy is emphasized through the use of AISC specifications. Design loads according to contemporary standards, and international building codes. Prerequisite: CEEG 300 or permission of the instructor.

CEEG 406. Design of Concrete Structures. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:2**

Introduction to behavior and design of concrete elements and structures: beams, columns, slabs, footings, bridges. Reinforced and prestressed concrete. Material properties and behavior, flexural and shear strength, serviceability and deflections. Use of relevant codes and specifications including ACI and ASSHTO. Design loads according to contemporary standards and international building codes. Prerequisites: CEEG 300 and permission of the instructor.

CEEG 407. Prestressed Concrete. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Analysis and design of prestressed concrete members and structures: flexural stresses, flexural strength, shear strength, loss of prestress, deflections. Prerequisites: CEEG 406 and permission of the instructor.

CEEG 408. Finite Element Methods. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Fundamental theory and applications for civil/mechanical engineering, and engineering mechanics stress analysis problems. One-, two-, three-dimensional and axisymmetric elements, and their formulations; stress recovery techniques; modeling considerations; convergence criteria and error estimates, includes use of commercial and developmental finite element analysis programs. Prereq: CEEG 401 or permission of instructor. Crosslisted as CEEG 608 and MECH 467 and MECH 667.

CEEG 409. Earthquake Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Analysis and design of structures subjected to earthquakes. Single and multi degree-of-freedom systems, response spectra, seismology, soil dynamics. Seismic design methods in building codes. Isolation and energy dissipation systems. Laboratory to include experiments with shake table. Prerequisite: CEEG 300 or permission of the instructor.

CEEG 419. Advanced Topics in Structural Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Topics will vary. Prerequisite: permission of the instructor.

CEEG 421. Hydrology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

The interrelation of meteorological conditions, precipitation, surface runoff, and groundwater storage. Prerequisites: CEEG 320 and permission of the instructor.

CEEG 422. River Mechanics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Mechanics of free-surface flows in rivers; introduction to sediment transport mechanisms; application to river engineering design (bridge crossings, culverts, flood control, river stabilization). Prerequisites: ENGR 222 and permission of the instructor.

CEEG 425. Groundwater. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:2**

The study of the occurrence of groundwater, the laws and equations governing storage and movement of groundwater, and the interaction between surface and ground waters. Prerequisite: permission of the instructor.

CEEG 429. Advanced Topics in Water Resources Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Topics will vary. Prerequisite: permission of the instructor.

CEEG 430. Introduction to Roadside Safety. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Fundamentals of roadside safety design and analysis: topics include traffic barrier warranting and selection, crash data analysis, hardware performance evaluation, and benefit/cost analysis. Prerequisites: CEEG 330 or permission of the instructor.

CEEG 431. Introduction to Urban and Regional Planning. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Problems of urban and regional planning and the treatment of various factors of a comprehensive plan. Emphasis on the sustainability and the interrelationships between engineering, sociology, geography, and economics. Prerequisite: permission of the instructor.

CEEG 432. Sustainable Transportation Planning. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Multimodal design principles, urban and regional planning approaches, and capacity analysis methods are used to analyze and design transportation systems in order to enhance mobility while simultaneously reducing impacts on the environment, society, and the economy. Prerequisite: CEEG 330 or third or fourth year engineers with permission of the instructor.

CEEG 436. Advanced Traffic Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Introduction to traffic engineering elements, including traffic flow theory, queue theory, geometric design and signal design. Students will learn to use traffic design and simulation software. Prerequisite: CEEG 330 or permission of the instructor.

CEEG 439. Advanced Topics in Transportation. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:4**

Topics will vary. Prerequisite: permission of the instructor.

CEEG 440. Physical and Chemical Treatment Processes. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Fundamentals of physical and chemical treatment processes used to remove pollutants from water, air, and soil such as ion-exchange, coagulation, sedimentation, filtration, air stripping, disinfection, adsorption, and membrane processes. Laboratory experiments reinforce theory and are help develop design criteria for full-scale treatment processes. Prerequisites: CEEG 340 or instructor permission. Crosslisted as CEEG 640.

CEEG 441. Environmental Engineering Biotechnology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:2**

Theory and design of biological waste treatment systems for industrial, municipal and hazardous pollutants and natural biotransformation of pollutants in the environment. Laboratory experience on startup, operation, and analysis of systems that biodegrade pollutants and produce useful forms of energy. Prerequisite: CEEG 340 or instructor permission. Crosslisted as CEEG 641.

CEEG 442. Sustainability Principles for Engineers. 1 Credit.**Offered Spring Semester Only; Lecture hours:4**

An introduction to concepts for the application of sustainable engineering principles. Topics include life-cycle assessment, biogeochemical cycles, climate change, fossil fuels and renewable energy, embedded water, global and cultural context, market externalities, sustainability metrics, and carbon footprint. Prerequisite: CEEG 340 or third- or fourth-year engineers with permission of the instructor. Crosslisted as CEEG 642.

CEEG 443. Systems and Life Cycle Assessment. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Systems topics include definitions, causal loops, systems dynamics, emergence, self-organization, and complexity. Life cycle assessment (LCA) includes standardized methodologies, LCA projects, and sensitivity analyses. Reading, discussion, and computational tools are central to the course. Prerequisite: CEEG 442 or instructor permission.

CEEG 444. Hazardous Waste Management. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Identification of common hazardous chemicals and related industrial activities, determination of risk-based clean up levels for hazardous waste sites, toxicology, pump-and-treat ground water remediation, in situ bioremediation, legal and liability issues, and remedial action. Prerequisites: CEEG 340 and permission of the instructor. Crosslisted as CEEG 644.

CEEG 445. Environmental Engineering Chemistry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Principles of aquatic chemistry and applications with emphasis on acid-base reactions, metal speciation and solubility, and oxidation-reduction reactions in water. Prerequisite: permission of the instructor.

CEEG 447. Sustainable Cities. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:2**

This team taught course introduces students to the core concepts of sustainability and how they have been applied to promote sustainability in London, the UK, and Europe. This course is part of Bucknell in London core course. Prerequisite: permission of the instructor. Crosslisted as ENST 347.

CEEG 448. Air Quality / Hazardous Waste Management. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Air quality topics: regulations, airborne pollutants and sources, treatment technology design, and air quality/climate change relationship. Hazardous waste topics: identification of hazardous chemicals and sources, risk-based clean-up of contaminated sites, toxicology, pump-and-treat remediation, in situ bioremediation, legal and liability issues, and remedial action. Prerequisite: CEEG 340 or instructor permission. Crosslisted as CEEG 648.

CEEG 449. Advanced Topics in Environmental Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Advanced topics course for Civil and Environmental Engineering. Prerequisite: permission of the instructor.

CEEG 450. Geotechnical Engineering II. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Application of the theories and principles of soil mechanics to foundation design. Subsurface investigations; methods of analysis, design, and construction of foundations; bearing capacity and settlement of shallow and deep foundations; excavation and bracing; earth structures. Prerequisite: CEEG 350 or permission of the instructor.

CEEG 451. Environmental Geotechnology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Interaction between hazardous and toxic wastes and geotechnical properties of soils. Remediation of the subsurface environment. Prerequisite: permission of the instructor.

CEEG 452. Ground Improvement Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Application of soil mechanics principles to improving the engineering characteristics of soils. Includes mechanisms of soil stabilization, grouting, deep dynamic compaction, reinforced earth, sand drains, and preconsolidation. Prerequisites: CEEG 350 and permission of the instructor.

CEEG 453. Advanced Soil Mechanics. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:3**

Advanced study of the theories of strength, hydraulic conductivity and compressibility. Critical review of soil origin and composition effects upon the physical and engineering properties of soils. Introduction to soil dynamics. Planning, execution, and interpretation of soil testing programs. Prerequisites: CEEG 350 and permission of the instructor.

CEEG 454. Unsaturated Soil Mechanics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Extension of the theories and principles of soil mechanics for soils in a partially saturated state. Emphasis is on the hydraulic and stress-deformation properties of soil and their history. Knowledge from this course can be applied across civil engineering disciplines. Prerequisite: CEEG 350, CENG 350 or permission of instructor. Crosslisted as CEEG 654.

CEEG 459. Advanced Topics in Geotechnical Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Topics will vary. Prerequisite: permission of the instructor.

CEEG 472. Construction Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Project documents and processes from procurement through occupancy. Building methods, materials and equipment from sitework through finishes.

CEEG 475. Forensic Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Introduction to identification, evaluation and analysis of a wide variety of engineering failures; failure investigation and the legal process; serviceability failure, material or system failure, design errors; expert witness testimony. Prerequisite: senior status.

CEEG 479. Advanced Topics in Construction Engineering and Management. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Topics will vary. Prerequisite: permission of the instructor.

CEEG 480. Special Topics in Civil Engineering. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies**

Individual projects in laboratory work, design, or library studies, depending upon the nature of the problem selected. Prerequisite: permission of the instructor.

CEEG 481. Undergraduate Research. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Original investigations in structural engineering, transportation engineering, environmental engineering, geotechnical engineering, or water resource engineering.

CEEG 490. Engineering Planning and Project Management. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Exploration and application of the civil engineering planning process including feasibility study, decision making, engineering economic analysis, and project management skills. Prerequisite: senior status.

CEEG 491. Civil Engineering Design. 1 Credit.**Offered Spring Semester Only; Lecture hours:2,Other:10**

A comprehensive design of a civil engineering project that integrates at least two subdisciplines of civil engineering. Projects are designed by teams of two to four students and must involve analysis and synthesis to produce design solutions that achieve the desired "client" needs within specified constraints. A weekly seminar series by practicing engineers and others focuses on ethics, professionalism, global issues, and engineering careers. Prerequisite: CEEG 490.

CEEG 495. Advanced Topics in Engineering Mathematics. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Linear algebra and analytical/computational techniques for solving ordinary and partial differential equations relevant to engineering applications. Prerequisite: permission of the instructor. Crosslisted as CHEG 495 and ECEG 495 and MECH 495 and ENGR 695.

CEEG 4NT. Civil and Environmental Engineering Non-traditional Study. .5-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in civil and environmental engineering. Prerequisite: permission of the instructor.

Classics (CLAS)

CLAS 110. Complex Opedipus: Myth and Remix. 1 Credit.**Offered Occasionally; Lecture hours:3**

The ancient Greek myths surrounding the royal house of Thebes and its scandalous affairs.

CLAS 115. Violence in Classics and Cinema. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the ethical and aesthetic dimensions of violence in classical literature and American cinema.

CLAS 131. Greek Civilization. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to the study of ancient Greek civilization through its art, literature, history, religion, etc. Emphasis on the classical period.

CLAS 132. Roman Civilization. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to Roman Civilization from Romulus to Constantine. Emphasis on social and cultural history, including literature, art, architecture, religion, and historiography in their cultural context.

CLAS 141. Ancient Cities. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Introduction to Near Eastern and Greco-Roman civilization through study of major urban centers. Seniors by permission of the instructor.

CLAS 150. Modern Greek Language. 1 Credit.**Offered Occasionally; Lecture hours:3**

Introduction to the basics of the Modern Greek language and culture; taught on site in Athens during the semester study abroad program in Athens.

CLAS 215. Classical Myth. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of the traditional tales of Greece and, to a lesser extent, the Near East and Rome; consideration and application of myth theory.

CLAS 216. Athenian and Theban Traditions. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:3**

Theban and Athenian myth traditions studied in their historical context and as cultural constructions expressing identity, religion, and regional opposition through literature, vase painting, and architecture.

CLAS 217. Greek History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Greek history from the heroic Bronze age down through the Persian invasion, the flourishing of Classical Athens, and the Peloponnesian wars to the death of Socrates, focusing on political, social, and economic developments. Crosslisted as HIST 240.

CLAS 218. Roman History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Roman history from Rome's foundations as a backwater village ca. 753 BCE, through its rise as a world-power to its fall in the fourth century CE, focusing on economic and political issues. Crosslisted as HIST 241.

CLAS 219. Ancient Egyptian Literature. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course presents an overview of written primary sources from Ancient Egypt including literary, religious and historical texts from the third millennium BCE to the Greco-Roman Periods.

CLAS 220. Preindustrial Environment. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An introduction to global environmental history of the preindustrial world through three thematic lenses: how the natural environment shaped patterns of human life, how ideologies toward nature shifted over time, and how human activities and ideologies reshaped the ancient landscape. Crosslisted as ENST 216.

CLAS 221. Heroic Epic. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Interpretive study of Homer's Iliad and Odyssey and other epics chosen by the instructor (e.g., the Argonautica and Aeneid). Study may include epic works of later traditions.

CLAS 222. Greek Tragedy. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Interpretive study of the works of Aeschylus, Sophocles, and Euripides.

CLAS 223. Ancient Laughter. 1 Credit.**Offered Occasionally; Lecture hours:3**

Interpretive study of Greco-Roman dramatic comedy (works of Aristophanes, Plautus, and Terence) and the comic traditions.

CLAS 224. Poetry of Passion in Greece and Rome. 1 Credit.**Offered Occasionally; Lecture hours:3**

Interpretive study of Greek and Latin poetic genres (such as lyric, epigram, elegy, pastoral, and satire), with an emphasis on the representation of love and sexuality. May include discussion of post-classical traditions of erotic poetry.

CLAS 225. The Classical Tradition. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This class establishes, explores, and questions what it means to be "classically educated" and to engage in Classical Studies in the modern world. Prerequisite: permission of the instructor. Not open to first-year students.

CLAS 226. Ancient Conflict and Competition. 1 Credit.**Offered Occasionally; Lecture hours:3**

The ancients had numerous settings for conflict and competition: battlefields, stadia, and artistic patronage. This course explores the origin, content, and meaning of agonistic display.

CLAS 227. Ancient Near Eastern Mythology. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course presents an overview of the mythology and belief systems from the Ancient Near East from the third millennium BCE to the Greco-Roman Periods.

CLAS 228. Ancient Near Eastern History. 1 Credit.**Offered Occasionally; Lecture hours:3**

Introduction to the history of the Ancient Near East; Egypt, the Levant, Anatolia, and Mesopotamia from the third millennium BCE to the Greco-Roman Periods. Emphasis is on political and social history and the evolution of belief systems.

CLAS 229. Ancient Biography. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the emergence and development of ancient biographical writing.

CLAS 230. Herodotus and His World. 1 Credit.**Offered Occasionally; Lecture hours:3, Other:3**

Study of the historian's work alongside major cultural moments of the 5th century BCE, including the Persian and Peloponnesian wars, the Sophistic movement, the Athenian Empire, and the Aegean Sea as a cultural conduit.

CLAS 231. Religion of the Ancient Mediterranean. 1 Credit.**Offered Occasionally; Lecture hours:3**

Study of the various religions of the ancient Mediterranean, especially Greek and Roman pagan practices as well as Near Eastern influences and early Christianity.

CLAS 233. The Age of Alexander the Great. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Study of the transformation of classical Greek culture into a civilization dominating the Mediterranean world and its Eastern neighbors. Topics may include art, urban culture, politics, intellectual expressions, and religious innovation.

CLAS 236. The Age of Augustus. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Study of late republican - early empire Rome, emphasizing the transition from the republic to empire, the role played by Augustus in this transition, the tension between East and West, and the crisis of morals.

CLAS 237. Ethnicity, Gender, and Identity in Antiquity. 1 Credit.**Offered Occasionally; Lecture hours:3**

Ancient Greek and Roman perceptions, both social and biological, of gender (including sexuality) and ethnicities. Includes discussion of the social position of women and other marginal members of society in antiquity. Crosslisted as WMST 237.

CLAS 240. Roman and Byzantine Greece. 1 Credit.**Offered Occasionally; Lecture hours:4**

History and archaeology of Roman and Byzantine Greece; focus on culture through art, architecture, religion, politics, and regional studies. Taught on site and in Athens during the semester study abroad program in Athens.

CLAS 241. Archaeology of Egypt. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Survey of the material culture, with emphasis on major architectural and artistic developments and their legacy to modern Western civilization. Crosslisted as ARTH 241.

CLAS 242. Archaeology of Greece. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Survey of the material culture of the Greek world from the Bronze Age through the Hellenistic period. Crosslisted as ARTH 242.

CLAS 243. Archaeology of Rome. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Survey of the material culture of the Roman world from the Etruscans through the late Empire. Crosslisted as ARTH 243.

CLAS 247. Ancient Technology. 1 Credit.**Offered Alternate Fall and Spring; Lecture hours:3**

A detailed survey of the state of ancient technology by the time of the early Roman empire in its economic and social context. Topics include sources of power, mining and metallurgy, quarrying, land and sea transport, and the urban infrastructure.

CLAS 250. Topic in Classics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of a topic relating to the classical world and its tradition. Examples, slavery, women, religions, a historical period. May be repeated for credit when topic varies.

CLAS 251. Biblical Archaeology. 1 Credit.**Offered Occasionally; Lecture hours:3**

A survey of the archaeology of the Biblical world from the Agricultural Revolution through the Byzantine Period emphasizing the evolution of the Biblical texts.

CLAS 253. Ancient Ships and Seafaring. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course will introduce you to the ships, sailors, and navies of the ancient Mediterranean and of Greece and Rome in particular. We will analyze the evidence in ancient texts, shipwreck archeology, and artistic representations.

CLAS 275. Greece and Turkey: East and West. 1 Credit.**Offered Summer Session Only; Lecture hours:Varies**

This course is based around a three-week summer study abroad experience in Greece and Turkey. Themes and materials will vary from year to year. Prerequisites: interview prior to admission and permission of the instructor. Crosslisted as ENLS 275 and HUMN 275.

CLAS 311. Independent Study in Classics. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Topics in classical civilization, to be chosen by the student. Prerequisite: permission of the instructor.

CLAS 321. Honors Tutorial and Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Independent study and research leading to the writing of a thesis. Prerequisite: permission of the instructor.

CLAS 322. Honors Tutorial and Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Independent study and research leading to the writing of a thesis. Prerequisite: permission of the instructor.

CLAS 332. Classical Athens. 1 Credit.**Offered Occasionally; Lecture hours:3**

An in-depth integrative study of Athens from the 6th - 4th centuries including its literature, arts, architecture, religion, philosophy, politics. Some background required. Prerequisite: permission of the instructor.

CLAS 333. Hellenistic Cultural Landscape. 1 Credit.**Offered Occasionally; Lecture hours:3**

An interdisciplinary examination of the Hellenistic cultural landscape as a cultural, historic, ecological, and symbolic system. Includes discussion of the eastern Mediterranean and central Asia as a focus of confrontation between east and west over time. Prerequisite: permission of the instructor.

CLAS 334. Women in Antiquity. 1 Credit.**Offered Occasionally; Lecture hours:3**

Seminar-style examination of the lives of women in antiquity both real and imagined, as attested in a variety of ancient media. Prerequisite: permission of the instructor. Crosslisted as WMST 334.

CLAS 335. Roman Literature. 1 Credit.**Offered Occasionally; Lecture hours:3**

This seminar will consist of an in-depth reading of various literatures of Rome from both literary and historical perspectives.

CLAS 336. The Ancient Novel. 1 Credit.**Offered Occasionally; Lecture hours:3**

Study of Graeco-Roman prose fiction, such as Apuleius' "Golden Ass", and Longus' "Daphnis and Chloe", together with current scholarly literature. Prerequisite: permission of the instructor.

CLAS 350. Seminar on a Classical Topic. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of a topic of importance in classics. Examples: a current problem, an important figure, a historical period. Prerequisite: permission of the instructor.

Computer Science (CSCI)

CSCI 1NT. Computer Science Non-traditional Study. .5 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in computer science. Prerequisite: permission of the instructor.

CSCI 203. Introduction to Computer Science I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:2**

Overview of computing that explores relationships between computer organization, various programming approaches, limits to computing, and computing in society. Students solve computational problems using Python.

CSCI 204. Introduction to Computer Science II. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:2**

Introduction to data structures and algorithms using an object-oriented approach. Topics include software-engineering principles, object-oriented programming, recursion, basic data structures, algorithm analysis, and team programming. Prerequisite: CSCI 203 or permission of the instructor. Corequisite: MATH 201 or equivalent.

CSCI 205. Software Engineering and Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Fundamentals of software design and software engineering. Students will participate in large-scale, team-based software development project. Prerequisite: CSCI 204 or permission of the instructor.

CSCI 206. Computer Organization and Programming. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Concepts of software and hardware. Software: instruction set design, assembly language and assemblers. Hardware: processor organization, memory hierarchy, interfacing processors and I/O devices. Prerequisite: CSCI 204 or permission of the instructor.

CSCI 208. Programming Language Design. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Study of modern programming language paradigms (procedural, functional, logic, object-oriented). Introduction to the design and implementation of programming languages including syntax, semantics, data types and structures, control structures, run-time environments. Prerequisite: CSCI 205 or permission of the instructor.

CSCI 240. Computers and Society. .5 Credits.**Offered Spring Semester Only; Lecture hours:2**

The place of computers in society. In-depth study of societal, ethical, and legal issues related to computing. Historical and futurists' views of computing and technology. Public perceptions of computing and the role of computer scientists as professionals. Course work includes oral and written presentations. Prerequisite: junior or senior standing.

CSCI 245. Life, Computers, and Everything. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

This course explores how computing technologies fit into modern life and provides opportunities for critical analysis of their societal impacts. Past, current, and future developments in computing are studied from ethical and legal perspectives. Course activities includes discussions, oral presentations, and written work. Fulfills CSCI 240 requirement for CS majors.

CSCI 278. Computer Science Individual Study. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies; Repeatable**

Independent study or project in computer science. Prerequisite: one of the following: CSCI 185, CSCI 203, CSCI 204, CSCI 205, CSCI 206, CSCI 208, CSCI 240, or permission of the instructor.

CSCI 2NT. Computer Science Non-traditional Study. .5-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in computer science. Prerequisite: permission of the instructor.

CSCI 305. Introduction to Database. 1 Credit.**Offered Occasionally; Lecture hours:3**

Relational database design methodologies, evaluation techniques, programming, and query languages. Introduction to database systems design, performance, and object-oriented databases. Prerequisites: CSCI 204 and junior or senior standing.

CSCI 311. Algorithms and Data Structures. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Introduction to the algorithms and data structures used in implementing abstract data types including priority queues, dictionaries, and graphs. Includes complexity analysis of various implementations. Prerequisites: MATH 241 and CSCI 205 or permission of the instructor.

CSCI 315. Operating Systems Design. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Introduction to operating system design including processor management, scheduling, memory management, resource allocation, file systems, and concurrency. Prerequisite: CSCI 206.

CSCI 320. Computer Architecture. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Use hardware description language to describe and design digital systems. Processor design, pipelining, cache and storage systems. Instruction and thread level parallelism, speculation, branch prediction. Prerequisite: CSCI 315 or permission of the instructor.

CSCI 321. Mobile Systems Development. 1 Credit.**Offered Occasionally; Lecture hours:3**

Covers the software design and development process of a mobile applications developer. The course uses smartphones and tablets as the programming platform. Prerequisite: CSCI 205.

CSCI 331. Compiler Optimization. 1 Credit.**Offered Occasionally; Lecture hours:3**

Project based introduction to compiler optimization for theoretical and practical issues such as run-time, memory usage, code robustness, and security. Prerequisite: CSCI 208.

CSCI 335. Web Information Retrieval. 1 Credit.**Offered Occasionally; Lecture hours:3**

Introduction to information retrieval. Topics include retrieval models, evaluations, text properties, indexing, query operations, user interfaces, and web search. Prerequisites: CSCI 206 and junior standing.

CSCI 341. Theory of Computation. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

Finite automata, regular sets, pushdown automata, context-free grammars. Turing machines, recursive functions and undecidability. Prerequisite: MATH 241 or MATH 280.

CSCI 349. Introduction to Data Mining. 1 Credit.**Offered Occasionally; Lecture hours:3**

Data preprocessing, statistical modeling, basic machine learning algorithms for mining large datasets. Topics include association analysis, frequent pattern mining, classification, and clustering. Prerequisites: CSCI 311 and MATH 226.

CSCI 350. Introduction to Analysis of Algorithm. 1 Credit.**Offered Occasionally; Lecture hours:3**

Selected topics in algorithm design, analysis, and application. Possible topics include network flows, graphs, string processing, randomized algorithms, parallel algorithms, optimization, and NP-completeness. Prerequisite: CSCI 311.

CSCI 362. Computer and Network Security. 1 Credit.**Offered Occasionally; Lecture hours:3**

Fundamental principles of computer and network security. Topics include cryptology, privacy, secure programming, authentication, assurance, intrusion detection, and practical experience on networking Linux computers. Concurrent prerequisite: must have already taken or currently taking CSCI 315.

CSCI 363. Computer Networks. 1 Credit.**Offered Occasionally; Lecture hours:3,Lab:2**

Principles and design of networked computing systems and application programs. Topics include reliable communications medium access control, routing, transport, congestion control and networked applications. Prerequisite: CSCI 315.

CSCI 367. Computer Graphics. 1 Credit.**Offered Occasionally; Lecture hours:3,Lab:2**

Topics in graphics hardware and software. Input devices and output displays and graphics processor architecture. Application packages, general purpose graphics packages, and algorithms. Use of color and software for two- and three-dimensional graphics. Prerequisites: junior or senior standing; CSCI 204 or permission of the instructor.

CSCI 376. Computer Science Honors Thesis. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies; Repeatable**

Independent work on computer science honors thesis. Prerequisite: permission of the instructor.

CSCI 378. Individual Study in Computer Science. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies; Repeatable**

Independent study in computer science. Recent areas include graph algorithms, computer security, distributed computing, graphics, programming languages, software engineering, web retrieval. Prerequisites: junior standing and permission of the instructor.

CSCI 379. Topics in Computer Science. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Current topics of interest. Course may/may not require laboratory depending upon the topic. Prerequisite: permission of the instructor.

CSCI 3NT. Computer Science Non-traditional Study. .5-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study course in computer science. Prerequisite: permission of the instructor.

CSCI 475. Senior Design I. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:2; Repeatable**

A recognized software engineering methodology will be used with all phases of a senior design project. Written work will include a technical report about the project, a feasibility report, and a requirements specification document. Prerequisite: permission of the instructor.

CSCI 476. Senior Design II. 1 Credit.**Offered Spring Semester Only; Lecture hours:1.5**

Students undertake several cycles of delivery, each including a design document, product implementation, testing, and feedback. Students produce technical and user's manuals for the final version. Class presentations of designs and implementations. Includes public presentation of the final product and design process. Prerequisites: CSCI 475 and permission of the instructor.

CSCI 479. Computer Science Design Project. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Students in teams use software engineering methodology to design and implement a semester-long project. Written reports and oral presentations are required. Prerequisites: CSCI 205 and senior standing in the College of Arts and Sciences and permission of the instructor.

Creative Writing (ENCW)

ENCW 101. Creative Writing. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to creative writing through the reading and writing of poetry and prose (fiction or creative nonfiction). Does not count toward the creative writing concentration or minor. Prerequisite: seniors by permission of the instructor.

ENCW 102. Writing Fiction. 1 Credit.**Offered Occasionally; Lecture hours:3**

In this introductory fiction workshop, students will read and discuss contemporary and classic texts with a writer's eye. Completing fiction exercises and revisions as well as responding to one another's work, they will use the techniques and habits of successful writers to enhance their own writing and creativity.

ENCW 1NT. Creative Writing Non-traditional Study. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in English. Prerequisite: permission of the instructor.

ENCW 202. Fiction Workshop. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Principles of writing fiction, with constant practice. Designed for students planning to concentrate or minor in creative writing. Preference given to juniors, sophomores, and first-year students. Restrictions: seniors by permission of the instructor.

ENCW 203. Creative Nonfiction Workshop. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Theory and practice of creative nonfiction, including travel writing, memoir, and other forms. Designed for students planning to concentrate or minor in creative writing. Preference given to juniors, sophomores, and first-year students. Prerequisite: seniors by permission of the instructor.

ENCW 204. Poetry Workshop. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Principles of writing poetry, with constant practice. Designed for students planning to concentrate or minor in creative writing. Preference given to juniors, sophomores, and first-year students. Prerequisite: seniors by permission of the instructor.

ENCW 205. Screenwriting Workshop. 1 Credit.**Offered Occasionally; Lecture hours:3**

Principles of screenwriting with constant practice. Designed for students interested in creative writing or Film/Media Studies.

ENCW 210. Special Topic in Creative Writing. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Studies in such topics as prosody, stylistics, characterization, or narrative theory. Course emphasizes formal or structural elements within particular genres and an appreciation of craft from a writer's perspective. Prerequisite: permission of the instructor.

ENCW 211. Writing Foreign Places. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course in the reading and writing of personal narrative essays and short fiction about foreign places is designed for students interested in writing out of experiences of travel and/or other kinds of cultural displacement. Each student will define "foreign" in relation to him or herself.

ENCW 214. Introduction to Screenwriting. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Principles of screenwriting with constant practice. Designed for students interested in creative writing or Film/Media Studies.

ENCW 220. Writing Comedy and Satire. 1 Credit.**Offered Occasionally; Lecture hours:3**

Students will explore satire and humor in fiction through the work of comic writers, including Kurt Vonnegut, George Saunders, and Donald Barthelme. The focus will be on analyzing craft (i.e. hyperbole, understatement, the surreal) and on employing these elements in exercises, stories, and class workshops.

ENCW 221. Short Short Fiction. 1 Credit.**Offered Occasionally; Lecture hours:3**

Developing a sense of the foundational elements of short form fiction through reading and discussion of a variety of American and international writers, students will challenge conventions as they draft their own short form fiction and respond to one another's work.

ENCW 230. Writing Nature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This creative writing "form and theory" course explores writing about nature in several traditions with attention to the ways in which nature is inscribed in language and expressed by literary forms. It examines critical moments in the evolution of cultural awareness of nature in the West. Prerequisite: permission of instructor.

ENCW 231. Environmental Writing. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This is a course in creative nonfiction focused on writing about the environment. Prerequisites: permission of the instructor.

ENCW 237. Internship. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4; Repeatable**

Two competitive internships are offered: Stadler Center Internship provides practical experience in and insight into arts management; West Branch Internship provides practical experience in and insight into literary publishing. Prerequisite: permission of the instructor.

ENCW 240. Eco-poetics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

An exploration of poetry as site-specific ecological practice. Intended for students interested in both Creative Writing and Environmental Studies. Prerequisite: permission of the instructor. Crosslisted as ENST 227.

ENCW 241. Poetry, Mind, Nature. 1 Credit.**Offered Occasionally; Lecture hours:3**

In the reading and writing of poetry that observes the natural world explores the relationship between such poetry and the human imagination. The course involves workshops as well as fieldwork, which provides material for poems and increases students' ability to identify local flora and fauna. Prerequisite: permission of the instructor.

ENCW 2NT. Creative Writing Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3; Repeatable**

Non-traditional study in Creative Writing. Prerequisite: permission of the instructor.

ENCW 302. Advanced Fiction Workshop. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced workshop in the writing of fiction. Prerequisites: Any 200-level Creative Writing (ENCW) course in creative nonfiction or fiction and permission of the instructor. Crosslisted as ENCW 609.

ENCW 303. Advanced Creative Nonfiction Workshop. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced workshop in the writing of creative nonfiction. Prerequisites: Any 200-level Creative Writing (ENCW) course in creative nonfiction or fiction and permission of the instructor. Crosslisted as ENCW 603.

ENCW 304. Advanced Poetry Workshop. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced workshop in the writing of poetry. Prerequisites: Any 200-level Creative Writing (ENCW) course in poetry and permission of the instructor. Crosslisted as ENCW 608.

ENCW 319. Individual Projects in Creative Writing. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Individual special projects supervised by instructor; honors thesis. Prerequisite: permission of the instructor.

ENCW 379. Senior Thesis. 1 Credit.**Offered Spring Semester Only; Lecture hours:Varies,Other:3; Repeatable**

The writing of a scholarly or creative departmental senior thesis. Students must confer with and submit a proposal to an adviser prior to registering for the thesis. Prerequisite: permission of the instructor.

ENCW 380. Honors Thesis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

The writing of a scholarly or creative honors thesis. Students must confer with and submit a proposal to a departmental adviser and to the University Honors Council for approval. Prerequisites: senior status and permission of the instructor.

ENCW 391. Seminar in Poetry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

A study of poetry as a genre and an analysis of the work of selected poets. Prerequisite: permission of the instructor.

ENCW 3NT. Creative Writing Non-traditional Study. 1-1.5 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Creative Writing. Prerequisite: permission of the instructor.

Dance (DANC)

DANC 105. Jazz Dance Technique I. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:3**

Beginning level course on jazz as an American vernacular dance form emphasizing its roots in African and Latin cultural rhythms, as well as contemporary technique.

DANC 120. Modern Dance Technique I. .5 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

Beginning level technique emphasizing the basic principles of different modern dance styles, dynamics and alignment through floorwork, locomotor patterns, improvisation and movement combinations.

DANC 140. Ballet Technique I. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:3**

Beginning level ballet course emphasizing fundamental classical ballet technique and vocabulary necessary for performance.

DANC 200. Art of Chinese Watersleeve. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:2**

Studio training in the classical and folk dance forms of China, including Chinese traditional dance and specialized props, such as watersleeves, fans, ribbons, etc. Dance experience required.

DANC 205. Jazz Dance Technique II. .5 Credits.**Offered Alternate Fall and Spring,Offered Alternate Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

Intermediate/advanced jazz dance course emphasizing complex combinations in technique and rhythm of American vernacular, Broadway, and contemporary jazz.

DANC 207. Musical Theatre. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:1.5,Other:1.5**

An experiential study of musical theatre as an art form with unique conventions and aesthetics, focusing on the performance and production elements of the Broadway stage. Some experience suggested. Crosslisted as THEA 207. Prerequisite: permission of the instructor.

DANC 215. Special Topics in Dance. .5-1 Credits.**Offered Occasionally; Lecture hours:1.5,Other:1.5; Repeatable**

Lecture/laboratory course emphasizing the discovery and exploration of basic movement principles, which could include historical, cultural, or social approaches to kinesthetic experiences. Topics vary. Crosslisted as THEA 215.

DANC 220. Modern Dance Technique II. .5 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Intermediate level technique exploring the basic principles of different modern dance styles, alignment, dynamics, and musicality through floorwork, locomotor patterns and movement combinations. Prerequisite: DANC 120.

DANC 240. Ballet Technique II. .5 Credits.**Offered Both Fall and Spring,Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

Intermediate level ballet course emphasizing the development of technique and performance aesthetics.

DANC 250. History of Dance. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Survey of Western and non-Western dance forms both as reflective of cultural history and as an art form from ancient times to the present.

DANC 262. Dance Composition. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Introduction to the fundamental elements and underlying principles of the craft and art of dance composition emphasizing practical experience in structuring solo and group choreography. Prerequisite: permission of the instructor.

DANC 263. World Dance and Culture. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:3; Repeatable**

Study of specific dance technique, performance theory, repertory section, and/or methodology emphasizing an experiential understanding of the specific genre. Prerequisite: permission of the instructor.

DANC 273. American Social Dance. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:3**

No experience required. A kinesthetic American history course, this class will focus on the various popular dance forms of the 20th century common to American dance halls, television and movies, stage, and streets.

DANC 275. Dance Conditioning. .5 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3**

Introduction to principles of conditioning emphasizing strengthening, alignment, flexibility, and injury prevention through such integrative techniques as Pilates, Yoga, Floor Barre, and other body/mind systems.

DANC 319. Individual Projects. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Individual, special projects supervised by instructor. Prerequisites: junior or senior status and permission of the instructor.

DANC 320. Modern Dance Technique III. .5 Credits.**Offered Alternating Fall Semester; Lecture hours:Varies,Other:3; Repeatable**

Advanced level technique refining principles of different modern dance techniques, alignment, dynamics, and artistry through complex floorwork, locomotor patterns and movement combinations. Prerequisite: DANC 220.

DANC 335. Advanced Training and Technique. .5 Credits.**Offered Alternating Spring Semester; Lecture hours:Varies,Other:2; Repeatable**

This course is designed to supplement rigorous physical training for advanced dancers with ballet, jazz, and/or modern backgrounds. Prerequisites: DANC 205, DANC 220, or DANC 240 and permission of the instructor.

DANC 340. Ballet Technique III. .5 Credits.**Offered Alternating Fall Semester; Lecture hours:Varies,Other:3; Repeatable**

Advanced level ballet course emphasizing technical precision and expressive qualities in complex contemporary and classical ballet combinations.

DANC 355. Pointe and Variations. .5 Credits.**Offered Alternating Spring Semester; Lecture hours:Varies,Other:2; Repeatable**

Applied pointe technique emphasizing individual artistic development using classical or contemporary variations appropriate for each student's skill level and interest. Previous pointe experience required.

DANC 360. Rehearsal and Performance. .25 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Quarter-course credit for substantial participation in dance production. Prerequisite: permission of the instructor.

East Asian Studies (EAST)

EAST 111. East Asian Civilization. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:1**

The development of Chinese, Korean, and Japanese civilizations highlighting their political, cultural, philosophical, and religious aspects from earliest times to the present.

EAST 120. Introduction to Chinese Culture. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Introductory course on Chinese culture from antiquity to the middle of the 20th century, covering philosophy, literature and arts.

EAST 125. Masterpieces of Chinese Literature in Translation. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course introduces students to various great works in Chinese literary tradition from early times to the modern period. No prerequisite.

EAST 130. Business Japanese: Language and Culture. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Basic Japanese business conversation, basic writing skills, and accepted conventions in the Japanese business world. No prerequisite.

EAST 137. Traditional Chinese Tales/Stories. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Explores Chinese literature through the lens of stories. We will examine a variety of stories including, but not limited to creation stories, myths, ghost stories and romances.

EAST 203. Digital Methods in Chinese Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:5,Other:2.5**

This course introduces students to digital tools and resources in Chinese studies. Topics include data mining, database design, and data visualization. It combines discussion of digitally-empowered scholarship in Chinese studies and training in the technical know-how. Knowledge of Chinese language, Chinese history, or programming is not required. Crosslisted as HIST 203.

EAST 205. Introduction to Translation Studies. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

An introduction to the history, theories, and development of the field of Translation Studies. Facility in one language other than English is strongly recommended. Crosslisted as HUMN 260.

EAST 211. Premodern Japanese Literature in Translation. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

The beginnings of Japanese literary traditions: works written before the close of the 19th century - before Western influence is seen. Taught in English.

EAST 212. Modern Japanese Literature in Translation. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Literary trends in 20th-century Japan with emphasis on the development of the modern novel and short story. Works by Soseki, Tanizaki, Kawabata, Mishima, Abe, Enchi, Murakami and others. Taught in English.

EAST 213. Chinese Literature in Translation. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Great works of modern and contemporary Chinese literature.

EAST 220. Japanese Warrior in Literature. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Traces the literary (re)construction of the 'warrior' in Japanese literature, from the samurai of the 12th century to the Imperial soldier of the mid 20th century. Taught in English.

EAST 222. Passion/Perversion: Japan Film. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3**

A discussion class in which numerous modern Japanese films are used to explore the representation of desire, both passionate and perverse. WARNING: explicit sexual content. Crosslisted as WMST 221.

EAST 226. East Asian Politics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course surveys political history, political institutions, economy, and society of major countries in East Asia, with focus on the continuity and changes in politics and policies of China, Japan, and Korea. Crosslisted as IREL 226 and POLS 226.

EAST 227. Art of Japan. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Introduction to the art and architecture of Japan.

EAST 228. China Through the Lens. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

A history of cinema in mainland China, its origin and important periods, movements, and "generations," as well as representative cinemas of Taiwan and Hong Kong.

EAST 232. Romance in Chinese Literature and Art. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An introduction to Chinese literature and art through examinations of love stories in fairy tales, poetry, fiction, drama, theatre, film, and music.

EAST 233. China from Ancient Time to 18th Century. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Chinese history and culture from their beginnings to the middle of the Qing Dynasty, before that dynasty and China were challenged by the West. Crosslisted as HIST 293.

EAST 234. China Since 1800. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

China from the eve of its modern confrontation with the West to the present through years of traumatic challenge and change. Crosslisted as HIST 294.

EAST 239. Tradition and Transformation. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

A summer trip to China to study past and present in five historical capitals. Prerequisite: permission of the instructor.

EAST 241. Women in Chinese Literature. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course examines various modes of representation of women in Chinese literature to understand China's literary past from a women-centered point of view. Crosslisted as WMST 241.

EAST 244. Religions of East Asia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Focused study of one or more East Asian religious traditions. This course centers on religions and on topics that may include but will not be limited to: Confucianism, Daoism, Buddhism, Shinto, and new East Asian religious movements. Crosslisted as RELI 244.

EAST 248. International Relations in East Asia. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course offers an overview of international relations in East Asia, with focus on political, economic, and social interactions among major states in the region. Crosslisted as IREL 283 and POLS 283.

EAST 251. Buddhism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1**

Interdisciplinary introduction to Buddhism, including basic teachings of liberation from suffering, impermanence, no-self, ethics, and meditation. Also explores the historical development of various streams of Buddhism in Asia and the West, with attention to the effect of Buddhism on society, politics, and material culture. Crosslisted as RELI 200.

EAST 252. Marketing Chinese Religions. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Focus on the economies of Chinese religious institutions in modern and contemporary periods, with attention also paid to premodern precedents. Economics here indicates not only mechanisms of monetary exchange, but also negotiations of spiritual capital (ledgers of [de]merit) and of religious identities amidst rampant consumerism and commodification of sanctity. Crosslisted as RELI 245.

EAST 253. Religions of Japan. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to the religious traditions of Japan through study of their origins, basic beliefs, practices and values, historical development, as well as their interaction and involvement with politics, culture, society, and each other. Focus on Shinto and the various forms of Japanese Buddhism. Crosslisted as RELI 246.

EAST 254. From Shinto to Shogun: Pre-modern Japan. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The course will examine the cultural and institutional developments which constitute the Japanese heritage, with emphasis on classical Heian and early medieval court culture and late medieval samurai society. Crosslisted as HIST 295.

EAST 255. Modern Japanese History. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Japanese economy, society, politics, war, and diplomacy from 1868 to World War II; successes, crises, and conflicts in building a modern nation-state. Crosslisted as HIST 296.

EAST 256. Contemporary Japanese History. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:1**

Political and cultural history of post-World War II Japan using various sources including film, anime, art, political cartoon, popular song. Crosslisted as HIST 286.

EAST 266. Chinese Philosophy. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Major philosophical schools of the classical age, Buddhist philosophy, Neo-Confucianism. Crosslisted as HUMN 266 and PHIL 266. Prerequisite: PHIL 100 or permission of the instructor.

EAST 267. The People's Republic of China. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

A historical look at life in China under the rule of the Communist Party. Unprecedented triumphs and tribulations. Crosslisted as HIST 297.

EAST 269. Chinese Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This examines China's rich political history, its dynamic economic and social changes, its lasting political culture, its enduring struggle for modernization, and its evolving relations with the rest of the world. Crosslisted as IREL 225 and POLS 225.

EAST 274. The Greater Chinese Economy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Coverage of topics essential to understanding the ongoing process of economic transition in China, while emphasizing China's role in the Asian and world economies. Prerequisite: ECON 103.

EAST 278. Asian Economic Development. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Analysis of contemporary economic development in Asia, focusing on the role of public policy, international trade and investment, and on prospects for future growth. Prerequisite: ECON 103.

EAST 289. Chinese Diaspora. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Is the world becoming Chinese? This course examines the history of China outside of China. It explores the development of overseas Chinese communities around the world, including SE Asia and the Americas. Crosslisted as HIST 289.

EAST 295. Topics in East Asian Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary.

EAST 299. Topics in the History of the Third World. 1 Credit.**Offered Occasionally; Lecture hours:3**

History of Vietnam.

EAST 321. Independent Study. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; Repeatable**

Individual program of reading, research, or writing. Prerequisite: permission of the instructor.

EAST 322. Independent Study. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

Individual programs of reading, research, or writing. Prerequisite: permission of the instructor.

EAST 339. China and the World Economy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An analysis of economic transition and development in China, with emphasis on its role in the Asia-Pacific and world economies. Prerequisites: ECON 256 and ECON 257 or permission of the instructor. Crosslisted as ECON 439. Preference given to ECON and ECMA majors.

EAST 340. Comparative Pacific Basin Economics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Contemporary developmental issues facing selected Pacific Basin economies, emphasizing international trade, foreign investment, and public policies. Prerequisite: ECON 256, ECON 257, or permission of the instructor.

EAST 369. Seminar in East Asian History and Culture. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

A multidisciplinary seminar for Japanese and East Asian Studies majors. Bibliography, sources and disciplinary approaches to East Asia.

EAST 370. Seminar in East Asian History and Culture. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

A multidisciplinary seminar for Japanese and East Asian Studies majors. Individual and group studies of selected topics.

EAST 382. U.S.-China Relations. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Through tracing the evolution of U.S.-China relations from the 18th century to the present, this course discusses major issues and challenges between the two countries today. Future trends of the bilateral relationship will also be explored. Prerequisite: POLS 170. Preference given to POLS/IREL/EAST majors. Crosslisted as IREL 482 and POLS 382.

EAST 395. East Asian Studies Honors Thesis. 1 Credit.**Offered Fall Semester Only; Lecture hours:Varies,Other:3**

Focused research relevant to department Culminating Experience. Prerequisite: permission of the instructor. Seniors only.

EAST 400. East Asian Studies Senior Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Focused research relevant to department Culminating Experience. Prerequisite: permission of the instructor. Seniors only.

Economics (ECON)

ECON 102. Workshop in Social Science Methods. .5 Credits.**Offered Spring Semester Only; Lecture hours:1**

Covers basic introduction to research methods, skills, and ethics. Both qualitative and quantitative methods are covered. Offered as a prerequisite to summer research assistantship. Prerequisite: permission of the instructor.

ECON 103. Economic Principles and Problems. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

General introduction to both macroeconomics and microeconomics, along with an introduction to economic history, international economics, and political economy. The course also examines the origin of economic ideas in the works of Adam Smith, John Maynard Keynes, Karl Marx, and others.

ECON 1NT. Economics Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in economics. Prerequisite: permission of the instructor.

ECON 201. Independent Study. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3**

Individual product or project supervised by a member of the economics department typically resulting in the production of a long research paper.

Prerequisite: permission of the instructor.

ECON 222. Economic Topics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected issues in economic theory or policy. Prerequisite: permission of the instructor.

ECON 224. African Political Economy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Analysis of topics in films and novels by Ousmane Sembene: pre-colonial history, colonialism, post-colonial independence, racial and gender oppression, worker exploitation, religious conflict, and modernization. Prerequisite: ECON 103. Crosslisted as WMST 224.

ECON 225. Cultivating Change. 1 Credit.**Offered Occasionally; Lecture hours:15,Other:15**

Explores limits to growth and sustainable alternatives. Includes work on an organic farm, and discussions of rhetoric and debates regarding sustainability. Crosslisted as UNIV 224.

ECON 227. International Economics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An examination of international economic relations today and of the theory used to analyze trade and financial relations. Attention is given to the problems of government policy with respect to international issues. Prerequisite: ECON 103 or permission of the instructor.

ECON 231. Resources and the Environment. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course will develop economic concepts to explain why well-intentioned individuals so often choose to abuse their own environment and stock of natural resources and suggest and evaluate policies designed to remedy the situation. Prerequisite: ECON 103 or permission of the instructor.

ECON 235. African Economic Development. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A historical, institutional analysis of Sub-Saharan African economic, social, and political development. Primary emphasis will be on the analysis of the economic crisis facing the subcontinent since the late '70s and the structural adjustment programs that have been instituted to deal with the crisis.

Prerequisite: ECON 103.

ECON 236. Unemployment and Poverty. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A study of the causes of unemployment and poverty in the United States and policies to generate full employment and eliminate poverty. Prerequisite: ECON 103 and/or permission of the instructor. Crosslisted as WMST 236.

ECON 237. Health Politics and Health Policy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

History of health care delivery and financing in the United States and introduction to and evaluation of current topics in health policy. Prerequisite: ECON 103 or permission of the instructor. First- or second-year standing, others by permission.

ECON 238. Urban Economics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of household and business location decisions, and public policies aimed at congestion, pollution, and crime. Prerequisite: ECON 103. First- and second-year standing, others by permission.

ECON 245. Sports Economics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The study of the economics of professional sports teams and leagues, including ticket pricing, the market for broadcast rights, the effects of revenue sharing and other league practices on the distribution of talent and player salaries, and government subsidies for stadiums. Prerequisites: ECON 103 and MATH 216 or MATH 226 or MGMT 102 or PSYC 215.

ECON 251. Logic Limits Economic Justice. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Investigation of the nature of the "good society" from an economist's point of view, ranging from Right libertarian to anarcho-communist perspectives. Prerequisites: ECON 103 and permission of the instructor.

ECON 253. Gender and Migration. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Role of gender in internal and international migration flows; economic restructuring; state policies; transnational domestic laborers and sex workers; and migration effects. Crosslisted as WMST 253.

ECON 256. Intermediate Microeconomic. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Intermediate economic theory of the consumer, the firm, market structures, and resource allocation. Not open to students who have completed ECON 259. Prerequisite: ECON 103 and ACFM majors or permission of the instructor.

ECON 257. Intermediate Macroeconomic. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The study of national income, employment, inflation, interest rates, and the impact of monetary and fiscal policy on the economy. Prerequisite: ECON 103 and MATH 192 or MATH 201.

ECON 258. Intermediate Political Economy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Intermediate study of Marxist and institutionalist political economy. The ideas of Marx and Veblen applied to such matters as the distribution of income and power, the environment, working conditions, consumerism, and race and gender issues. Prerequisite: ECON 103.

ECON 259. Intermediate Mathematical Microeconomics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Intermediate microeconomic theory of the consumer, the firm, market structures, and resource allocation. Topics are introduced using differential calculus. Not open to students who have completed ECON 256. Prerequisites: ECON 103 and MATH 192 or MATH 201.

ECON 266. Political Economy of Caribbean. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The development of the Caribbean from colonial times to the present. A look at the social, political, and economic development of the Caribbean as a whole rather than as independent aspects of development.

ECON 268. Migrations: Africa to America. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

This course examines forced and voluntary migrations of Africans and their North American descendants. It will begin with an analysis of west and central African history and will then focus on the period from the beginning of the Trans-Atlantic Slave trade to the present.

ECON 270. South Africa: Social Entrepreneurship. 1 Credit.**Lecture hours:15**

The course examines the legacy of apartheid and the role of social entrepreneurship in transforming communities. Students are placed in community organizations in nearby townships. Crosslisted as MGMT 270 and WMST 275 and PSYC 270. Prerequisite: permission of the instructor.

ECON 271. The British Economy: Structures and Policies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Offered as an option for Bucknell in London students. This course will treat a distinct topic relating to British economic affairs.

ECON 273. Latin American Economic Development. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

The course deals with historic and contemporary economic problems, starting from colonial times and reaching the present integration into world economy. Prerequisite: ECON 103. Crosslisted as LAMS 273.

ECON 277. The French Economy: Structures and Policies. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Analysis of government planning since 1945. The conflict of liberal and socialist ideologies today. Open to Bucknell en France students only.

ECON 280. Political Economy of Media and Advertising. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines the interrelationship of cultural, political, and economic aspects of media content and advertising from the perspective of Institutional and Marxian political economy. Prerequisite: ECON 103 or permission of the instructor.

ECON 299. Teaching Assistants in Economics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course can only be taken by economic majors who have permission and have taken the prerequisites. Prerequisites: ECON 256 or ECON 259, ECON 257, and ECON 258 and permission of the instructor.

ECON 2NT. Economics Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3; Repeatable**

Non-traditional study in economics. Prerequisite: permission of the instructor.

ECON 301. Independent Study. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Individual study or project, supervised by instructor. Prerequisite: permission of the instructor.

ECON 302. Honors Thesis in Economics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; Repeatable**

Individual research, leading to an honors thesis in economics, undertaken by qualified students, and supervised by an instructor in the department of economics. Prerequisites: ECON 256 or ECON 259, ECON 257, ECON 258, and permission of the instructor and University Honors Council.

ECON 309. Globalization and Its Implications. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The course explores opposing economic views on globalization and its effect on the social, cultural, and environmental aspects of life in developed and developing countries. Prerequisites: junior or senior status; ECON 257 and ECON 258. Preference given to ECON and ECMA majors.

ECON 311. Labor Economics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An examination of economic models related to labor markets, current labor market trends, and the influence of related government policies.

Prerequisites: ECON 256 or ECON 259 and one semester of statistics. Preference given to ECON and ECMA majors.

ECON 319. Economic History of Women in the United States. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Examination of the history of women in the U.S. economy, with particular attention to racial-ethnic and class differences among women. Prerequisites:

ECON 256 or ECON 257 or ECON 258 or ECON 259 and permission of the instructor. Preference given to ECON and ECMA majors. Crosslisted as WMST 318.

ECON 320. Race, Economics and Inequality. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Analytically rigorous study of the connections between law, philosophy and policy in the micro and macro economics of racial and social inequality in democratic market societies. Prerequisites: ECON 256 or ECON 259 and ECON 257 and MATH 192 or MATH 201 and permission of the instructor.

ECON 324. European Economic History. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Development of the market economy and its major institutions. The changing place of the economy in society. Prerequisites: at least one of the following: ECON 256, ECON 257, ECON 258, or ECON 259 and/or permission of the instructor. Preference given to ECON and ECMA majors.

ECON 326. History of Economic Thought. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Discussion of original sources of economic ideas. Readings in Smith, Malthus, Ricardo, Mill, Marx, Jevons, Keynes, and others. Prerequisites: ECON 326 and permission of the instructor.

ECON 327. International Economic Theory. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Covers trade theory, tariffs and non-tariff barriers, economic integration, balance of payments, fixed and flexible exchange rates. Prerequisites: ECON 256 or ECON 259 and ECON 257.

ECON 328. Money and Financial Institutions. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

An analysis of the role of the financial system in the U.S. economy. Topics include determinants of asset prices, risk management, and financial regulations. Prerequisites: ECON 256 or ECON 259 and ECON 257 and MATH 216 or MATH 226 or MGMT 102. Preference given to ECON and ECMA majors.

ECON 330. Law and Economics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines several areas of law from the "Law and Economics" perspective and analyzes the assumptions that underlie this approach to law. Property rights law, contract law, and tort law will be covered. Prerequisite: ECON 256 or ECON 259.

ECON 333. Seminar in Economic Topics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Guided discussion of economic issues. Topics to be announced at time of preregistration. Prerequisite: permission of the instructor. Preference given to ECON and ECMA majors.

ECON 337. International Monetary and Financial Economics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The course covers balance of payments, foreign exchange markets, international monetary systems, the adjustment mechanism, macroeconomic policy in an open economy and monetary integration. Prerequisites: ECON 256 or ECON 259 or permission of the instructor. Preference given to ECON and ECMA majors.

ECON 339. China and East Asian Economics. 1 Credit.**Lecture hours:3**

An analysis of economic transition and development in China, with emphasis on its role in the Asia-Pacific and world economies.

ECON 341. Econometrics. 1 Credit.**Lecture hours:3**

The application of statistical methods to quantify and test economic theories, analyze government policies, and forecast economic variables.

ECON 350. Classical Marxism. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The goal is to develop an understanding of Marx's analysis of capitalism by reading mainly original texts by Marx and consider its applications to disciplinary thinking. Crosslisted as GEOG 350.

ECON 357. Economic Development. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The main theories of development; economic and social dualism; agricultural, industrial, and trade strategies; and the role of less developed countries in the emerging global economy. Prerequisites: ECON 256 or ECON 259 and ECON 257 and permission of the instructor. Preference given to ECON and ECMA majors.

ECON 358. Marxian Economics. 1 Credit.**Lecture hours:3**

Examines the implications of class struggle on microeconomic competition, the distribution of value within and between firms, and macroeconomic instability accumulation and crises at the national and international level.

ECON 380. Marx on Media. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Examines a number of media industries to critically examine the effects of capitalist competition on media content and industry dynamics from a Marxian perspective. Prerequisite: ECON 258 or permission of the instructor. Preference given to ECON and ECMA majors.

ECON 3NT. Economics Non-traditional Study. .5-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies; Repeatable**

Non-traditional study in economics. Prerequisite: permission of the instructor.

ECON 401. Recessions and Depressions. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course will explore the main theories of the business cycle that explain the causes of depressions and recessions, and would try to use them to explore the main differences and similarities between the Great Depression and the most recent recession. The differences between Keynesian (including New Keynesian) and Monetarist (New Classical) views of the cycle, and Real Business Cycles schools will be contrasted with heterodox/radical (post-Keynesian and Marxist) views of cycles and crises. The objective of the course is to apply economic models of the business cycle to explain the historical and institutional causes of the Great Depression and the Great Recession. Prerequisite: ECON 257.

ECON 405. Comparative Economic Systems. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A critical analysis of the organization of economic systems. The characteristics of selected capitalist and socialist economics studied and assessed from both mainstream and Marxian analytical perspectives. Prerequisite: ECON 258 or permission of the instructor. Preference given to ECON and ECMA majors.

ECON 412. Health Economics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Theoretical and empirical examinations of issues in health economics. Course includes semester-long research project on a health topic.

Prerequisites: ECON 256 or ECON 259 and MATH 216 and one semester of statistics or permission of the instructor. Preference given to ECON and ECMA majors.

ECON 413. Public Finance. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

An analysis of the government's role in the economy. Topics include the economic rationale for government, expenditure analysis, and the allocative and distributive consequences of taxation. It is strongly recommended that students have one semester of statistics. Prerequisite: permission of the instructor. Preference given to ECON and ECMA majors.

ECON 415. Population and Family Economics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The course investigates the economic determinants and consequences of demographic changes in the context of both developing and developed countries. Topics include household formation and structure including marriage, divorce, dowry, and fertility. Prerequisites: MATH 216 and ECON 256 or ECON 259. Preference given to ECON and ECMA majors.

ECON 418. American Economic History. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

An examination of the development and influence of American economic institutions from colonial to current times. Prerequisites: ECON 256 or ECON 259 and ECON 257, or permission of the instructor. Preference given to ECON and ECMA majors.

ECON 420. The British Economic Miracle. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course examines the early British economy and the role it played and continues to play in influencing the modern world. Prerequisites: ECON 256 or ECON 259 and ECON 257.

ECON 425. Behavioral Economics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

To examine theories (Behavioral Economics) as well as evidence in laboratory and field experiments (experimental Economics) related to the psychology of economic decision making. Prerequisites: ECON 103 and ECON 256 or ECON 259.

ECON 427. International Economic Theory. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Theoretical principles underlying international trade, investment, commercial policy, economic integration, adjustment mechanisms, and balance of payments policy will be examined with an application to current national/international policies. Prerequisites: ECON 256 or 259 and ECON 257. Not open to students who have taken ECON 227. Preference to ECON and ECMA majors.

ECON 429. Political Economy of Financial Crises. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course will explore the causes and consequences of financial crises from macroeconomic perspectives, with most of the attention given to the recent financial crisis in the United States. Prerequisite: ECON 258 or permission of the instructor. Preference given to ECON and ECMA majors.

ECON 431. Industrial Organization Economics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Topics include market structure, industrial concentration, firm conduct, mergers, advertising, market performance, examined in the context of U.S. antitrust policy. Prerequisites: ECON 256 or ECON 259 and permission of the instructor. Preference given to ECON and ECMA majors.

ECON 439. China and the World Economy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An analysis of economic transition and development in China, with emphasis on its role in the Asia-Pacific and world economies. Prerequisites: ECON 256 and ECON 257 or permission of the instructor. Crosslisted as EAST 339. Preference given to ECON and ECMA majors.

ECON 441. Advanced Econometrics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Advanced panel data methods, instrumental variables and two stage least squares, simultaneous equations, limited dependent variables, sample selection bias, advanced time series, and writing and presenting an empirical research project. Prerequisite: ECON 341.

ECON 444. Senior Seminar in Economic Topics. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Topics to be announced at the time of preregistration.

ECON 458. Marxian Economics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines the implications of class struggle on microeconomic competition, the distribution of value within and between firms, and macroeconomic instability accumulation and crises at the national and international level. Prerequisite: ECON 258 and permission of the instructor. Preference given to ECON and ECMA majors.

Education (EDUC)

EDUC 101. Social Foundation of Education. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Historical, economic, philosophical, and social foundations of education, and their implications for present-day education in America. Provides a background of information for the prospective teacher and citizen. Not open to seniors.

EDUC 105. Education for Peace and Justice. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course is an interdisciplinary examination into the meaning, lived experience and learning necessary for peace and justice.

EDUC 110. Education and the Human Spirit. 1 Credit.**Offered Summer Session Only; Lecture hours:6**

This course explores the role of spirituality within education. There is a strong focus on theory and practice in relationship to personal experience. Prerequisite: permission of the instructor.

EDUC 1NT. Education Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in education.

EDUC 201. Educational Psychology. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Role of psychological concepts in educational practices. Nature, sources of individual differences in development and readiness. Learning theory, motivation, and emotion in learning. Issues in identifying and supporting the learning of all students. Measurement and evaluation of learning.

EDUC 230. Foundations of Classroom Assessment. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Use of observation, documentation, and assessment to develop instructional practices that support learning of all children. Includes assessment across environments and for different purposes. Prerequisite: EDUC 201 and junior status or permission of the instructor.

EDUC 235. Integrated Arts in Learning. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course invites students to examine the role and possibility of the arts within education. Class time will include discussion, experiential activities, and time for contemplation as students develop a holistic understanding of arts-informed education while addressing essential questions about the nature and purpose of education.

EDUC 240. Literacy and Learning in the Diverse Classroom. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course examines how diverse adolescents engage in literacy across content areas, developing abilities to decode, interpret, and use sign systems to gain access to secondary school content knowledge. Other topics include classroom management, curriculum integration and curriculum planning. Required fieldwork. Prerequisites: EDUC 101 and EDUC 201. Crosslisted as EDUC 640.

EDUC 290. Gender Issues in Education. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An examination of how gender affects the teaching-learning process with an emphasis on theory, curriculum, pedagogy, and assessment. Prerequisite: EDUC 201 or permission of the instructor. Crosslisted as WMST 290 and EDUC 690.

EDUC 2NT. Education Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in education. Prerequisite: permission of the instructor.

EDUC 301. Behavioral Assessment and Intervention. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:1**

Provides an understanding of applied behavior analysis (ABA) and its use in preventing and managing challenging behaviors that arise in classrooms and other settings. Crosslisted as EDUC 601.

EDUC 302. Positive Behavior Support. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Study of motivations underlying human behavior; exploration of ecological and human interactions and mechanisms for behavior change. Role of supporting adaptive responses to environmental conditions. Fieldwork. Prerequisite: EDUC 301.

EDUC 303. Treating Challenging Behaviors. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

In-depth positive behavioral interventions effective for decreasing common problem behaviors often experienced by children with autism and other developmental disabilities. Prerequisite: EDUC 301.

EDUC 304. Behavior Intervention Research. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Single-subject research and ethical considerations are explored focusing on the impact of applied behavioral analysis interventions on behavior change. Prerequisite: EDUC 301.

EDUC 305. Advanced Educational Psychology. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Both the theories and practical applications of cognitive psychology and development are emphasized. How theories connect to the field of cognitive neuroscience also is addressed. Prerequisites: EDUC 201 and permission of the instructor. Crosslisted as EDUC 605.

EDUC 308. Advanced Educational Foundations: Democracy and Education. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course employs a multidisciplinary approach to explore the relationship between education and democracy in "free" societies such as the United States. Students will critically examine the American educational system and its contemporary problems through the lenses of history, philosophy, sociology, and anthropology. Prerequisites: EDUC 101. Crosslisted as EDUC 608.

EDUC 312. Counseling Techniques. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:4**

This course provides an introduction to counseling theory and basic micro-skills of counseling. Students will practice basic techniques of therapeutic interviewing. Crosslisted as EDUC 612.

EDUC 315. Senior Thesis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Senior thesis. Prerequisites: permission of the instructor and department.

EDUC 316. Teaching in Diverse Environments. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Supervised practice in the design and implementation of instruction in non-traditional learning environments. Emphasis on theory informing practices. Prerequisite: permission of the instructor.

EDUC 317. Problems in Education. .25-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Research on a problem not involved in a student thesis. Upperclass students. Prerequisite: permission of the instructor. Crosslisted as EDUC 617.

EDUC 318. Multiculturalism and Education. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course combines social science and educational research with narrative accounts to explore the historical, philosophical, sociological, and political foundations of the multicultural movement in American education. The course will examine and critique contemporary issues such as the educational experiences of minority groups, inclusive pedagogy, and bilingual education. Crosslisted as EDUC 618.

EDUC 319. Group Processes. 1 Credit.**Lecture hours:3**

This course presents basic dynamics, theoretical components, and developmental aspects of group processes with clients. Students will participate in a group exercises as members and leaders. Crosslisted as EDUC 619.

EDUC 320. Ethics in Education. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Application of traditional and contemporary ethical theories to current dilemmas in teaching, research, counseling, administration, and educational policy.

EDUC 322. Psychology of the Exceptional Child. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Understanding the psychology of the exceptional child from childhood through adolescence. Focused involvement in building an understanding of the diverse ways cognitive disabilities are manifested in children and adolescents with an emphasis on prevention, intervention and remediation. Optional fieldwork. Crosslisted as EDUC 622.

EDUC 323. Education of Young Children. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:4**

A conceptual-development overview of the social, emotional, cognitive, and physical characteristics of the early childhood years (to age 9) stressing extrapolation from developmental theory to educational practice for teachers and parents who function as the earliest educators. Crosslisted as EDUC 623.

EDUC 325. Career Development. 1 Credit.**Offered Summer Session Only; Lecture hours:6**

An examination of career decision making and career choices within the context of cognitive, social, emotional, and physical development, with emphasis on both theory and practice. Crosslisted as EDUC 625.

EDUC 327. Immigrant Youth in U.S. Society. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the varied trajectories in contemporary immigrant youth adaptations across social contexts, including schools, families, peer groups and work.

EDUC 328. Tests and Measurement. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Introduction to the fundamental concepts of measurement and testing theory with emphasis on the application of those concepts in a variety of educational, psychological, and employment settings. Crosslisted as EDUC 628.

EDUC 332. Remaking Public Education. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines the way advocates, entrepreneurs, and philanthropists are changing public education (and society) through innovations like charter schools, school vouchers, cyber schools, and home schooling.

EDUC 334. Later Childhood and Adolescence. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Uses theory, case studies, and field experience to illustrate early and later adolescent development. Required field work. Not open to students who have taken EDUC 335 or EDUC 635. Crosslisted as EDUC 634.

EDUC 335. Child & Adolescent Development. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Social, emotional, cognitive, and physical development from age 5 to 18 in relation to the educational environment, including the interaction of the child with family, adults, and peers. Requires field work. Not open to students who have taken EDUC 334 or EDUC 634. Crosslisted as EDUC 635.

EDUC 339. Inclusive Practices. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:4**

Students will explore the unique instructional needs of L2 learners and students with disabilities and learn how to modify and adjust content, process, and product to enhance their development in inclusive classrooms. Required fieldwork.

EDUC 341. Early Literacy. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:4**

A study of the strategies and techniques involved in teaching children to read and to write (Pre-K-4 level). Contemporary theories of reading behavior. Required field work. Prerequisites: EDUC 101 and EDUC 201. Crosslisted as EDUC 641.

EDUC 342. Differentiation and Diversity in Education. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:4**

Differential instruction and cultural awareness to foster the learning of all students in inclusive classrooms. Adaptations for reading, writing, spelling, and mathematics included. Required field work. Crosslisted as EDUC 642.

EDUC 343. Culture and Community. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Consideration of special problems arising in teaching social studies in elementary and secondary schools. Influences determining course content, including state and national standards. Prerequisite: junior status or permission of the instructor. Crosslisted as EDUC 643.

EDUC 344. Science as Inquiry. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:4**

This course reflects best practices for the teaching of science as inquiry outlined by the National Science Education Standards and the PA State Standards. This course provides instructional methods and curricular materials appropriate for teaching science concepts, processes, and skills to young children. Prerequisites: EDUC 101 and EDUC 201. Crosslisted as EDUC 644.

EDUC 346. Literacy Across Contexts. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:4**

This course will explore principles of creating a developmentally appropriate elementary learning environment. Emphasis is placed on writing as process, designing literacy instruction and using approaches to management appropriate to learners of various levels of cognitive, emotional, and social development. Prerequisite: Junior status or permission of instructor. Crosslisted as EDUC 646.

EDUC 347. Family, School, and Community Partnerships. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Students will explore important factors and effective strategies in creating and sustaining respectful, reciprocal, supportive and empowering relationships with families to enhance children's development and learning. Prerequisite: junior or senior status or permission of the instructor. Field experience and clearances are required.

EDUC 349. Student Teaching: Elementary. 3 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:35**

Supervised practice in the design and implementation of instruction in elementary school classrooms. Emphasis on professional conduct and use of theory to inform practice. Students must be accepted into the Pre-CIP program, must have enrolled in all certification courses or obtain permission of the instructor. Corequisite: EDUC 449. Crosslisted as EDUC 649.

EDUC 350. Higher Education in the United States. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Overview of historical and contemporary trends in post-secondary education: systematic examination of selected social, political, economic, and educational forces and problems affecting contemporary higher education. Crosslisted as EDUC 650.

EDUC 351. Learning and Development in Postsecondary Education. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Investigation of contemporary theories pertaining to the processes of learning and development that occur from later adolescence through old age. Crosslisted as EDUC 651.

EDUC 354. Teaching of Art. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:4**

Principles and practices of teaching art in grades K-12. Interested students should meet with the Chair of the Department of Education no later than March 15 of sophomore year. Prerequisites: EDUC 101, EDUC 201 and EDUC 335.

EDUC 355. Teaching of Science in Secondary School. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:4**

Principles and practices of teaching biology, chemistry, physics, earth and space science, and environmental science in grades 7-12. Prerequisites: EDUC 101, EDUC 201, and EDUC 334 or EDUC 335 (EDUC 335 required for environmental science). Crosslisted as EDUC 655.

EDUC 359. Student Teaching: Secondary. 3 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:35**

Supervised practice in the design and implementation of instruction in secondary school classrooms. Emphasis on professional conduct and use of theory to inform practice. Corequisite: EDUC 459. Crosslisted as EDUC 659.

EDUC 362. Quantitative Research Methods. 1 Credit.**Offered Spring or Summer; Lecture hours:3**

This course emphasizes the design of quantitative research and the development of skills in analyzing and interpreting data. Quantitative research in education and psychology is critiqued in terms of theory, past research, hypothesis generation, and research design. Data input and analysis involves the use of the statistical software package SPSS. Crosslisted as EDUC 662.

EDUC 364. Qualitative Research Methods. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This is an introduction to the foundations of qualitative design in education, including: history, philosophy, nature, types, examples, and the challenges associated with data collection and its interpretation. Crosslisted as EDUC 664.

EDUC 375. Methods of Teaching English as a Second Language. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course focuses on preparing students to teach students for whom English is their second language (ESL). It focuses on three primary areas: instructional materials development for ESL; assessment and support of ESL students; and cultural awareness and sensitivity. Crosslisted as EDUC 675.

EDUC 376. English as a Second Language Internship / Professional Seminar. .5 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:1**

Internship (60 hours) at varying grade levels under the supervision of certified ESL teachers in local schools with weekly professional seminar. ESL Program Specialists only. Prerequisite: permission of the instructor.

EDUC 398. Student Affairs Programs in Higher Education. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The study of historical and philosophical foundations of the student affairs profession and the roles and functions of student affairs professionals in contemporary collegiate institutions. Crosslisted as EDUC 698.

EDUC 3NT. Education Non-traditional Study. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Education non-traditional study course. Prerequisite: permission of the instructor.

EDUC 425. Internship in Education. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3**

Supervised practice in an educational setting including a structured reflection component. This course may be used to fulfill the Culminating Experience course requirement for the B.A. in education.

EDUC 439. Student Teaching in Music. 3 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:35**

Student teaching in music. Corequisite: MUSC 335. Prerequisite: permission of the instructor.

EDUC 449. Professional Seminar in Elementary Education. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Systematic approach to the observation, interpretation, verification, and remediation of problems affecting student learning. Psychological and sociological theory informing teaching practice. Implications of student diversity for adaptation of instruction. Prerequisites: EDUC 342, senior status, and permission of the instructor. Corequisite: EDUC 349.

EDUC 459. Professional Seminar in Secondary Education. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Systematic approach to the observation, interpretation, verification, and remediation of problems affecting student learning. Psychological and sociological theory informing teaching practice. Implications of student diversity for adaptation of instruction. Prerequisite: permission of the instructor. Corequisite: EDUC 359.

EDUC 484. Local Educational Politics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course introduces students to a variety of philosophical, political, and sociological theories that explain the nature of conflict in the educational arena. Crosslisted as EDUC 669.

Electrical & Computer Engr. (ECEG)

ECEG 101. Electrical and Computer Engineering Analysis. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Introduction to concepts, voltage, current, signals, network elements, and Kirchhoff's laws. Electrical measurements, energy and information generation, storage and transmission. Introduction to logic circuits and switching theory. Not for majors in electrical and computer engineering. Corequisite: MATH 202.

ECEG 120. Introduction to Electrical and Computer Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Introduction to the fundamental concepts of electrical and computer engineering. Voltage, current, signals, electrical elements and their laws. Kirchhoff's laws and basic circuit analysis. Digital systems. Electrical measurements. Computational tools and circuit modeling software. Corequisite: MATH 202.

ECEG 205. Electrical and Computer Engineering Fundamentals. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Lab:2**

Electrical measurement and physical quantities, sensors, sensor dynamics, filters, computer-controlled measurements, data storage and analysis, networked measurements. Corequisite: MATH 202.

ECEG 225. Circuit Theory I. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Lab:2**

DC circuits, steady-state analysis, impedance concepts, operational amplifiers, power calculations. Corequisite: MATH 211. Prerequisite: ECEG 120 or permission of the instructor.

ECEG 226. Circuit Theory II. .5 Credits.**Offered Spring Semester Only; Lecture hours:2,Lab:2**

Transformers, complex power, three-phase circuits, transients, filters, Fourier series, and Laplace transforms. Corequisite: MATH 212. Prerequisite: ECEG 225 or permission of the instructor.

ECEG 240. Digital System Design. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Comprehensive introduction to modern digital design techniques. Combinational and sequential logic, finite state machines, CAD tools and algorithms, and programmable logic devices. Prerequisite: ECEG 120, or CSCI 206, or permission of the instructor.

ECEG 245. Introduction to Digital Systems. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Comprehensive introduction to modern digital design techniques. Combinational and sequential logic, finite state machines, CAD tools and algorithms, and programmable logic devices. Prerequisite: ECEG 101.

ECEG 2NT. Electrical and Computer Engineering Non-traditional Study. .25-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in electrical and computer engineering. Prerequisite: permission of the instructor.

ECEG 301. Praxis of Engineering Design. .5 Credits.**Offered Spring Semester Only; Lecture hours:Varies,Lab:2**

Project-oriented course that focuses on electrical and computer engineering design as distinct from analysis with the goal of developing skills in prototyping, professional communication, and test and measurement. Prerequisite: junior standing in ECE or permission of the instructor.

ECEG 308. Independent Study. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Independent study for qualified first-years, sophomores, and juniors. Prerequisite: permission of the instructor.

ECEG 320. Linear Systems and Signal Processing. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Discrete and continuous signals; differential and difference equations; state equations; transform techniques (Z, Laplace, Fourier); analog and digital filter designs. Prerequisites: ECEG 226 and MATH 212.

ECEG 347. Embedded and Cyber-Physical Systems. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Concepts, principles, tools, and techniques for the design, analysis, and implementation of embedded and cyber-physical systems. Integrative course that draws on topics from across the electrical and computer engineering curriculum. Prerequisites: ECEG 240 and CSCI 203, or permission of the instructor.

ECEG 350. Electronics I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Introduction to semiconductor components and circuits. Device physics, operation, and modeling; design applications of operational amplifiers, diodes, and transistors; PN junctions; bipolar and field-effect structures; digital logic circuits. Prerequisite: ECEG 226 or permission of the instructor.

ECEG 351. Electronics II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Basic amplifier circuits, differential amplifiers, frequency response, and feedback concepts. Prerequisite: ECEG 350 or permission of the instructor.

ECEG 390. Theory and Applications of Electromagnetics. 1 Credit.**Offered Spring Semester Only; Lecture hours:4**

Applications of Maxwell's equations to the solution of problems involving static electric and magnetic fields and transverse electromagnetic waves. Transmission line parameters, wave propagation, reflection from planar surfaces, boundary conditions, polarization, and electromagnetic properties of matter. Prerequisites: ECEG 226 and MATH 212.

ECEG 3NT. Electrical and Computer Engineering Non-traditional Study. .25-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in electrical and computer engineering. Prerequisite: permission of the instructor.

ECEG 400. Project Planning and Engineering Design. .5 Credits.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Introduction to design, conceptual design, design evaluation, project planning and scheduling for Electrical and Computer Engineering senior design project and development of design proposal. Prerequisite: senior status or permission of the instructor.

ECEG 401. Electrical and Computer Engineering Senior Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:2,Other:2**

This project-oriented course is the continuation of capstone design for electrical and computer engineering majors. Students work in teams to develop, implement, and evaluate an effective solution to an open-ended problem. Prerequisite: ECEG 400 or permission of the instructor.

ECEG 402. Special Topics in Electrical or Computer Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:2; Repeatable**

Current topics of interest in electrical or computer engineering. This course includes a lab section.

ECEG 403. Special Topics in Electrical and Computer Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4; Repeatable**

Current topics of interest in electrical and computer engineering. This course does not include a lab section.

ECEG 404. Electrical and Computer Engineering Honors Thesis. .5 Credits.**Offered Fall Semester Only; Lecture hours:1.5**

Independent work on an electrical or computer engineering thesis. Prerequisites: permission of the instructor and Honors Council.

ECEG 408. Advanced Independent Study. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Advanced independent study for qualified seniors. Prerequisite: Permission of instructor.

ECEG 409. Engineering: A Humanist Enterprise. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course explores engineering as a human activity geared towards meeting human goals and undertaken by humans. The course explores how multiple disciplinary perspectives are required to undertake good engineering, and how our nature as humans affects engineering activities to help students transcend disciplinary boundaries. Crosslisted as UNIV 350.

ECEG 411. Neural Signals and Systems. 1 Credit.**Offered Occasionally; Lecture hours:3,Recitation:1**

Introduction to neural systems and signaling. Topics include neural physiology, models of action potential generation and synapse dynamics, neural networks and techniques of neural waveform analysis. Prerequisite: permission of the instructor. Crosslisted as BMEG 441 and ECEG 611.

ECEG 430. Mobile Computing. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Mobile computing ecosystem including apps, devices, wireless networks, and back-end systems. Includes at least one major project; the specific course content will vary based on projects, student interest, and current technology trends. This course typically includes a considerable amount of software development. Prerequisites: CSCI 206 or permission of instructor.

ECEG 442. Digital VLSI Circuit Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Introduction to digital integrated circuit design, from wafer fabrication through structured design techniques. Teams conceptualize, design, simulate, layout, extract, and verify small VLSI systems using appropriate CAD tools. Prerequisites: ECEG 240 and ECEG 350 or permission of the instructor.

ECEG 443. High Performance Computer Architecture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Topics include "good" computer architecture, RISC/CISC, pipelining, super-scalar, super-pipelining, out-of-order execution, speculative execution, virtual memory, and caches coherence. Prerequisites: ECEG 347, CSCI 206, or permission of the instructor.

ECEG 444. Advanced Digital Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:2,Other:2**

Design of multi-part digital systems using contemporary digital components centered around a system-on-chip with a microprocessor and FPGA. Hardware description languages, specialized FPGA elements, peripheral interfacing and protocols, high-level synthesis. Prerequisites: ECEG 240, ECEG 245, or permission of the instructor. Crosslisted as ECEG 644.

ECEG 445. Solid State Optoelectronic Devices. 1 Credit.**Offered Either Fall or Spring; Lecture hours:2,Other:2**

Basic principles required to understand the operation of solid-state devices. Semiconductor device equations developed from fundamental concepts. P-N junction theory developed and applied to the analysis of devices such as solar cells and light emitting diodes. Emphasis on device physics rather than circuit applications.

ECEG 463. Introduction to Mechatronics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

This multidisciplinary course is the synergistic integration of mechanical engineering with electronic and computer engineering. This course will study actuators, drive systems, sensors, controllers, micro-controllers programming and interfacing, and automation systems integration. Prerequisite: permission of the instructor. Crosslisted as MECH 463 and MECH 663 and ECEG 663.

ECEG 470. Communication and Information Systems. 1 Credit.**Lecture hours:3**

Digital and analog communication systems, modulation techniques, noise considerations, optimum receivers. Prerequisite: ECEG 320 or permission of the instructor.

ECEG 471. Applications of Probability in Electrical and Computer Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Probability theory, random variables, probability mass/density functions, expected value, Gaussian distribution, detection, estimation, applications in electrical and computer engineering. Prerequisite: ECEG 320 or permission of the instructor.

ECEG 472. Digital Signal Processing. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:2**

Sampling A/D and D/A conversion; digital filters; recursive and nonrecursive designs, quantization effects, Fast Fourier Transform; spectral estimation; computer implementations; applications. Prerequisite: ECEG 320 or permission of the instructor.

ECEG 473. Digital Speech and Audio Processing. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Theory and application of digital speech and audio processing. Topics include speech and audio (MP3) coding, artificial speech synthesis, automatic speech recognition, and audio effects. Prerequisite: ECEG 320 or permission of the instructor.

ECEG 475. Computer Communication Networking. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to computer networking using the seven-layer Open Systems Interconnection model. Hands-on exploration of the data link, network, transport, and application layers. Prerequisite: Junior status.

ECEG 477. Wireless System Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Introduction to hardware aspects of wireless communication systems, including RF circuit design, transmitter and receiver architecture, antennas, and radio wave propagation. Corequisite: ECEG 390 or permission of the instructor.

ECEG 480. Electrical Control Systems. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:2**

System components: closed loop systems; stability from Nyquist and root locus viewpoints: performance, compensation techniques, sampled systems, Z-Transforms. Prerequisites: ECEG 320 and ECEG 350.

ECEG 491. Electrical Energy Conversion. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3**

Three phase power circuits, transformer circuits, rotating machines and equivalent circuits, power electronic switches, machine dynamics, motor generator control. Corequisite: ECEG 390. Prerequisite: ECEG 350 or permission of the instructor.

ECEG 494. Renewable Energy Systems. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Engineering analysis of photovoltaic, wind, and other renewable energy systems. Modeling of systems, resources, and performance with an emphasis on grid-tied photovoltaic system optimization. Open to juniors and seniors in engineering.

ECEG 495. Advanced Topics in Engineering Mathematics. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Linear algebra and analytical computation techniques for solving ordinary and partial differential equations relevant to engineering applications. Crosslisted as CEEG 495 and CHEG 495 and MECH 495 and ENGR 695. Prerequisite: permission of the instructor.

Engineering (ENGR)

ENGR 100. Exploring Engineering. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:2**

Introduction to the study and practice of engineering, including overviews of specific disciplines. Participatory focus involves group design projects, hands-on learning, computer work, team building, and engineering ethics discussions. Permission of instructor required for non-first-year students.

ENGR 101. Engineering Graphics. .5 Credits.**Offered Spring Semester Only; Lecture hours:1,Lab:2**

Introduction to engineering graphics including drawing with drafting instruments, computer-aided drafting and surveying.

ENGR 138. Written and Oral Communication. .5 Credits.**Offered Either Fall or Spring; Lecture hours:2**

Written and oral forms of communication, including preparation and presentation of job/internship communication, memos, letters, and reports, with consideration of audience, purpose, structure, style, and language. Required for all Bachelor of Science in electrical engineering students. Prerequisite: ELEC 205, ELEC 120, ELEC 101 or BMEG 205. Open to other engineering students. Open to Arts and Sciences students as space permits.

ENGR 1NT. ENGR Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in engineering. Prerequisite: permission of the instructor.

ENGR 200. Thermodynamics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Properties, first law, second law, entropy, availability, efficiency, pure substances, real gases. Introduction to heat transfer. Prerequisite: MATH 201.

ENGR 201. Electrical Instrumentation and Measurements. .5 Credits.**Offered Spring Semester Only; Lecture hours:1,Lab:3**

Electrical instruments and techniques of measurement; laboratory analysis of elementary circuits. Prerequisite: ELEC 205.

ENGR 210. Exploring The Grand Challenges of Engineering. 1 Credit.**Offered Summer Session Only; Lecture hours:15,Other:20; Repeatable**

The specific foci of the course will vary each summer to allow Grand Challenge Scholars to complete one or two of their requirements. Students will be exposed to concepts underlying 3-8 of the Grand Challenges and required to complete a major project relating to a Grand Challenge of their choice.

ENGR 211. Introduction to Chemical Engineering Computing. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Other:2**

Programming fundamentals and introductory numerical methods. Problems drawn from mathematics and chemical engineering. With computational laboratory. Prerequisites: CHEG 200 and MATH 202. Not open to students who have taken ENGR 212 or ENGR 214.

ENGR 212. Engineering Computation. .5 Credits.**Offered Fall Semester Only; Lecture hours:1,Lab:2**

An in-depth introduction to using computers as a fundamental tool for solving civil engineering problems. Course will include: structured programming, and numerical methods. Prerequisite: MATH 222 or equivalent. Not open to students who have taken ENGR 211.

ENGR 214. Computational Analysis. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Introduction to a modern computer language. Structured programming and algorithm design for engineering problems involving linear algebra, statistical analysis of data, and elementary numerical analysis. Introduction and use of a scientific application package as a tool. Not open to students who have taken ENGR 211 or ENGR 212. Open to mechanical engineering students only.

ENGR 215. Experimental Design and Data Analysis. .5 Credits.**Offered Spring Semester Only; Lecture hours:2,Lab:1**

Introduction to the analysis of experimental and industrial data. Topics include statistical inference, analysis of variance, regression analysis, experimental design and computational methods. With computational laboratory. Not open to students who have taken BMEG 226.

ENGR 221. Mechanics. 1 Credit.**Offered Spring Semester Only; Lecture hours:4**

Equilibrium of two- and three-dimensional force systems. Friction. Kinematics and kinetics of particles and rigid bodies. Corequisite: MATH 212 or MATH 222. Not open to civil and environmental engineering and mechanical engineering students. Not open to students who have taken ENGR 229 or MECH 220.

ENGR 222. Civil Engineering Fluid Mechanics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:3**

Fluid properties and hydrostatics. Flow concepts and basic equations. Viscous flow in pipes and channels. Steady pipe flow. Potential flow. Introduction to open channels or hydraulic machinery. Prerequisite: ENGR 229.

ENGR 229. Solid Mechanics I. 1 Credit.**Offered Spring Semester Only; Lecture hours:4**

Equilibrium of rigid body systems, including analysis of trusses, beams, and frames for internal forces and moments. Introduction to stress and strain, including their relationship and stress transformations. Prerequisite: MATH 201.

ENGR 230. Solid Mechanics II. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Behavior of deformable systems: analysis for forces/stresses and deformation/strains due to axial, torsional, flexural, shear, and combined effects. Analysis of indeterminate systems and basic concepts of stability of compression member. Prerequisite: ENGR 220 (minimum grade of D).

ENGR 231. Fluid Mechanics. .5 Credits.**Offered Fall Semester Only; Lecture hours:3**

Nature of forces; incompressible and compressible fluids under conditions of streamline and turbulent flow. Prerequisite: MATH 202.

ENGR 233. Chemical Engineering Fluid Mechanics. 1 Credit.**Offered Spring Semester Only; Lecture hours:4,Other:3**

Fluid statics, laminar and turbulent flow of incompressible fluids; introduction to compressible and non-Newtonian fluids; nature of forces, momentum transfer, shell balances; dimensional analysis; applications to pipe flow, drag, fluid measurement and pump design. With experimental laboratory. Prerequisites: ENGR 100 and ENGR 215. Corequisite: CHEG 210.

ENGR 240. Science of Materials. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:2**

Study of the relationships between atomic structure and observable properties of materials. Properties of metallic, ceramic, and polymeric materials. Selection of materials for engineering applications. Measurement and modification of material properties. With experimental laboratory. Corequisite: one of the following: CHEM 201, CHEM 211, CHEM 221, CHEM 222, or equivalent, or permission of the instructor.

ENGR 242. Materials Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Elements of science of materials. Evaluation and control of properties of common civil engineering materials, including steel, concrete, wood and polymers. Laboratory tests of materials. Visitation trips to see fabrication and quality management procedures of selected materials. Prerequisite: ENGR 229.

ENGR 248. Engineering Problems. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Problems in engineering adapted to the needs of the students. Prerequisite: permission of the instructor.

ENGR 250. Product Archeology: Unearthing Business Decisions. .5 Credits.**Offered Either Fall or Spring; Lecture hours:2,Other:2**

An examination of device design by unearthing the technical and business decisions made in bringing a real product to market. Topics will include product dissection, competitive analysis, intellectual property, financial forecasting, marketing, sales, distribution, industry standards, project planning, project management, and individual and team professionalism. Requires permission of the instructor.

ENGR 251. IDEAS Design Studio 3. .5 Credits.**Offered Occasionally; Lecture hours:1,Other:3**

Hands-on multi-disciplinary design project course covering problem identification, project management, value proposition, intellectual property, and related topics. Prerequisite: permission of the instructor.

ENGR 252. IDEAS Studio II: Build Your Idea. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Other:2**

This is an introductory course in product fabrication. The course content includes minor elements dealing with opportunity recognition, basic market analysis, and intellectual property. Most of the course content focuses on the process of creating physical hardware from a product idea using a range of fabrication processes and techniques.

ENGR 262. Introduction to Energy Resources. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:4**

Introduction for non-engineers to energy concepts including: energy balance; energy demand; technologies to meet demand; and, effects on the environment. Not open to students who have taken ENGR 200, MECH 213, CHEG 200, PHYS 147, PHYS 211. Crosslisted as ENST 262.

ENGR 285. Leadership in Management and Technology. 0 Credits.**Offered Summer Session Only; Lecture hours:1.5**

Interdisciplinary program for leadership in technology and management; macro and micro perspectives, design and TQM, ethical/professional considerations, environmental and energy management. Open only to students admitted to the Institute for Leadership in Technology and Management. Prerequisite: permission of the instructor. Crosslisted as MGMT 285.

ENGR 290. Engineering: Global/Societal Context. 1 Credit.**Offered Occasionally; Lecture hours:Varies; Repeatable**

This study abroad course studies the global and societal context of engineering including impact of traditions, customs, and culture on engineering. A three-week study abroad course. Prerequisites: must have completed the second year of an engineering program and permission of the instructor.

ENGR 291. The Global Engineer. .25 Credits.**Offered Both Fall and Spring,Offered Occasionally; Lecture hours:1,Other:1; Repeatable**

Engineering and cultural awareness are explored in a global and societal context. Students develop skills necessary to become successful global engineers, informed global citizens and environmental stewards. Students are encouraged to take this course more than once. If the course is repeated four times, students can petition the Associate Dean of Engineering for this course to fulfill the global and societal perspectives requirement. Prerequisite: engineering majors only. Arts and Sciences students by permission of the instructor.

ENGR 300. Professional Engineering. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:1,Other:Varies; Repeatable**

The solution of small business engineering problems under the supervision of a faculty member. The projects will be selected by the Bucknell Small Business Development Center in cooperation with companies, faculty members, and students. Open only to engineering seniors. Prerequisite: permission of the instructor.

ENGR 375. Should We Start This Company?. .5 Credits.**Offered Alternate Fall or Spring; Lecture hours:2**

Project-centered course in entrepreneurship, generating new business ideas, and product or service design and development through business planning. Prerequisite: permission of the instructor. Crosslisted as MIDE 375 and UNIV 375.

ENGR 385. Internship in Management and Technology. .5 Credits.**Offered Summer Session Only; Lecture hours:1.5**

Internship in complex management challenges, the internal role of technology in organizations, and interdisciplinary decision-making. Open only to students admitted to the Institute for Leadership in Technology and Management. Prerequisites: ENGR 285 or MGMT 285 and permission of the instructor. Crosslisted as MGMT 385.

ENGR 401. Transport Phenomena in Nature. 1 Credit.**Offered Occasionally; Lecture hours:2,Other:2**

Experimental and theoretical considerations of momentum, heat and mass transport phenomena in and around plants, animals, cells and the environment. Prerequisite: MECH 312 and permission of the instructor. Crosslisted as ENGR 601.

ENGR 410. Engineering Seminar. 0 Credits.**Offered Either Fall or Spring; Lecture hours:3**

Bi-weekly seminar to promote intellectual and professional exchange between students, faculty, and staff in the field of engineering. Prerequisites: senior status and permission of the instructor. Crosslisted as ENGR 610.

ENGR 450. Creative Systems Design. .5 Credits.**Offered Occasionally; Lecture hours:2,Other:2**

Interdisciplinary design studio. Methods for creativity applied to hands-on design utilizing sensors, actuators, and control systems. Ancillary topics include opportunity recognition and value. Juniors and seniors only.

ENGR 452. Interdisciplinary Senior Design I. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Other:2**

Capstone design course emphasizing realization of engineered design solutions in interdisciplinary teams. Focus areas include problem definition, background research, solution generation, team skills, communication, and professional development. Emphasis placed on articulating, addressing, and validating customer-appropriate value proposition.

ENGR 453. Interdisciplinary Senior Design II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2**

Second semester of the interdisciplinary engineering design sequence emphasizing fabrication, instrumentation, testing and evaluation, development and roll-out, and final presentation of projects.

Environmental Studies (ENST)

ENST 100. Introduction to Environmental Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of environmental issues intended for non-majors. Students will understand the cultural, political, historical, economic and ethical complexities of environmental problems and their responses. Intended for first-year students and sophomores. Does not count toward either the Environmental Studies or Environmental Science major.

ENST 160. Introduction to Environmental Chemistry. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

One semester terminal course in chemistry. Introduction to the basic chemistry principles that govern natural processes and anthropogenic effects on the environment. Satisfies laboratory science requirement for Bachelor of Arts students not majoring in science or engineering. Crosslisted as CHEM 160.

ENST 201. Environmental Problems-Sustainable Futures. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Develops a working understanding of the core concepts linked to environmental studies and introduces skills such as posing researchable questions, gathering data, presenting oral arguments, and applying these skills in group projects. Intended only for students majoring or intending to major in Environmental Studies or Environmental Science.

ENST 203. Green Development in Europe. 1 Credit.**Offered Occasionally; Lecture hours:3**

Explores the politics and practice of sustainable development in Europe through select case studies of natural resource management, climate governance, environmental planning, political contestation, and grassroots activism.

ENST 204. Global Political Ecology of Food. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course examines the political-economic and ecological dimensions of contemporary transformations in the global food system.

ENST 205. Green Utopias. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Introduction to literary utopias and to the cultural writings of various ecological movements offering alternative concepts to the increasing destruction of nature.

ENST 206. Environmentalism and Its Discontents. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A survey of historical and contemporary efforts to protect nature and the backlash they have provoked.

ENST 207. American Environmental History. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course examines how nature (soil, disease, water, climate, etc.) shaped American history and how Americans transformed the environment, from the colonial period to today.

ENST 208. Principles of Ecology and Evolution. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:3**

Introduction to ecology and evolutionary biology, organism interactions with environment, biodiversity, energy flow, and nutrient cycling, with emphasis on human influences on living systems and applications of evolutionary biology and ecology to solving environmental problems. This course is intended primarily for students majoring in environmental studies. Crosslisted as BIOL 208E.

ENST 209. Rainforests and Ecopolitics in Latin America. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Focusing on Amazonia as a key region in global environmental politics, the course examines climate policy debates and recent shifts in global environmentalism. Crosslisted as ANTH 202 and LAMS 202.

ENST 211. Environmental Pollution and Control. 1 Credit.**Offered Spring Semester Only; Lecture hours:Varies,Lab:2**

Introduction for non-engineering students to the major areas of environmental engineering. Topics include environmental chemistry, biology and ecology, water and air pollution and treatment, solid and hazardous wastes, sustainability, and global climate issues. Not open to students who have taken CEEG 340.

ENST 215. Environmental Planning. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Explores the main approaches to planning theory and their environmental applications. Considers how environmental planning can promote the socio-ecological health and sustainability of democratic communities. Crosslisted as GEOG 215.

ENST 216. Preindustrial Environment. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An introduction to global environmental history of the preindustrial world through three thematic lenses: how the natural environment shaped patterns of human life, how ideologies toward nature shifted over time, and how human activities and ideologies reshaped the ancient landscape. Crosslisted as CLAS 220.

ENST 221. Hazardous Waste and Society. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3**

Hazardous waste regulation, risk assessment and toxicology, overview of treatment technologies and site investigation, environmental audits, facilities siting and public participation, pollution prevention. Not open to engineering students, and also not open to students who have taken CEEG 444.

ENST 222. Concepts in Sustainability. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:2**

This course explores the definitions and concepts of economic, social and environmental sustainability and utilizes the tools to evaluate sustainability metrics including life cycle assessment, systems thinking, and economic analysis. Not open to engineering students.

ENST 224. Visions of the Susquehanna. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines literature of the Susquehanna Valley. Crosslisted as ENLS 224. Prerequisite: permission of the instructor.

ENST 225. Susquehanna Country. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:2,Other:3**

Interdisciplinary studies in environment, philosophy, literature and communities of the Susquehanna region. Crosslisted as ENLS 225 and HUMN 290 and UNIV 241.

ENST 226. Water Politics and Policies. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Examines the evolution and philosophical foundations of water use as well as the politics surrounding current issues in water use.

ENST 227. Eco-poetics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

An exploration of poetry as site-specific ecological practice. Intended for students interested in both Creative Writing and Environmental Studies. Prerequisite: permission of the instructor. Crosslisted as ENCW 240.

ENST 228. The Loire. A Cultural Heritage or a "Wild" River of the Anthropocene. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

In class lectures and on-site discovery of the Loire river designed to gain a better understanding of the links between a-biotic and biotic dynamics and human activities, and to increase awareness for proper river management (wild aspects, hydrology, etc.) and for the diversity in the Loire Valley.

ENST 230. Introduction to Sustainable Design. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The application of basic sustainability principles to multiple design scales, including consumer products, buildings, communities, and landscapes. Emphasis is placed on the campus and its surrounding community as a living laboratory for design experimentation.

ENST 234. Human Ecology. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

A general science course in human ecology, to demonstrate the ways humans continue to adapt to their environment through biological, cultural, scientific, symbolic, political, and technical means. Crosslisted as GEOG 234.

ENST 236. Environmental Ethics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of the major theories of environmental ethics, with particular attention to the challenge of developing an ethic commensurate with increasing human power. Crosslisted as RELI 226.

ENST 240. Sustainable Resource Management. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Focuses on problem-oriented policy analysis of domestic and international environmental issues including ecosystem management, endangered species, protected areas, and community-based conservation.

ENST 243. Global Environmental History. 1 Credit.**Offered Occasionally; Lecture hours:3**

Explores how global forces, including population growth, commercialization, and fossil fuel revolutions, transformed nature and culture across the planet in the 20th century.

ENST 244. History of Ecology. 1 Credit.**Offered Occasionally; Lecture hours:3**

Explores the development of ecology as a science, with attention to the political ramifications of ecological ideas and their enrollment in environmental management.

ENST 245. Environmental Policy and Politics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An introduction to understanding the role of political institutions, stakeholders and policy processes (in the U.S. and internationally) in addressing environmental problems. Crosslisted as POLS 291.

ENST 246. Environmental Activism. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course explores the geographies and practice of environmental activism. Drawing from national and international examples, we examine diverse means and methods of environmental protest.

ENST 254. Environmental Humanities. 1 Credit.**Lecture hours:3**

Explores humanistic perspectives on the environment—from history, ethics, literature, religion, and the arts—including how these perspectives complement or unsettle knowledge about nature from the sciences.

ENST 255. Environmental Injustice. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Explores environmental injustice in United States and internationally. Includes discussion of: structural racism, class issues, ecological justice, morality and environmental policy, and the environmental justice movement.

ENST 256. Political Ecology of Mining. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Using a political ecology framework, we explore development contradictions associated with mining in India and the United States to meet global energy and mineral demand.

ENST 258. Feeding the Global City. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3; Repeatable**

This Bucknell in London course will explore the contemporary transformation of European food systems from a social, political, and ecological perspective.

ENST 260. Environmental Law. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course will examine the statutes, regulations and common law pertaining to risk and pollution abatement. We will both analyze current law and propose changes to better address the environmental problems involved.

ENST 262. Introduction to Energy Resources. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:4**

Introduction for non-engineers to energy concepts including: energy balance; energy demand; technologies to meet demand; and, effects on the environment. Not open to students who have taken ENGR 200, MECH 213, CHEG 200, PHYS 147, PHYS 211. Crosslisted as ENGR 262.

ENST 286. Imagining Sustainability. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An Integrated Perspectives course covering critical understandings and applications of sustainability across the humanities, the social sciences, and the natural sciences as integrative of environmental, social, economic, and cultural perspectives. Crosslisted as UNIV 286 and RELI 286.

ENST 291. Bucknell on the Susquehanna Watershed SCI/Natural History. 1 Credit.**Offered Fall Semester Only; Lecture hours:4,Other:4**

The study of watershed processes and regional natural history of the Susquehanna River. Prerequisite: permission of the instructor.

ENST 292. Bucknell on the Susquehanna Land Use Planning and Social Processes. 1 Credit.**Offered Fall Semester Only; Lecture hours:4,Other:4**

The study of land use planning and social processes involved with watershed management of the Susquehanna River valley region. Prerequisite: permission of the instructor.

ENST 293. Bucknell on the Susquehanna Human Dimensions and Environmental History. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

The history of human settlement and culture in the Susquehanna River valley and its relationship to resources and the environment. Prerequisite: permission of the instructor.

ENST 295. Topics in Environmental Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected issues in environmental studies.

ENST 298. Stream Restoration. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Lab:4; Repeatable**

Scientific principles to integrate physical and biological approaches to stream restoration in watershed management. Team-taught field course highlights developing restoration plan for Bucknell's Miller Run. Crosslisted as GEOL 298.

ENST 299. Watershed Systems Science. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Lab:4; Repeatable**

Watersheds regulate water flow and ecosystem health on our landscape. Team-taught field course integrating physical, chemical, and biological processes in watersheds, using the Susquehanna and tributaries. Crosslisted as GEOL 299.

ENST 2NT. ENST Non-traditional Study. 1-3 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in Environmental Science. Prerequisite: permission of the instructor.

ENST 302. Community-Based Research Design. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:1**

Students will learn quantitative and qualitative research methods related to environmental studies including research design, data collection, and analysis. Prerequisite: junior or senior status. Preference to Environmental Studies majors, others by permission of the instructor.

ENST 315. Cold Places. 1 Credit.**Offered Occasionally; Lecture hours:3**

A seminar exploring the nature and culture of cold places – glaciers, mountain tops, Antarctica, and the Arctic – through art, film, literature, science, and popular media.

ENST 319. Directed Research. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Supervised research or thesis work on environmental issues. Prerequisite: permission of the instructor.

ENST 325. Nature, Wealth and Power. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A seminar in political ecology that explores the historical, social political and economic dimensions of environmental change in developing regions. First-year students and sophomores by permission only. Prerequisite: permission of the instructor. Crosslisted as GEOG 325.

ENST 341. The Hidden God of Nature: Christian Eco-poetics from Chaucer to Dostoevsky. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Explores how great works of European literature related nature and culture in Christian traditions from the 14th to the 19th century. Analyzes their legacy for environmental ethics and cultural creativity as part of sustainability today. Includes non-Christian and secular critiques in considering poetic, rhetorical, symbolic, and spiritual approaches to ecology. Crosslisted as ENLS 341 and ENLS 641.

ENST 345. Food and the Environment. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Nothing from the environment is more important than food production, nothing affects the environment more; we'll study both environmental and social circumstances. Laboratory science course. Crosslisted as GEOG 345.

ENST 347. Sustainable Cities. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:2**

This team-taught course introduces students to the core concepts of sustainability and how they have been applied to promote sustainability in London, the UK, and Europe. This course is part of the Bucknell in London core course. Prerequisite: permission of the instructor. Crosslisted as CEEG 447.

ENST 349. Senior Thesis. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Independent thesis work under adviser's supervision. Prerequisite: permission of the instructor.

ENST 350. Senior Thesis. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Independent thesis work under adviser's supervision. Prerequisite: permission of the instructor.

ENST 353. Ecosystem Ecology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Recitation:1**

Interactions between organisms and the physical and chemical environment including nutrient cycling and energy flow, biogeochemistry, and temporal and spatial dynamics of ecosystems. Prerequisites: BIOL 208, junior or senior status, and permission of the instructor. Crosslisted as BIOL 353 and BIOL 653.

ENST 355. Advanced Topics in Environmental Policy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Advanced seminar on environmental policy. Focus varies by semester. Consult class schedule for current topic. Prerequisite: permission of the instructor. Crosslisted as POLS 393.

ENST 356. Nationalism, Identity and Nature. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores: the politics and geographies of nationalism; how nature is nationalized; the various ways ethnocentrism, racism, and sexism become part of national identity construction; ideas about and representations of nature in environmental contestations and in reactions to nationalism; and the intersection of nationalism with other social constructions. Crosslisted as POLS 356 and IREL 356.

ENST 393. International Environmental Aid. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This advanced seminar focuses on an applied and critical examination of international aid for solving environmental problems. It explores topics including: theories of international relations, environmental politics, and development; how international organizations, states, and non-governmental actors relate, and problem-solving case studies. Prerequisite: permission of the instructor. Crosslisted as POLS 393.

ENST 3NT. ENST Non-traditional Study. 1-3 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in Environmental Science. Prerequisite: permission of the instructor.

ENST 411. Environmental Community Projects. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Community-based "clinic" course on environmental problems or projects for local stakeholders, based on integrative, interdisciplinary research and design. Preference to senior ENST, ENSC, and GEOG majors. Crosslisted as GEOG 420.

Film/Media Studies (ENFS)

ENFS 130. Introduction to Film/Media Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to film grammar, history, genres, and movements using theoretical text and primary source films. Emphasis on critical thinking skills through video essay projects.

ENFS 1NT. Film/Media Studies Non-traditional Study. .25-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Film/Media Studies. Prerequisite: permission of the instructor.

ENFS 234. National Cinemas. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Concentration on the history and style of a particular national cinema. Weekly screenings.

ENFS 235. Gender and Film. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Current debates about gender and American film, from WW II to the present. Diverse critical approaches for interpreting film within the broad context of gender studies.

ENFS 238. Special Topics in Film Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Examination of a specialized topic in film studies. Weekly screenings.

ENFS 242. Film and Media History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines major industrial, technical, and cultural milestones in the history of the cinema, radio, television, and new media industries. Weekly screenings.

ENFS 245. Televisual Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course focuses on non-cinematic moving image culture including the television industry, video art, and new media technologies. The course examines the subject from a variety of theoretical viewpoints—industrial practices, stylistic modes, and audience reception.

ENFS 246. Documentary & Avant-Garde Cinema. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

Examines the history and style of non-fiction and experimental cinema in order to explore the importance of recording the world in the most direct and the most abstract fashion. Weekly screenings.

ENFS 247. Film/Media Genres and Auteurs. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3; Repeatable**

Examination of a particular film/media genre (film noir, melodrama, Hong Kong action movies, Westerns, etc.) or a close examination of a particular director, cinematographer, screenwriter, or producer's oeuvre. Weekly screenings.

ENFS 248. Intermediality: Italy, Film, and the Arts. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

This IP course will focus on intermediality, film, and Italy. It seeks to examine the relationships of cinema with the other arts, in particular the arts of Italy. Crosslisted as ITAL 248 and UNIV 248.

ENFS 253. Introduction to Film/Media Production. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introductory level, studio-based course covering the basics of moving image practice, from pre-visualization to principles and techniques of cinematography, editing, lighting and sound. Students produce individual projects, developing both technical skills and personal vision. In-class screenings further students' awareness of cinema's expressive potential. Prerequisite: ENFS 130.

ENFS 254. Film Exhibition and Programming. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course provides a historical and practical perspective on various strategies for independent and alternative film programming and exhibition. Coursework culminates in the production of the Bucknell University Short Film Festival, held annually at the Campus Theatre. Class participants curate the programs and organize all aspects of the festival.

ENFS 256. Writing about Film/Media. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines various approaches to writing film criticism, scholarly analysis, and industry-oriented copywriting. Students will practice these approaches by developing their writing and argumentation skills, prose style, and critical thinking abilities using films as a subject.

ENFS 2NT. Film/Media Studies Non-traditional Study. .25-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3; Repeatable**

Non-traditional study in Film/Media Studies. Prerequisite: permission of the instructor.

ENFS 319. Individual Projects in Film/Media Studies. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Individual special projects supervised by instructor; honors thesis. Prerequisite: permission of the instructor.

ENFS 332. Seminar in Film and Technology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Traces technology's impact on film form and content. Topics include early cinema, sound technology, widescreen, and computer-generated images. Weekly screenings. Prerequisite: permission of the instructor.

ENFS 335. Special Topics in Film/Media Production. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

This advanced seminar focuses on specific production (lighting, cinematography) and post-production (sound design, color grading) areas to provide students with an in-depth knowledge of specialized production skills. Prerequisites: ENFS 236 or ENFS 253 or ENFS 254.

ENFS 336. Seminar in Film Genres/Auteurs. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Examination of a particular genre (film noir, Hong Kong action movies, Westerns, etc.), director, cinematographer, screenwriter, or producer. Weekly screenings. Prerequisite: permission of the instructor.

ENFS 337. Seminar in Film Theory. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Survey of approaches to film analysis and critique, ranging from realist/formalist debates to psychoanalytic, feminist, and semiotics approaches. Weekly screenings. Prerequisite: ENFS 130 and permission of the instructor.

ENFS 338. Special Topics in Film/Media Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

This course covers specialized, rotating topics in Film/Media Studies. Prerequisite: ENFS 130 and permission of the instructor.

ENFS 339. Film/Video Production. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

This course applies film theory concepts to advanced video/audio production through a range of hands-on production assignments. Prerequisite: ENFS 253 and permission of the instructor.

ENFS 340. Film/Media Production Practicum. .25-.5 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

The Film/Media Production Practicum provides students with advanced and specialized study in a particular area of Film/Media production. Possible practicum topics might include advanced sound design, color grading, visual effects works, or specialized cinematography techniques.

ENFS 379. Senior Thesis. 1 Credit.**Offered Spring Semester Only; Lecture hours:Varies,Other:3; Repeatable**

The writing of a scholarly or creative departmental senior thesis. Students must confer with and submit a proposal to an adviser prior to registering for the thesis. Prerequisite: permission of the instructor.

ENFS 380. Honors Thesis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

The writing of a scholarly or creative honors thesis. Students must confer with and submit a proposal to a departmental adviser and to the University Honors Council for approval. Prerequisites: senior status and permission of the instructor.

ENFS 3NT. Film/Media Studies Non-traditional Study. .25-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Film/Media Studies. Prerequisite: permission of the instructor.

Foundation Seminar (FOUN)

FOUN 098. Foundation Seminar. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

A small writing-intensive first-year seminar. Also see RESC 098.

French (FREN)

FREN 101. Discovering French. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Recitation:1**

Beginning language skills. Practice in listening, speaking, reading, and writing; elementary grammar; and introduction to French civilization. Prerequisite: no more than two years of secondary school French or permission of the instructor.

FREN 102. Exploring French. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Recitation:1**

Continuation of language skills. Practice in listening, speaking, reading, and writing; grammar; readings in literature and civilization. Prerequisite: FREN 101 or one year of secondary school French.

FREN 103. Building Proficiency in French. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Recitation:1**

A review of basic grammar emphasizing all four language skills and culture. Prerequisite: FREN 102 or equivalent (three years of secondary school French).

FREN 104. Communicating in Context. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Recitation:1**

Continuing review of basic grammar emphasizing all four language skills and culture. Prerequisite: FREN 103 or four years of secondary school French.

FREN 150. L'écriture fantastique. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Application of major linguistic functions and acquisition of skills essential for 200-level courses through a series of contextualized writing assignments. Prerequisite: FREN 104 or five years of secondary school French.

FREN 1NT. French Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Nontraditional study in French.

FREN 201. Intermediate French Conversation I. .5 Credits.**Offered Fall Semester Only; Lecture hours:2; Repeatable**

Concentration on development of speaking skill. Conducted entirely in French by native speaker. Not open to students who have studied in France or other French-speaking countries. Intended for students enrolled in 200-level courses. Prerequisite: FREN 104 or FREN 150 or equivalent. (Cannot be applied toward the French major or minor).

FREN 202. Intermediate French Conversation II. .5 Credits.**Offered Spring Semester Only; Lecture hours:2; Repeatable**

Concentration on development of speaking skill. Conducted entirely in French by native speaker. Not open to students who have studied in France or other French-speaking countries. Intended for students enrolled in 200-level courses. Prerequisite: FREN 104 or FREN 150 or equivalent. (Cannot be applied toward the French major or minor).

FREN 215. Advanced Intermediate French I. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies**

Intensive French language study during the student's first month in Tours. Offered only in Tours, required of all students their first semester there. Prerequisite: FREN 150.

FREN 216. Advanced Intermediate French II. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4**

Guided practice for the improvement of written and spoken French at the advanced intermediate level, and preparation for the DELF French proficiency exam. Offered only in Tours, required of all students their first semester there. Prerequisite: FREN 215.

FREN 217. Advanced French I. .5-1 Credits.**Offered Spring Semester Only; Lecture hours:Varies,Other:Varies**

Intensive French Language study during first month of second semester in Tours. Offered only in Tours. Prerequisite: FREN 215.

FREN 218. Advanced French II. .5-1 Credits.**Offered Spring Semester Only; Lecture hours:Varies**

Guided practice for the improvement of written and spoken French at the advanced intermediate level, and preparation for the DELF French proficiency exam. Offered only in Tours. Prerequisite: FREN 216.

FREN 220. Women in the Middle Ages and Renaissance. 1 Credit.**Lecture hours:3; Repeatable**

Introduction to history of French literature from the Middle Ages to the French Revolution with an emphasis on women writers and women's lived experiences and/or literary representations. Provides an introduction to literary history and methods of critical reading. A comprehensive survey. Prerequisite: FREN 104.

FREN 230. French Literature I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Introduction to history of French literature from the Middle Ages to the French Revolution. Provides an introduction to literary history and methods of critical reading. A comprehensive survey. Prerequisite: FREN 150.

FREN 231. French Literature II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Introduction to history of French literature of the 19th century to the present and to methods of literary analysis. Prerequisite: FREN 150.

FREN 236. Topics in Francophone Literature and Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of the literature, language, geography, history, music, and film of a particular Francophone region (French Caribbean, Quebec, West Africa, Maghreb, etc.). Prerequisite: FREN 150.

FREN 255. Introduction to French Cinema. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to French cinema from a cultural and historical perspective. Students will familiarize themselves with major cinematic movements and with methods of critical reading. The course also includes discussions of the relationships between film, literature, and other visual arts. Prerequisite: FREN 150.

FREN 261. Traduction. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to translation. Prerequisite: FREN 150.

FREN 262. Intercultural Communication. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course is intended to provide a foundation in intercultural communication theory with specific application to the French and American cultures. Offered only in Tours.

FREN 270. La France actuelle. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to contemporary France from historical, sociological, anthropological, and symbolic perspectives. The study of French attitudes, lifestyles, conceptions of society, social and political structures, and of France and French in a post-colonial context. Prerequisite: FREN 150.

FREN 271. La France artistique. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to French music, literature, and fine arts from the Middle Ages to the present. Focus on selected artists, writers and musicians from each period. Provides a comprehensive survey. Prerequisite: FREN 150.

FREN 274. The Art of Touraine. .5 Credits.**Offered Fall Semester Only; Lecture hours:2**

This course will focus on the arts of the Touraine region. Offered only in Tours.

FREN 275. French Economy and Business Culture. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:2; Repeatable**

In-depth study of the language, culture, politics, and economic climate of business in France. Preparation for further study of management and internships in France. Prerequisite: FREN 150.

FREN 276. Tours artistique. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2**

The many faces of Tours as reflected in the arts. Offered only in Tours.

FREN 277. La France au quotidien. .5 Credits.**Offered Spring Semester Only; Lecture hours:1,Other:1**

Introduction to the history and literary scene of the Touraine region. Offered only in Tours. Prerequisites: For second semester Bucknell en France students staying for a full year in Tours and who have taken FREN 276.

FREN 280. Translating Food Cultures. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to basic translation skills through contemporary texts dealing with food and culturally significant culinary practices in the French and Francophone world. Prerequisite: FREN 150.

FREN 282. Patrimoines Gastronomiques. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to food practices in France from historical, sociological, anthropological, and symbolic perspectives. Studies conceptions of society through gastronomic discourse. Prerequisite: FREN 150.

FREN 288. Global Cuisines, Local Contexts: Commensality and Conflict. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

We will consider how food both brings people together, and creates divisions between them, through an in-depth examination of the cases of French and Andean (South American) cuisines. Cuisine will be considered through aesthetic, cultural, and economic lenses as a mirror into larger social worlds. Crosslisted as ANTH 288 and UNIV 288 and LAMS 288.

FREN 290. Independent Study. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:1; Repeatable**

Independent study in French for students enrolled in the Bucknell en France program. Prerequisite: permission of the instructor.

FREN 295. Topics in French Studies. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies**

Topics vary but permit study of one or several subjects in French or Francophone literature, culture and civilization. Prerequisites: FREN 150 and permission of the instructor.

FREN 301. Advanced French Conversation I. .5 Credits.**Offered Fall Semester Only; Lecture hours:2**

Advanced conversation for students who have studied in France or other French-speaking countries. Conducted entirely in French by native speaker. May not be taken by native speakers of French.(Cannot be applied toward the French major or minor).

FREN 302. Advanced French Conversation II. .5 Credits.**Offered Spring Semester Only; Lecture hours:2**

Advanced conversation for students who have studied in France or other French-speaking countries. Conducted entirely in French by native speaker. May not be taken by native speakers of French. (Cannot be applied toward the French major or minor).

FREN 322. Medieval and Renaissance Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of the literature of the medieval and Renaissance periods emphasizing the analysis of themes, ideas, and styles as well as cultural and historical contexts. Prerequisite: FREN 230 or permission of the instructor.

FREN 324. Seventeenth-Century Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics deal with aspects of Louis XIV's classical aesthetic. Examination and analysis of its literary, artistic, and cultural manifestations, its socio-political and philosophical underpinnings, and its counter-culture: the salon tradition. Prerequisite: FREN 230 or permission of the instructor.

FREN 325. Eighteenth-Century Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary, but deal with aspects of the literary, artistic, and intellectual manifestations of the decline of the Ancient Regime and the liberation of thought initiated by the pre-Revolutionary philosophies. Prerequisite: FREN 230 or permission of the instructor.

FREN 326. Nineteenth-Century Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary, but inevitably focus on the interaction of Romantic imagination and Realist observation that characterizes the 19th century in France.

Prerequisite: FREN 231 or permission of the instructor.

FREN 327. Twentieth-Century Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary and could focus on a period, a genre, a group of writers, or a theme from the 20th or 21st century. Prerequisite: FREN 231 or permission of the instructor.

FREN 330. Topics in Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced study of themes or topics in French or Francophone literature. Prerequisite: FREN 230, FREN 231 or permission of the instructor.

FREN 336. Francophone Africa. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Study of literature, film, politics, and society of Francophone Africa. Prerequisite: FREN 230, FREN 231, FREN 236, FREN 270, or FREN 271.

FREN 370. Topics in Civilization. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced study in themes, topics, or periods in French or Francophone history or civilization. Prerequisite: FREN 270 or permission of the instructor.

FREN 371. Topics in the Arts. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced study in themes, topics, or periods of French art history. Prerequisite: permission of the instructor. Prerequisite: FREN 271 or permission of the instructor.

FREN 390. Independent Study. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Subject to be selected by student in consultation with the instructor. Prerequisite: permission of the instructor.

FREN 395. Seminar in French Studies. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Topics vary, but permit detailed study of any one of innumerable subjects in French literature and civilization. Prerequisite: permission of the instructor.

FREN 3NT. French Non-traditional Study. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in French.

Geography (GEOG)

GEOG 100. From Earth to Home. 1 Credit.**Offered Occasionally; Lecture hours:3**

Explores how, why, and where humans transform planet Earth to create the distinct places, landscapes, and territories we call home.

GEOG 101. Globalization, People, and Place. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Investigates the world from a spatial perspective to understand the complexity of places and the dynamic relationship between peoples and the world they inhabit. Open to first-years and sophomores.

GEOG 110. World Environmental Systems. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3**

Survey of physical geography, organized upon an understanding of how natural systems - climate, landscape, evolution, biological community - create the different environments of the world. Laboratory science course.

GEOG 113. Human Impact on Environment. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Causes and effects of major environmental changes induced by humans, challenges to our future well-being, and opportunities for future sustainability. Prerequisite: open to first-year students only.

GEOG 175. Landforms of the World. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Lab:3.5**

Understanding the pattern of landforms around the world, the processes that created them, and their influence on humans. Laboratory science course for B.A. students. Prerequisite: juniors and seniors by permission only.

GEOG 200. Independent Study - Nicaragua. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

Supervised independent study, readings, and preparation of a paper in conjunction with the Bucknell in Nicaragua summer program. Prerequisite: permission of the instructor.

GEOG 204. Applied G.I.S.. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Problem Session:1.5**

Introduction to the use of Geographical Information Systems to collect, structure, and display large or complex spatial data sets, using examples from human and physical geography. Prerequisite: permission of the instructor.

GEOG 209. Economic Geography. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Inquiry into local and global changes in economic activity, location and spatial organization, especially focusing on implications for the well-being of people in particular places.

GEOG 210. Urban Condition. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Geographic and sociological inquiry into pressing urban issues of advanced industrialized societies, including inequality, housing, employment, and how cities fit into the American present and future. Crosslisted as SOCI 210.

GEOG 211. Political Geography. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Considers political processes from a geographical perspective across a range of scales, in particular analyzing the geographical arguments which shape international political relations.

GEOG 214. Europe in Age of Globalization. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines the geographical mosaic that is "Europe" in the contemporary period marked by conflicting forces of globalization, nationalism, and regionalism.

GEOG 215. Environmental Planning. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Explores the main approaches to planning theory and their environmental applications. Considers how environmental planning can promote the socio-ecological health and sustainability of democratic communities. Crosslisted as ENST 215.

GEOG 216. Borders and Politics of Mobility. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Explores the politics of contemporary nation state borders, issues of territory, sovereignty, mobility, migration, identity, citizenship, statelessness, and focuses on borders at other scales. Crosslisted as IREL 216.

GEOG 218. Geographies of Justice. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

This course will focus on the role of space for questions of justice and social change. Drawing on scholarship in geography and cognate disciplines, students will examine how social structures that privilege dominant groups embed to produce spatial inequality and marginality across the globe.

GEOG 220. Cultural Geography. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Role of culture in shaping places. How cultures are geographically expressed, and how geography is a basic element in the constitution of cultures.

GEOG 222. Thinking Space: Critical Reflections on Research. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

With an eye toward research design, proposal and grant writing, students will critically engage the role of the University in imagining, creating and understanding place. Students will think about space, how to study it, and, in turn, how studying space produces it.

GEOG 234. Human Ecology. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

A general science course in human ecology, to demonstrate the ways humans continue to adapt to their environment through biological, cultural, scientific, symbolic, political, and technical means. Crosslisted as ENST 234.

GEOG 236. Third World Development. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Socio-cultural, economic, and environmental problems confronting developing countries. Includes such topics as political-economic change in a global and local context, transnational corporations, gender relations, food production/consumption, urbanization, and sustainable development.

GEOG 237. Grassroots Development: Nicaragua. 1 Credit.**Offered Summer Session Only; Lecture hours:15**

This service-learning Bucknell in Nicaragua summer program course focuses on local people's efforts to promote sustainable development. Study involves academic, service, and travel components. Prerequisite: permission of the instructor.

GEOG 257. Global Environmental Change. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:3.5**

Understanding human and physical systems as they respond to the natural and human-induced changes in the global environment.

GEOG 265. Geography of Pennsylvania. 1 Credit.**Lecture hours:3**

Exploring the landscape, industry, culture, and history of Pennsylvania; using this example to understand the broad themes of human geography.

GEOG 292. Service-Learning in Nicaragua. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course focuses on the connections between Nicaraguan development processes and Brigade-based service-learning. Prerequisite: permission of the instructor. Crosslisted as IREL 292 and LAMS 292.

GEOG 301. Topics in Advanced Physical Geography. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:4**

Specialized topics in physical geography. Prerequisite: permission of the instructor.

GEOG 304. Advanced GIS. 1 Credit.**Offered Occasionally; Lecture hours:3**

Project-based opportunity to solidify existing skills and learn advanced techniques in GIS and map design. Prerequisite: GEOG 204, or GEOL 230, or HIST 201 or permission of the instructor.

GEOG 309. Topics in Advanced Economic Geography. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Specialized topics in economic geography.

GEOG 310. Topics in Advanced Social Geography. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Specialized topics in social geography. Prerequisite: permission of the instructor.

GEOG 311. Topics in Advanced Political Geography. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Specialized topics in political geography. Prerequisite: permission of the instructor.

GEOG 312. Geographies of Health. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Seminar considers health across places and society and issues such as inequality, ecological and other risks, political economic changes, and organizing health service provision.

GEOG 319. Undergraduate Research. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Supervised research, readings, and/or preparation of a paper on some aspect of geography. Prerequisite: permission of the instructor.

GEOG 320. Undergraduate Research. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Supervised research, readings, and/or preparation of a paper on some aspect of geography. Prerequisite: permission of the instructor.

GEOG 321. Special Topics in Geography. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Development and growth of geographic thought; investigation, report and/or seminar on currently significant topics in geography. Prerequisite: permission of the instructor.

GEOG 322. Special Topics in Geography. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Development and growth of geographic thought; investigation, report and/or seminar on currently significant topics in geography. Prerequisite: permission of the instructor. Crosslisted as GEOG 622.

GEOG 323. Gender and Geography. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course develops advanced critical context for analyzing relationships between geography (space/place) and gender (women's and men's socially defined roles and relationships.) Prerequisite: permission of the instructor.

GEOG 324. Geographies of Identity. 1 Credit.**Offered Occasionally; Lecture hours:3**

Who are "we"? Seminar considers role of space in constituting society around the world. Explores nationalism, globalization, multiculturalism, citizenship, race, ethnicity, gender, sexuality, age, disability. Prerequisite: first-year students by permission only. Crosslisted as WMST 324.

GEOG 325. Nature, Wealth and Power. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A seminar in political ecology that explores the historical, social political and economic dimensions of environmental change in developing regions. First-year students and sophomores by permission only. Crosslisted as ENST 325.

GEOG 332. Evolution, Ecology, and Human Impact. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3.5**

This course explores processes shaping the distribution and diversity of life on Earth as a framework for understanding our impact on the biosphere. Laboratory science course.

GEOG 345. Food and the Environment. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Nothing from the environment is more important than food production, nothing affects the environment more; we'll study both environmental and social circumstances. Laboratory science course. Crosslisted as ENST 345.

GEOG 350. Classical Marxism. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The goal is to develop an understanding of Marx's analysis of capitalism by reading mainly original texts by Marx and consider its applications to disciplinary thinking. Crosslisted as ECON 350.

GEOG 356. Nationalism, Identity and Nature. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the geographies and politics of nationalism, the ways in which nature is nationalized, the construction of nature in environmental contestations and reactions to nationalism, and the intersection of nationalism with other social constructions. Crosslisted as ENST 356 and IREL 356.

GEOG 420. Environmental Community Projects. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Community-based "clinic" course on environmental problems or projects for local stakeholders, based on integrative, interdisciplinary research and design. Preference to senior ENST, ENSC, and GEOG majors. Crosslisted as ENST 411.

Geology (GEOL)

GEOL 107. Global Change - Past and Present. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to major transformations of the physical, biological, and chemical components of Earth systems from a geological perspective including climate, tectonics, biodiversity, sea-level, and ocean circulation. Not open to students who have taken GEOL 204. Preference given to first-years and sophomores.

GEOL 108. When Rocks Attack. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Students explore popular depictions of natural disasters to assess their geologic plausibility. Not open to students who have taken GEOL 117 or GEOL 203 or GEOL 250. Preference given to first-years and sophomores.

GEOL 109. Energy and Natural Resources. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Origin, development, and use of natural resources for energy production with an emphasis on petroleum, natural gas, and nuclear energy and their impact on the environment. Not open to students who have taken GEOL 117, GEOL 203, or GEOL 250. Only open to first-years and sophomores.

GEOL 117. Environmental Geohazards. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Geologic environmental hazards. Emphasis on hazards recognition and assessment in seminars, and field applications. Topics include: soils, slopes, floods, fans, earthquakes, land use, coastal, and groundwater hazards. Preference given to first-years and sophomores. Not open to Geology majors, except by permission of instructor, or students who have taken GEOL 108 or GEOL 316.

GEOL 203. Physical/Environmental Geology. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Lab:4**

Introduction to Earth's dynamic systems, plate tectonic processes that make Earth a unique planet, and human interaction with Earth. Geologic factors and limitations that affect use or management of the environment. Not open to students who have taken GEOL 250. Prerequisite: first- or second-year status, others by permission.

GEOL 204. Evolution of the Earth. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:4**

Introduction to the evolution of life, climate, plate tectonics, and catastrophes through time provides perspective for making decisions about ongoing and future environmental change. Preference given to first-years and sophomores.

GEOL 230. Environmental GIS. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Geographic Information Systems (GIS) in geologic mapping, environmental monitoring, and hydrologic modeling. Introduction to global positioning, (GPS), environmental databases, spatial analyses, and terrain modeling.

GEOL 250. Geology for Engineers. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:4**

Basic principles, including properties of rocks and soils, hydrology, surface processes, rock mechanics, environmental parameters, geological hazards, and engineering case histories. Not open to students who have taken GEOL 203. GEOL 250 is restricted to first- and second-year civil and environmental engineering students and others by permission.

GEOL 298. Stream Restoration. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Lab:4; Repeatable**

Scientific principles to integrate physical and biological approaches to stream restoration in watershed management. Team-taught field course highlights developing restoration plan for Bucknell's Miller Run. Crosslisted as ENST 298.

GEOL 299. Watershed Systems Science. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Lab:4; Repeatable**

Watersheds regulate water flow and ecosystem health on our landscape. Team-taught field course integrating physical, chemical, and biological processes in watersheds, using the Susquehanna and tributaries. Crosslisted as ENST 299.

GEOL 304. Crystallography-Mineralogy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:3**

Principles of crystallography and mineralogy; crystal morphology, structure, chemistry, physical properties, genesis, occurrence, and identification of important minerals by various techniques including chemical analysis. Prerequisite: GEOL 203 or GEOL 250 or permission of the instructor.

GEOL 305. Introduction to Geochemistry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:4**

Element distribution, basic thermodynamics and kinetics, mineral and gas solubility, phase diagrams, stable and radioactive isotopes, oxidation-reduction processes, surface geochemistry, composition of natural water. Prerequisites: MATH 201, CHEM 201 - CHEM 202, and permission of the instructor.

GEOL 309. Sedimentology and Stratigraphy. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:4**

Principles and techniques of the study of depositional processes and environments. Emphasis on semester-long sedimentary basin analysis project including analysis of Paleozoic outcrops near campus. Prerequisite: GEOL 204.

GEOL 314. Structural Geology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:4**

Orientation and geometric analyses of rock structures, kinematics and mechanics of rock deformation at all scales. Prerequisite: GEOL 203 or GEOL 250 or permission of the instructor. Crosslisted as GEOL 614.

GEOL 316. Geomorphology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:4**

Physical processes shaping the Earth's surface and evolution of resulting landforms. Emphasis on linkages between landscape components and understanding complex relationships between process and form. Prerequisite: GEOL 203 or GEOL 250 or permission of the instructor. Crosslisted as GEOL 616.

GEOL 317. Paleontology. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Lab:4**

Principles of evolution and ecology applied to investigation of ancient life. Emphasis on analysis of field collections of marine invertebrate fossils from Paleozoic outcrops near campus. Prerequisite: GEOL 204 or permission of the instructor.

GEOL 318. Undergraduate Research. .5-1 Credits.**Offered Summer Session Only; Lecture hours:Varies; Repeatable**

Research course for qualified students in any branch of geology. Prerequisite: permission of the instructor.

GEOL 319. Undergraduate Research. .5-1 Credits.**Offered Fall Semester Only; Lecture hours:Varies; Repeatable**

Research course for qualified students in any branch of geology. Prerequisite: permission of the instructor.

GEOL 320. Undergraduate Research. .5-1 Credits.**Offered Spring Semester Only; Lecture hours:Varies; Repeatable**

Research course for qualified students in any branch of geology. Prerequisite: permission of the instructor.

GEOL 321. Special Topics in Geology. .5-1 Credits.**Offered Fall Semester Only; Lecture hours:Varies; Repeatable**

Investigation, report, or discussion on currently significant topics in geology. Prerequisite: permission of the instructor.

GEOL 322. Special Topics in Geology. .5-1 Credits.**Offered Spring Semester Only; Lecture hours:Varies; Repeatable**

Investigation, report, or discussion on currently significant topics in geology. Prerequisite: permission of the instructor.

GEOL 325. Independent Study. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Independent study course for qualified students in any branch of geology. Prerequisite: permission of the instructor.

GEOL 326. Independent Study. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Independent study course for qualified students in any branch of geology. Prerequisite: permission of the instructor.

GEOL 334. Geophysics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4,Lab:3**

Introduction to geophysical principles and methods (seismic, gravity, magnetic, electrical, electromagnetic and GPR) applied to both near-surface and solid earth studies. Emphasis placed on active learning by hands-on geophysical data collection focused on environmental and engineering applications. Prerequisites: One 200-level geology course and MATH 201 or permission of the instructor.

GEOL 336. Hydrogeology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Lab:4**

Water properties, fundamental flow equations, surface and subsurface flow, well hydraulics, regional flow, and contamination. Prerequisites: GEOL 203 or GEOL 250 and MATH 192 or MATH 201, or permission of the instructor.

GEOL 338. Applied Environmental Geomorphology. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3,Lab:4**

Surviving on a complex and dynamic earth surface. Understanding environmental problems and geologic hazards with geologic principles set in a multidisciplinary framework. Prerequisites: GEOL 316 and permission of the instructor.

GEOL 340. Igneous and Metamorphic Petrology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:4**

This class examines the mineralogy, petrography, geochemistry, origin and tectonic significance of igneous and metamorphic rocks. Prerequisite: GEOL 304.

German (GRMN)

GRMN 101. Exploring Your World - elementary level I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

Beginning language skills. Practice in listening, speaking, reading, and writing; elementary grammar; and introduction to German culture. Prerequisite: juniors and seniors by permission only.

GRMN 101A. Intensive Elementary German. 1.5 Credit.**Offered Spring Semester Only; Lecture hours:4,Other:2**

Intensive practice in speaking, listening, reading, and writing German. Introduction to everyday German culture. Successful completion meets the prerequisites for GRMN 103.

GRMN 102. Everyday Life in Germany - elementary level II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Continuation of language skills. Practice in listening, speaking, reading, and writing; grammar; reading in culture and literature. Prerequisite: GRMN 101 or equivalent.

GRMN 103. Building Proficiency in German. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

A continuation and review of basic grammar, emphasizing all four language skills and culture. Prerequisite: GRMN 102 or equivalent.

GRMN 104. Communicating in Context. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Review of basic grammar, emphasizing all four language skills and culture. Prerequisite: GRMN 103 or equivalent.

GRMN 127. Intermediate German - Part A. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2**

Together with GRMN 128 these courses will provide students with the skills covered in the one-semester course GRMN 103. Prerequisite: GRMN 102 or equivalent.

GRMN 128. Intermediate German - Part B. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2**

Together with GRMN 127 these courses will provide students with the skills covered in the one-semester course GRMN 103. Prerequisite: GRMN 102 or equivalent.

GRMN 201. Strategies in Speaking German. .5 Credits.**Offered Fall Semester Only; Lecture hours:2; Repeatable**

Concentration on development of speaking skills. Conducted in German by native speaker. Intended for students enrolled in 200 and 300-level courses. Prerequisite: GRMN 103 or equivalent.

GRMN 202. Strategies in Speaking German. .5 Credits.**Offered Spring Semester Only; Lecture hours:2; Repeatable**

Concentration on development of speaking skills. Conducted in German by native speaker. Intended for students enrolled in 200 and 300-level courses. Prerequisite: GRMN 103 or equivalent.

GRMN 204. German Conversation and Composition. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

Intensive practice in speaking and writing German. Prerequisite: GRMN 104 or equivalent.

GRMN 221. Doing Business in Germany. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Development of skills necessary to function in the German business world. Prerequisite: GRMN 204 or equivalent.

GRMN 225. German for Engineers and Natural Scientists. .5 Credits.**Offered Either Fall or Spring; Lecture hours:2**

Introduction to concepts and vocabulary pertinent to these disciplines as well as discussion of the "culture" of engineering and science in German-speaking countries. Prerequisite: GRMN 103 or equivalent.

GRMN 230. Genre and History: Introduction to German Studies. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Examination of a genre and its historical development with an emphasis on developing a critical approach to the reading of texts. Prerequisite: GRMN 204 or equivalent.

GRMN 231. Reading German Literature. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3; Repeatable**

Intended to sharpen the critical skills developed in GRMN 230 and provide students with more in-depth knowledge of a particular genre. Prerequisites: GRMN 204 and permission of the instructor.

GRMN 240. Reflections of Science and Technology in German Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An overview of German cultural responses to technological and scientific progress from the early 1800s to the present. Prerequisite: GRMN 204 or equivalent.

GRMN 251. Achtung Kamera. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:2**

This course is an introduction to German film studies. It provides a survey of German films from the beginning until today. Prerequisite: GRMN 204.

GRMN 261. Nazi Culture. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A study of Nazi attitudes towards the arts, science, education, mass media, work, morality, sex, war, and religion. In English. Crosslisted as UNIV 261.

GRMN 270. The Bourgeois Era: 19th-century Germany. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

An overview of German society from Romanticism to World War I from a cultural-historical perspective.

GRMN 272. Modern German Culture 1945-1990. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

An overview of cultural, social, economic, and political issues in the two Germanys. In German. Prerequisite: GRMN 204 or equivalent.

GRMN 273. The Berlin Republic since 1990. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Exploration of the cultural world of Germany since unification including literature, art, film, music. In German. Prerequisite: GRMN 204 or equivalent.

GRMN 295. Topics in German Studies. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

Study of topics in German culture or literature at an intermediate level. Prerequisite: GRMN 204 or equivalent.

GRMN 296. Advanced German Composition. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

Concentration on the writing of analytic German. Advanced level. Prerequisite: GRMN 204 or equivalent.

GRMN 310. German for Reading Knowledge. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Students will learn grammatical structures and vocabulary necessary to read German-language texts in their discipline. In English. Prerequisite: permission of the instructor. Crosslisted as GRMN 610.

GRMN 318. Contemporary German Cinema. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Analysis of contemporary German cinema. Advanced level.

GRMN 322. Leitmotifs in 19th-century German Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of how German-speaking writers, artists, and composers use a specific form and/or address a specific issues at various points throughout the 19th-century. Prerequisite: GRMN 230 or equivalent.

GRMN 328. The Cold War in Germany. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Analysis of Cold War politics and literature in East and West Germany, 1945 to 1990 and beyond. In German. Prerequisite: GRMN 230 or equivalent.

GRMN 329. German Literature in the 20th and 21st Centuries. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis and interpretation of major literary works. In German. Prerequisites: GRMN 204 or equivalent or permission of the instructor.

GRMN 390. Independent Projects in German Studies. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Subject to be selected by the student in consultation with the instructor. Prerequisite: permission of the instructor.

GRMN 391. Culture of the Weimar Republic. 1 Credit.**Offered Occasionally; Lecture hours:3**

A study of the history, economy, politics, and culture of the Weimar Republic. In German. Prerequisite: GRMN 270 or GRMN 272 or GRMN 273 or equivalent.

GRMN 392. Advanced Seminar in Selected Literary Topics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

The course will deal with selected topics in German literature on an advanced level. In German. Prerequisites: GRMN 230 or equivalent and permission of the instructor.

GRMN 393. Advanced Seminar in Selected Cultural Topics. 1 Credit.**Offered Alternate Fall and Spring; Lecture hours:3; Repeatable**

The course will deal with selected topics in German culture on an advanced level. In German. Prerequisites: GRMN 270 or GRMN 272 or GRMN 273 or equivalent and permission of the instructor.

GRMN 419. Culminating Experience. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies**

Independent study with a faculty member to prepare an oral presentation for annual German Studies Mini-Conference. Prerequisite: permission of the instructor.

Global Management (GLBM)

GLBM 300. Global Manager as Diplomat. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will examine the changing role of the manager in the global business environment.

GLBM 301. Global Supply Chain Management. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

In this course students will learn the concepts and tools to model, analyze and improve global supply chain operations under a variety of contexts.

Prerequisite: MGMT 102 or MATH 216 or permission of the instructor.

GLBM 302. The Global Flow of Capital. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will explore the challenges of financial management in a global context. Prerequisite: MGMT 203 or ACFM 370 or permission of the instructor.

GLBM 310. Independent Study in Global Management. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Individual study or projects, supervised by instructor. Prerequisite: permission of instructor.

GLBM 315. Special Topics in Global Management. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

A seminar on selected topics in global management. Prerequisite: permission of the instructor.

GLBM 320. The Global Negotiator. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course will focus on how to be an effective negotiator in the context of the global business environment. Juniors and seniors only.

GLBM 330. Rise of the Network Society. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

What are the fundamental social, economic, and political features that define our times? Starting with the idea of the network society we will explore globalization, the network organization, communication technologies, identity, and new forms of social protest. There is a special emphasis on developing presentation skills and independent projects.

GLBM 350. The Global Manager in Europe. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

In this course, students will learn about how companies make strategic decisions in the European business environment. Juniors and seniors only.

GLBM 351. The Global Manager in Russia. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course examines the specifics of doing business in Russia, and through video-conferencing with Russian counterparts, prepares students for more efficient functioning in the "globalized" business environment.

GLBM 352. The Global Manager in India. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course explores India's economic rise, its evolving business climate, and the emergence of powerful Indian companies on the global scene.

GLBM 353. The Global Manager in China. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course will analyze cases of companies doing business in China and will look for lessons about the business environment there.

GLBM 390. Honors Course in Global Management. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Special and independent studies for Global Management majors selected under the guidelines of the school and the University Honors Council.

Honors thesis required. Prerequisites: nomination by the school and permission of the instructor.

GLBM 400. Global Manager Abroad. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Students conduct independent studies analyzing a foreign venture of interest. Students interact with persons, foreign and/or domestic, who have experience with the venture. Students must demonstrate their understanding of: organizations as a global phenomenon, the global system, a specific region or country, and their emerging skill as a global manager.

Greek (GREK)

GREK 101. Introductory Ancient Greek. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An introduction to the classical and koine forms of the language. Emphasis upon forms and grammar, and rapid development of facility in reading.

GREK 102. Introductory Ancient Greek. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

An introduction to the classical and koine forms of the language. Emphasis upon forms and grammar, and rapid development of facility in reading. Selections chosen from a range of Greek periods. Prerequisite: GREK 101 or equivalent.

GREK 151. Intermediate Greek. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Study of selected works in Greek, including such authors as Homer, Euripides, Herodotus, Lysias, Plato, Xenophon. Review of forms and grammar. Prerequisite: GREK 102 or equivalent.

GREK 221. Studies in Greek Literature. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Study of a topic or author focusing on original Greek texts (e.g., Herodotus, Homer, Sophocles, Plato, New Testament). Highly recommended for students anticipating application to graduate programs in classics or divinity. Prerequisite: GREK 151 or equivalent.

GREK 311. Independent Study in Greek. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Independent study of Greek texts with concomitant study of secondary sources. Prerequisite: permission of the instructor.

Hebrew (HEBR)

HEBR 101. Beginning Modern Hebrew. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:1**

Introduction to modern Hebrew. Practice in listening, speaking, reading, and writing, elementary grammar and introduction to Israeli culture.

HEBR 101A. Intensive Elementary Hebrew. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:4**

Intensive practice in speaking, listening, reading, and writing modern Hebrew. Introduction to everyday Israeli culture. Not open to students who completed HEBR 101. Successful completion meets prerequisite for HEBR 103.

HEBR 102. Beginning Modern Hebrew II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:1**

Continuation of Modern Hebrew language skills. Practice in listening, speaking, reading, and writing and introduction to Israeli culture. Prerequisite: HEBR 101 or equivalent. Not open to students who completed HEBR 101A.

HEBR 103. Intermediate Hebrew I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:1**

A continuation and review of grammar emphasizing all four skills and culture. Prerequisite: HEBR 101A or HEBR 102 or equivalent.

HEBR 104. Intermediate Hebrew II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Further review of grammar with emphasis on all four skills and culture. Prerequisite: HEBR 103 or equivalent.

HEBR 150. Topics in Jewish Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of topics in Jewish cultures or societies.

HEBR 215. Hebrew Bible and Modern Literature. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

The course examines how materials from the Hebrew Bible are reworked in modern literature and culture, focusing on Hebrew and American traditions. Crosslisted as HUMN 215.

HEBR 236. Israel: Literature, Film, Culture. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Course explores Israeli culture in its historical, ethnic, religious, linguistic, and geographical context through literature, film, political discourse, photography, and other texts. Crosslisted as UNIV 236.

HEBR 250. Jews and the City: Literature and Film. 1 Credit.**Offered Occasionally; Lecture hours:3**

The course explores the 20th-century Jewish urban experience in Warsaw, New York, Tel Aviv, and Jerusalem through literary, cinematic, and scholarly materials. Crosslisted as UNIV 250.

HEBR 251. The Jewish Uprooted. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

The course explores the figure of the uprooted in modern Jewish literature and culture, focusing on early 20th-century Hebrew, Yiddish, and Jewish-American writing (readings are in English).

HEBR 390. Independent Study. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies**

Modern Hebrew at the intermediate level. Prerequisites: HEBR 102 and permission of the instructor.

History (HIST)

HIST 100. Thinking about History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Focus and content vary. An introductory history course for the development of informed historical analysis among its students. Primarily for first-year students.

HIST 111. Introduction to U.S. History I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course introduces students to American history from the pre-colonial period through the War of 1812.

HIST 112. Introduction to U.S. History II. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course introduces students to American history from Jeffersonian America through the Spanish-American-Cuban-Filipino War.

HIST 113. Introduction to U.S. History III. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course provides an introduction to 20th-century American history.

HIST 114. Canada from 1860. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An introduction to the history, politics, and culture of the northern half of North America, emphasizing the relationship between environment and national identity, since 1860. Preference to first- and second-years. Third- or fourth-years by permission only.

HIST 121. Introduction to African-American History I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A survey of African-American history from colonial times to the Civil War.

HIST 122. Introduction to African-American History II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

A survey of African-American history from the Civil War to the present.

HIST 131. Pre-modern Europe. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of Europe in the pre-industrial era. Content and goals vary with instructor.

HIST 132. Modern Europe. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of modern Europe.

HIST 170. Introduction to the History of Science and Technology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A general survey of Western science and technology in relation to social and intellectual developments from ancient times to the present.

HIST 171. Introduction to the History of Medicine and Public Health. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A cross-cultural survey of medicine and public health, emphasizing how different societies have interpreted and responded to epidemic diseases.

HIST 185. Introduction to Modern Southeast Asian History and Culture. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Examining all of Southeast Asia in general but focusing on Vietnam, Indonesia, and the Philippines, this course will examine the transition from colonialism to independence in Southeast Asia and the cultural and political expression of that transition. Not open to seniors.

HIST 190. World History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introductory survey of world history. Examines how cross-cultural encounters and global exchanges of ideas, people, and goods have shaped world history.

HIST 194. History of Modern Middle East. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

This course surveys the history of the modern Middle East from Napoleon's invasion of Egypt in 1798 to the Arab revolutions of 2011.

HIST 200. The Historians' Craft. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to the discipline of history and to the methods and approaches used by historians. The course also considers history and the wider public.

HIST 201. Introduction to Historical GIS. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:1,Other:2**

This course analyzes events of the historical past using geographic information systems (GIS) digital mapping software. Not open to first-year students.

HIST 202. Intermediate Historical Geographic Information Systems. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course reinforces student familiarity with GIS software appropriate to historical research, including using mobile technologies for data collection, and importing and manipulating data and maps into a historical GIS for analysis and presentation. Prerequisite: introductory GIS course or permission of the instructor.

HIST 203. Digital Methods in Chinese Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:.5,Other:2.5**

This course introduces students to digital tools and resources in Chinese studies. Topics include data mining, database design, and data visualization. It combines discussion of digitally#empowered scholarship in Chinese studies and training in the technical know#how. Knowledge of Chinese language, Chinese history, or programming is not required. Crosslisted as EAST 203.

HIST 211. Frontiers and Borderlands. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the development of the American West to 1900.

HIST 213. North American Environmental History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This class introduces the practices and purposes of studying our past relationships with nature, to better understand the origins of North America's landscapes today.

HIST 214. Topics in American History. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Topics vary.

HIST 217. American Colonial History. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Examines effects of European settlement on the North American continent. This course considers social, legal, and economic consequences for the various groups during encounters that occurred between 1607 and 1770.

HIST 218. African-Americans and the American Revolution. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Inquiry into the meaning of American independence from the perspective of the people for whom freedom was not intended.

HIST 219. Antebellum America. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An examination of social problems and movements during this era. Focus may vary. Slavery and slave narratives; underground railroads; utopian visions; abolitionists; strikes and labor protests.

HIST 220. American Civil War and Reconstruction. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The period is studied in depth as a revolutionary era through attention to political, economic, social, constitutional/legal, intellectual trends, events, personae, movements, and institutions.

HIST 221. U.S. History: 1880s to 1930s. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The rise and development of American capitalism, as well as the political and social movements that accompanied this period of economic turbulence will be covered.

HIST 222. U.S. History from the 1940s to the Present. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Continuation of HIST 221.

HIST 223. Twentieth-century African-American History: Eyes on the Prize. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Course uses as primary source the documentary "Eyes on the Prize" to examine African-American history between 1945 and 1985.

HIST 224. Eighteenth-century North America. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

A course that explores how different peoples (British, French, and American) claimed and fought over the environments of North America, shaping today's national borders.

HIST 225. Topics in American Political and Economic History. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; Repeatable**

Intensive study of leading themes, in American history since 1600. Topics vary from year to year, but may include economic and political structures; intellectual movements, or social and cultural history.

HIST 226. American Capitalism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the origins and development of capitalism in the United States. Property rights, how notions of time and space changed markets, proletarianization, alienation, commodification, and the role the government played (or not) in shaping the economy are some of the topics that we will cover.

HIST 227. American Intellectual History I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A study of selected thinkers, ideas, and intellectual currents from Puritanism through the Civil War.

HIST 228. American Intellectual History II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

A study of selected thinkers, ideas and intellectual currents from 1865 to the present.

HIST 229. Topics in American Intellectual History. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; Repeatable**

Studies in topics such as the Puritan origins of the American self, pragmatism and social reform, radical visions and American dreams.

HIST 231. Social History of Early Modern Europe. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Social history survey of continental Europe from the Black Death through the period of religious wars (1348-1700).

HIST 233. European State Systems (1660-1815). 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Politics, diplomacy, and war in the Age of Absolutism. Examines foreign relations and their domestic origins and implications.

HIST 236. Nineteenth-century Europe. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Romanticism, nationalism, and imperialism are examined, together with political developments of the 19th century.

HIST 237. The Renaissance. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course focuses upon the major religious, social, artistic, literary, and political constructs of the influential thinkers of the European Renaissance, 1300-1600.

HIST 238. Witchcraft and Magic in Europe. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines magic and witchcraft beliefs in Europe during the age of witch-hunting (Renaissance to Enlightenment). Topics vary.

HIST 239. Contemporary Europe, 1890-1995. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The crises of European cultures: world wars, economic depression, social unrest, and the decline of hegemony, the struggles for revitalization.

HIST 240. Greek History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

From the heroic Bronze Age down through the Persian invasion, the flourishing of Classical Athens, and the Peloponnesian wars to the death of Socrates, focusing on political, social and economic developments. Crosslisted as CLAS 217.

HIST 241. Roman History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Roman history from Rome's foundations as a backwater village ca. 753 BCE, through its rise as a world-power to its fall in the fourth century CE, focusing on economic and political issues. Crosslisted as CLAS 218.

HIST 242. Topics in French History. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; Repeatable**

Specific focus will vary but always a study of aspects of the constitution and transformation of major political-cultural formations which shape French society.

HIST 245. Topics in German History. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Topics vary. Intensive study of leading themes in German history since 1400.

HIST 246. Medieval Heresies and Heretics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Course examines the major heresies in western Europe from 1100 to 1600, and the church's attempts at repression.

HIST 247. Topics in European History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Intensive study of leading themes in European history since 1400. Topics will vary but may include economic and political structures, intellectual movements, or social and cultural history.

HIST 248. Topics in Russian History. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

Topics vary. An examination of various periods in the history of Russia and the Soviet Union that includes a balance of political, social, and cultural elements.

HIST 249. The Reformation. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This interdisciplinary course explores how five 16th-century reformations – Lutheran, Calvinist, Zwinglian, Anabaptist, Catholic – altered practices of daily life. Students will "re-live" debates that occurred regarding the perceived advantages and disadvantages of these theologies, and explore how class, gender, occupation, and local economy affected the reception of these systems.

HIST 250. Medieval and Early Modern Russia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course provides a survey of the principal events and themes in Russian history from the ninth through the early 18th century.

HIST 251. Imperial Russia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course provides a survey of the principal events and themes in Russian history from the early 18th through the early 20th century.

HIST 252. Soviet Russia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An overview of the political, intellectual, cultural, and social history of the Soviet Union from its ideological roots to its collapse as a communist power.

HIST 255. Under Siege: The Modern Middle East 1914-2014. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course surveys the history of the modern Middle East from the outbreak of WWI to aftermath of the Arab revolutions of 2011.

HIST 257. Women and Revolution. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Depending on the emphasis and expertise of the instructor, this course focuses on the place of women and the question of gender in revolutionary moments in history.

HIST 258. Topics in Women's and Gender History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary. Instructors shape the content according to their own interests in seeking insights into the historical construct of gender in Europe and/or the United States.

HIST 261. Twentieth-century Afro-Caribbean and African-American Thought. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Study of the intellectual contributions and scholarly vision of people of African descent to sociological theory, social philosophy, and social change in the 20th century. Crosslisted as SOCI 280.

HIST 262. History and Film. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introductory exploration of various aspects of cinematic representations of historical periods, events and agents.

HIST 266. Topics in Intellectual History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics will vary. Intensive study of major themes and thinkers in intellectual history.

HIST 267. European Intellectual History I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A survey of the main currents of European philosophical, social, and political thought from the 14th through the 18th centuries. Prerequisite: permission of the instructor.

HIST 268. Power, Ideology, Existence: The History of Post-Enlightenment European Thought. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will survey the major currents and impulses that informed European thought over the past 200 years. Texts include works by Hegel, Marx, Nietzsche, Benjamin, Adorno, Heidegger, and Foucault.

HIST 270. Science and Technology in US. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of intellectual, social, and professional developments in science and technology from Colonial times to the present, emphasizing federal science policy and politics. Prerequisite: permission of the instructor.

HIST 271. Medicine in the US. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines American experiences of health and sickness across gender, race, and class, and developments in medicine and public health from colonial times to the present.

HIST 272. History of Science I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Natural science during the Scientific Revolution (ca. 1450-1700), including intellectual, philosophical, and social developments.

HIST 273. History of Science II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Major developments in science and technology from the early 1800s to the present, and their social context and implications.

HIST 274. Africa and International Relations in Historical Perspective. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

From popular culture: music, film, fashion to digital technologies: cell phones, computers, fit-bits, and GOOGLE-glass to our food: morning coffee, sugar, and spices, we rely on African ideas and resources. Through novels, films, and scholarly articles we examine how International Relations across Africa and with Africa matter in our lives. Crosslisted as AFST 274 and IREL 274.

HIST 279. Topics in the History of Science and Medicine. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary: non-orthodox medicine; women and science; women and medicine; technology and social change. Prerequisite: permission of the instructor.

HIST 281. Radical Democracy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Covering everything from Pirate Utopias to Slave Republics, Revolutionary Communes to Occupy Wall Street, this course examines the theoretical and historical attempts to practice democracy outside of the liberal representative model.

HIST 282. Modern Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course traces and analyzes major developments in Latin American politics, society and culture from 1800 to the present. Crosslisted as LAMS 295.

HIST 283. Southeast Asia since 1800. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Political-cultural transformations in Southeast Asia since 1800. Topics vary.

HIST 286. Contemporary Japanese History. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:1**

Political and cultural history of post-World War II Japan using various sources including film, anime, art, political cartoon, popular song. Crosslisted as EAST 256.

HIST 287. Perspectives: The Vietnam War. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A comprehensive examination of the conflicts in Vietnam from 1940 to 1981.

HIST 288. The History of Vietnam. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Intensive study of the history of Vietnam from the era of Chinese occupation in the second century BC to the present.

HIST 289. Chinese Diaspora. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Is the world becoming Chinese? This course examines the history of China outside of China. It explores the development of overseas Chinese communities around the world, including SE Asia and the Americas. Crosslisted as EAST 289.

HIST 290. Europe Imperialism and Colonialism. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Considers the rise, development, and fall of Western political and economic hegemony over the peoples and states of Asia and Africa since the late 19th century.

HIST 291. Africa: Ancient to Early Modern Times 4000BCE-1400CE. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Survey of Africa from Ancient economic, social, cultural, economic, and political developments to the Early Modern Era and the rise of Atlantic era trade. This course focuses on social, cultural, political, and economic changes generated by populations across the continent.

HIST 292. Making Contemporary Africa: 'Early Modern' to the 'Post-Modern' World - 1400 to the Present. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of African history from the 15th century to the contemporary period. We explore six major themes in African History: The Indian Ocean World, Making of the Atlantic World, Colonialism in Africa, Nationalism and Independence Movements, Post-Colonialism and Issues in the Making of Contemporary Africa.

HIST 293. China from Ancient Times to the 18th Century. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Chinese history and culture from their beginning to the middle of the Qing Dynasty, before that dynasty and China were challenged by the West. Crosslisted as EAST 233.

HIST 294. China since 1800. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

China from the eve of its modern confrontation with the West to the present through years of traumatic challenge and change. Crosslisted as EAST 234.

HIST 295. From Shinto to Shogun: Pre-modern Japan. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course will examine the cultural and institutional developments which constitute the Japanese heritage, with emphasis on classical Heian and early medieval court culture and late medieval samurai society. Crosslisted as EAST 254.

HIST 296. Modern Japanese History. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Japanese economy, society, politics, war, and diplomacy from 1868 to World War II; successes, crises, and conflicts in building a modern nation-state. Crosslisted as EAST 255.

HIST 297. The People's Republic of China. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

A historical look at life in China under the rule of the Communist Party. Unprecedented triumphs and tribulations. Crosslisted as EAST 267.

HIST 299. Topics in Non-western History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected major issues in the study of imperialism and colonialism.

HIST 301. Seminar in Environmental History. .5 Credits.**Offered Either Fall or Spring; Lecture hours:3**

A seminar exploration of aspects of human interactions with the natural world over time.

HIST 310. U.S. History to 1865. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary.

HIST 311. U.S. History since 1865. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics vary.

HIST 312. American Social History. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Everyday life, the family, pre-industrial society and industrial society, social organizations and social conflict, material culture, poverty and punishment.

HIST 313. The American West. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

This course examines the U.S. West. Topics vary.

HIST 316. Independent Study. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Selected topics. Prerequisite: permission of the instructor.

HIST 319. African-American History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Focuses on recent developments in the field. Topics vary but may include slavery; African-American intellectual history; black feminism; race, class and gender; social and political movements; and cultural criticism.

HIST 320. American Labor History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the formation of the American working class. Issues such as political activism, economic transformation, gender roles, and shop-floor militancy will be covered.

HIST 321. American Immigrants. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the history and consequences of American immigration. The cultural practices, work, political activism and nativist challenges to various immigrant groups will be covered. Not open to first-year students.

HIST 322. American Industrialization and Political Development. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course focuses on the development and relations between workers, political parties, laws, and social movements. Not open to first-year students.

HIST 330. European History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Intensive study of selected issues. Topics vary.

HIST 333. 20th Century Germany. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will examine the history of Germany in the 20th Century. We will unearth all the ways that German history has made us - i.e., how its history has sculpted the very ways we think about ethics, sex, politics, and culture today.

HIST 350. Honors Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Credit may be taken either in one semester of the senior year or throughout the senior year.

HIST 355. Undergraduate Research. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies**

Undergraduate research projects in collaboration with a history faculty member. Prerequisite: permission of the instructor.

HIST 360. Intellectual History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Intensive study of selected issues. Topics vary.

HIST 370. History of Science and Medicine. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Intensive study of selected issues. Topics vary.

HIST 380. Topics in Global History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:1; Repeatable**

Global history examines interactions and collisions between and among cultures from a transnational perspective. It applies historical insights to diverse peoples in ways not possible from the vantage point of established regional and national history. Prerequisite: permission of the instructor.

HIST 399. Non-western History. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Intensive study of selected issues. Topics vary. Not open to first-year students.

Humanities (HUMN)

HUMN 100. The Humanities Now!. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

A multi-section course in the humanities that introduces students to the humanities world through use of latest tools and methods of analysis. Open to first-years and sophomores only.

HUMN 128. Myth, Reason, Faith. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

An introduction to the most significant works in the Western and Asian intellectual traditions, extending from ancient Mesopotamia through late medieval Europe and/or East Asia. Not open to students who have completed RESC 098 "Myth, Reason, Faith" or a crosslisted equivalent. Seniors by permission only.

HUMN 150. Enlightenments. 1 Credit.

Offered Spring Semester Only; Lecture hours:4

An interdisciplinary study of selected works in art, music, literature, science and philosophy from European Renaissance through the early 20th century. Crosslisted as ENGL 150.

HUMN 215. Hebrew Bible and Modern Literature. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3

The course examines how materials from the Hebrew Bible are reworked in modern literature and culture, focusing on Hebrew and American traditions. Crosslisted as HEBR 215.

HUMN 250. Modernism and Crisis. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

An interdisciplinary study of major texts, figures, and concepts of the 20th century. Designed to follow HUMN 128 and HUMN 150. Crosslisted as ENGL 230 and UNIV 230.

HUMN 260. Introduction to Translation Studies. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

An introduction to the history, theories, and development of the field of Translation Studies. Facility in one language other than English is strongly recommended. Crosslisted as EAST 205.

HUMN 266. Chinese Philosophy. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3

Major philosophical schools of the classical age, Buddhist philosophy, Neo-Confucianism. Crosslisted as EAST 266 and PHIL 266. Prerequisite: PHIL 100 or permission of the instructor.

HUMN 270. Data Visualization for the Digital Humanities. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An introduction to the techniques and issues of data visualization for the humanities. interdisciplinary and comparative study, using both theoretical study and concrete examples.

HUMN 271. Advanced Text Analysis: Redefining How We Read. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course will teach students how text analysis allows digital humanists to interpret textual data in new ways. Students will learn how computer languages (such as XML-compliant TEI) help to pursue analysis of literary and historical texts and reveal new ways words signify.

HUMN 272. Interdisciplinary Studies in the Humanities. 1 Credit.

Offered Alternating Fall Semester; Lecture hours:3

Comparative study investigating different cultures, historical epochs, narrative forms, media and traditions. Prerequisite: permission of the instructor.

HUMN 275. Greece and Turkey: East and West. 1 Credit.

Offered Summer Session Only; Lecture hours:Varies

This course is based around a three-week summer study abroad experience in Greece and Turkey. Themes and materials will vary from year to year. Prerequisites: interview and permission of the instructor. Crosslisted as CLAS 275 and ENGL 275.

HUMN 280. Buddhist Philosophy in Comparative Perspective. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An introduction to Buddhist thought in comparative perspective, through a close reading and discussion of primary texts of the classical, medieval, modern and contemporary traditions. Prerequisite: PHIL 100. Crosslisted as PHIL 280.

HUMN 290. Susquehanna Country. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3

An investigation of the place of the environment in the humanities from a variety of academic perspectives. May also be taught as UNIV 241. Prerequisite: permission of the instructor. Crosslisted as ENST 225 and ENGL 225 and UNIV 241.

HUMN 301. Brain, Mind, Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An interdisciplinary study of the intersections between the humanities and neuroscience in the history of thought and contemporary culture.

Prerequisite: permission of the instructor.

HUMN 303. Buddhism in American Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An examination of the transmission of Buddhism to the U.S., with focus on the literature and cultural impact of the writers of the Beat Generation.

Prerequisites: RELI 200 or permission of the instructor.

HUMN 304. Narrative and Media. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

A seminar featuring narrative in several forms and contexts of representation. Prerequisite: permission of the instructor.

HUMN 305. Utopias: Past, Present, Future. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course aims to investigate the utopian imagination as manifested in various influential texts throughout Asian and Western history, and to consider the problems and possibilities of utopian thinking with regard to the present and future.

HUMN 306. US: Fever/Fantasy/Desire. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Seminar on American literature between 1770-1861 with an emphasis on psychoanalytic approaches to literary and cultural study. Authors may include Brown, Sansay, Poe, and Melville. Prerequisite: permission of the instructor. Crosslisted as ENGL 306 and ENGL 606.

HUMN 310. Dante and Milton. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

An intensive comparative study of Dante's "Comedy" and Milton's "Paradise Lost" as exemplars of medieval and late Renaissance understanding of human experience. Crosslisted as ENGL 350.

HUMN 319. Independent Study. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

Individual project of study supervised by instructor. Prerequisite: permission of the instructor. Crosslisted as HUMN 619.

HUMN 320. History of Sexuality. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A cross-cultural and interdisciplinary examination of the signification of sexuality in literature, philosophy, scientific discourse, and the visual arts.

Prerequisite: permission of the instructor. Crosslisted as ENLS 394 and WMST 325.

HUMN 325. Dostoevsky and Tolstoy: Literary Philosophy. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An introduction to the major philosophical ideas of the great Russian writers Fyodor Dostoevsky and Leo Tolstoy. In English. Crosslisted as RUSS 325 and HUMN 625.

HUMN 330. Studies in Autobiography. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A critical, cross-cultural and trans-historical examination of the "writing of the self". An examination of inflections of race and gender in the writing of autobiography. Readings from Augustine, Rousseau, Olaudah Equiano, Ruth Klüger, Christa Wolf, Simone de Beauvoir, and Marjorie Shostak, among others.

HUMN 340. Seminar in Translation Studies. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Advanced seminar in the history, theory, and practice of translation, including investigation of the role of translation in intercultural communication and comparative studies. Facility in a language other than English is strongly recommended. Crosslisted as ENLS 362.

HUMN 350. Senior Thesis Workshop. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

A colloquium on issues arising from the writing of a scholarly thesis. Prerequisite: permission of the instructor.

HUMN 351. Honors Tutorial and Senior Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3**

Independent study and research leading to the writing of a thesis as approved by the Honors Council. Prerequisite: permission of the instructor.

HUMN 3NT. Humanities Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in Humanities. Prerequisite: permission of the instructor.

Interdepartmental (IDPT)

IDPT 320. Interdepartmental Independent Studies. .5-1 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies; Repeatable

Independent study on a topic of interest to the individual student. This course may fulfill a requirement for an interdepartmental minor. Prerequisite: permission of the instructor.

IDPT 352. Interdepartmental Major Project. .5-1 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies; Repeatable

Independent research designed to unify and integrate the various courses that comprise the interdepartmental major. Prerequisite: permission of the instructor.

International Relations (IREL)

IREL 200. International Relations: Topics/Issues. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

Selected topics in international relations.

IREL 201. Modernization and Social Revolution in Latin America. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

This class examines how technological and political processes combine focusing on the Latin American region. Crosslisted as LAMS 201.

IREL 204. Naming Violence: Language, space and power in the Israeli Palestinian conflict. 1 Credit.

Offered Fall, Spring, Summer; Lecture hours:3

This IP course adopts an integrative approach of two fields of knowledge: sociolinguistics and political geography. The course aims to explore the Palestinian-Israeli struggle and how this struggle is constructed and reproduced in various spaces that are directly related and those that are assumed to be related to the struggle. Crosslisted as UNIV 204 and ARBC 204.

IREL 206. Sacred Objects: Religion, Violence and History. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course examines religion and violence through a social history of sacred objects circulating in medieval and modern South Asia. It explores political ideologies of the Indian state by studying how objects (images, buildings, idols, books, jewels) become imbued with religious power and motivate cataclysmic violence. Crosslisted as RELI 206.

IREL 210. The Politics of International Aid and Development. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

"Development" is arguably one of the most powerful concepts defining North-South international relations in the post-WWII era. What does effective development look like? Why have so many development schemes failed? Even in places that have successfully "developed," why are large segments of the population left out of these gains?

IREL 214. Sex, Lies and Capitalism. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

In this course – as we explore global patterns of inequality – we will rethink our habitual definitions of gender, race, sexuality, class, and human. This course employs feminist, queer, and critical race theory to investigate the myths, or socially-useful lies, that are essential to the functioning of global capitalism. Crosslisted as WMST 214.

IREL 215. Cultural Dimensions of International Relations. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

The impact of culture on cross-cultural communication, diplomatic negotiation, conflict eruption and resolution, technology transfer, global trade, and investment.

IREL 216. Borders and Politics of Mobility. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Explores the politics of contemporary nation state borders, issues of territory, sovereignty, mobility, migration, identity, citizenship, statelessness, and focuses on borders at other scales. Crosslisted as GEOG 216.

IREL 218. International Relations of Europe. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

This course will examine the foreign policies of European countries, individually and collectively through the European Union, toward each other, regional and global intergovernmental organizations, and other regions/countries. Crosslisted as POLS 284.

IREL 225. Chinese Politics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course examines China's rich political history, its dynamic economic and social changes, its lasting political changes, its enduring struggle for modernization, and its evolving relations with the rest of the world. Crosslisted as EAST 269 and POLS 225.

IREL 226. East Asian Politics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course surveys history, politics, economy, and society of countries in East Asia. It investigates the continuity and change in politics and policies of China, Japan, Korea, and selected countries in Southeast Asia. Crosslisted as EAST 226 and POLS 226.

IREL 229. Middle East Conflict and Revolution. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course explores some of the most significant controversies, conflicts, revolutions, and resolutions, both historical and contemporary, that define the Middle East as a region.

IREL 231. Peace Studies: Conflict Resolution. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Topics examined include pacifism, conflict resolution techniques and approaches, and finally actual case studies to illustrate peacemaking in two contexts: interstate wars and internal or civil strife. Crosslisted as UNIV 219 and POLS 281.

IREL 234. Environment & Development. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

What is the relationship between development and the environment? This course lays out frameworks for understanding the engagement of development with the environment. This includes exploring circuits through which processes (economic, environmental, and social) and goods circulate, including cases from "sustainable" forestry, carbon economies, and the global trade in waste.

IREL 235. Modern Africa. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Introduction to complexity, richness, and vitality of contemporary African cultures. Interdisciplinary perspectives on issues including economy, politics, family and community, art, literature, religion. Crosslisted as ANTH 235.

IREL 240. Human Security. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Explores emerging debates around human vulnerability and: conflict, climate change, displacement, development, and other forms of "security."

IREL 242. Sex, Gender and Family During the Age of Empire. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Despite their brutally violent nature, European empires were imagined as families consisting of European colonials and their "native" subjects. This course examines widow burning; imperialism and motherhood; mixed race families; European children and their colonial caregivers; British feminism; matriarchy and Islam; sexuality and the imperial archive; and imperial violence. Crosslisted as WMST 242.

IREL 244. Global Feminisms. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The course investigates the often conflicting meanings for the term "feminism" that cut across international feminist politics, academic debates and the local/global politics of place and identity. Crosslisted as WMST 244.

IREL 250. Theories of International Relations. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Analysis and evaluation of main theories of international relations, including realist, neo-realist, liberal, neo-liberal, Gramscian, Marxist, feminist, and post-modernist approaches. Theories are related to the major dimensions of international relations. Prerequisites: POLS 170. Preference given to second semester sophomores and junior IREL majors.

IREL 251. International Inequality and Poverty. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

This course examines the levels, patterns, sources, and trends in international inequality and poverty as well as some of their economic, social, and political consequences.

IREL 252. Political Economy of Global Resources. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A study of environmental and energy economics in the context of global resources and politics. The theme of sustainable development will be linked to the new realities of international relations. Prerequisite: ECON 103.

IREL 255. International Law. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The nature, historical development, and sources of international law; substantive and procedural international law and its role in international relations. Crosslisted as POLS 278.

IREL 260. Humanitarianism. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Explores the history of and contemporary politics around humanitarian intervention, including contemporary discussions of sovereignty, planning, empowerment, and humanitarian expertise.

IREL 270. Global Governance of Climate Change. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course examines the global governance institutions for climate change and the current policies, debates and positions at the climate change summits and counter-summits.

IREL 272. Poverty Amid Plenty: Development in India and South Asia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores ideas and practices of development in India and South Asia: the promise, politics, results, and potential lessons for development.

IREL 274. Africa and International Relations in Historical Perspective. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

From popular culture: music, film, fashion to digital technologies: cell phones, computers, fit-bits, and GOOGLE-glass to our food: morning coffee, sugar, and spices, we rely on African ideas and resources. Through novels, films, and scholarly articles we examine how International Relations across Africa and within Africa matter in our lives. Crosslisted as Hist 274 and AFST 274.

IREL 275. Global Governance. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the rationales, processes, and institutions of multilateral governance in a globalized world. We examine the U.N., nongovernmental organizations, conflict resolution, economic development, environment, human rights, and international law. Not open to first-year students. Crosslisted as POLS 275.

IREL 276. Comparative Foreign Policy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course is designed to introduce students to the theories that have been developed to explain foreign policy processes and foreign policy behavior. The course will also examine and discuss the foreign policies of specific international actors. Crosslisted as POLS 276.

IREL 277. International Political Economy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the politics of international economic relations including trade, finance, and development. Crosslisted as POLS 277.

IREL 282. European Security. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

European security issues, including NATO enlargement, the military campaigns in the Balkans, the Iraq War, terrorism, and ballistic missile defense. For Bucknell in London. Crosslisted as POLS 282.

IREL 283. East Asian International Relations. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course offers an overview of international relations in East Asia, with focus on foreign policies of major states in the region as well as their political, economic, and social interactions. Crosslisted as EAST 248 and POLS 283.

IREL 285. The International Relations of Latin America in the 21st Century. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course will examine the emergence of the New Left, the production of regional spaces, the impact of the BRICS and South-South cooperation in Latin America. Crosslisted as POLS 285.

IREL 286. Nonstate Actors in International Relations. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course explores the role nonstate actors (such as nongovernmental organizations, multinational corporations, violent nonstate actors, and individuals) can and do play in various substantive areas of international relations. Crosslisted as POLS 286.

IREL 292. Service-Learning in Nicaragua. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course focuses on the connections between Nicaraguan development processes and Brigade-based service-learning. Prerequisite: permission of the instructor. Crosslisted as GEOG 292 and LAMS 292.

IREL 2NT. International Relations Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in international relations. Prerequisite: permission of the instructor.

IREL 300. Seminar: Topics in International Relations. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

This course considers the shift in international politics from an ethic based upon state security to one focused on human security. Prerequisite: permission of the instructor.

IREL 350. Globalization. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

This course is designed to provide IREL majors with an opportunity to study global change. The course addresses contemporary issues in globalization. Specific topics may vary. Normally taken in fall of junior or senior year. Prerequisites: IREL majors; Students should preferably have both ECON 227 and IREL 250.

IREL 356. Nationalism, Identity and Nature. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the geographies and politics of nationalism, the ways in which nature is nationalized, the construction of nature in environmental contestations and reactions to nationalism, and the intersection of nationalism with other social constructions. Crosslisted as ENST 356 and POLS 356.

IREL 360. Independent Study. .5-1 Credits.**Offered Fall Semester Only; Lecture hours:Varies; Repeatable**

Open to international relations majors who wish to pursue individual programs of reading, research, and writing under the supervision of a professor, usually for completion of the honors thesis. Prerequisites: permission of the supervising IREL professor and permission of the instructor.

IREL 361. Independent Study. .5-1 Credits.**Offered Spring Semester Only; Lecture hours:Varies; Repeatable**

Open to international relations majors who wish to pursue individual programs of reading, research, and writing under the supervision of a professor, usually for the completion of the honors thesis. Prerequisites: permission of the supervising IREL professor and permission of the instructor.

IREL 381. Arab-Israeli Conflict, Peace Process. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the failures and successes of the peace process among Israel, Arab States, and Palestinians. Special focus is on Oslo peace process, outstanding issues, and the involvement of outside actors, particularly the role of the US. Prerequisite: POLS 170 or permission from instructor. Crosslisted as POLS 381.

IREL 390. American Global Strategy. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course will examine the changing role of the manager in the global business environment. Prerequisite: junior or senior status.

IREL 400. Seminar: Topics in International Relations. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Selected topics of international relations at an advanced level for senior seminar credit. Prerequisites: second semester junior or senior status and permission of the instructor.

IREL 410. BRICS on the Global Stage. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This seminar will focus on the emergence of Brazil, Russia, India, China and South Africa as new players in the global stage, the debates whether they represent the formation of a New World Order and the impact that the BRICS are having in different sub-regions. Prerequisite: permission of the instructor.

IREL 415. Human Rights. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The seminar will study human rights, primarily from an international perspective, including self-determination, cultural rights, ethnic and racial rights, women's rights, religious rights, and lesbian and gay rights. Prerequisite: permission of the instructor. Preference given to international relations majors. Crosslisted as POLS 389.

IREL 418. Social Movements and Society. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This seminar examines social movements in International Relations in multiple contexts across the globe, through a variety of scales.

IREL 425. International Relations of Migration. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course will examine the causes and the international consequences of human displacement. It will consider the economic, political, social, and cultural components of international migration. Crosslisted as POLS 425.

IREL 430. Global Poverty: Politics and Practices. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course engages debates about the politics and practice of addressing poverty in a global context. We examine how schemes are conceptualized, come to be taken up, and circulate globally -- from micro-finance, to food supplements, and cash-transfers for the poor. Alongside this, we examine the business of "ending poverty."

IREL 444. Global Natures. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course engages debates about the politics of nature and natural resources in a global context. We examine struggles over how to define nature and how to organize human relationships with their environment, raising questions of environmental governance, sustainability, and justice.

IREL 482. U.S.-China Relations. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Through tracing the evolution of U.S.-China relations from the 18th century to the 21st century, this course discusses major issues and challenges between the two countries today. Future trends of the bilateral relationship will also be explored. Prerequisite: POLS 170. Preference given to EAST, IREL, and POLS seniors. Crosslisted as EAST 382 and POLS 382.

Italian (ITAL)

ITAL 101. Elementary Italian I. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Recitation:1

Beginning language skills, practice listening, speaking, reading, and writing; elementary grammar; and introduction to Italian culture.

ITAL 101A. Intensive Elementary Italian. 1.5 Credit.

Offered Spring Semester Only; Lecture hours:6

Intensive practice in speaking, listening, reading, and writing Italian. Introduction to Italian culture. Successful completion meets the prerequisite for ITAL 103.

ITAL 102. Elementary Italian II. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Recitation:1

Continuation of language skills. Practice in listening, speaking, reading and writing. Introduction to Italian culture. Prerequisite: ITAL 101 or equivalent.

ITAL 103. Intermediate Italian I. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Recitation:1

Review and expansion of language skills and cultural knowledge of Italy. Prerequisite: ITAL 102 or equivalent.

ITAL 104. Intermediate Italian II: Italian Civilization. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Recitation:1

Continuing review of grammar emphasizing all four skills. Focus on civilization. Prerequisite: ITAL 103 or equivalent.

ITAL 201. Intermediate Italian Conversation I. .5 Credits.

Offered Fall Semester Only; Lecture hours:2; Repeatable

Concentration on development of speaking skills. Conducted in Italian by native speaker. This course can be counted only once toward the minor. Prerequisite or corequisite: ITAL 104 or equivalent.

ITAL 202. Intermediate Italian Conversation II. .5 Credits.

Offered Spring Semester Only; Lecture hours:2; Repeatable

Concentration on development of speaking skills. Conducted in Italian by native speaker. This course can be counted only once toward the minor. Prerequisite or corequisite: ITAL 104 or equivalent.

ITAL 205. Discovering Italy. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Introduction to Italian culture. Intensive practice in speaking and writing Italian. Prerequisite: ITAL 104 or equivalent.

ITAL 206. Exploring Italian Studies. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Examination of artistic products of cultural expression, such as literature, opera, film. Focus on developing a critical approach to the reading of texts. Prerequisite or corequisite: ITAL 104 or equivalent.

ITAL 210. Italian Pop Culture (in English). 1 Credit.

Offered Occasionally; Lecture hours:3

This course analyzes Italian popular culture products, such as comic books, music and film, in connection with Italian history and society.

ITAL 240. Love and Politics (in English). 1 Credit.

Offered Alternating Spring Semester; Lecture hours:3

Survey of major Italian writers from Middle Ages and Renaissance with reference to contemporary visual arts and music.

ITAL 248. Intermediality: Italy, Film, and the Arts. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:3

This IP course will focus on intermediality, film, and Italy. It seeks to examine the relationships of cinema with the other arts, in particular the arts of Italy. Crosslisted as ENFS 248 and UNIV 248.

ITAL 250. Introduction to Italian Cinema (in English). 1 Credit.

Offered Alternating Spring Semester; Lecture hours:3,Other:3

Survey of Italian cinema from the silent era to the present. Discussion of major Italian cinematic movements and genres within the context of history, politics, and culture.

ITAL 295. Topics in Italian Studies. 1 Credit.

Offered Spring Semester Only; Lecture hours:3; Repeatable

Study of topics in Italian culture, literature, and/or civilization. Prerequisite: ITAL 101 or equivalent.

ITAL 380. IL Mezzogiorno: Culture of Southern Italy. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3,Other:3

Study of the culture and society of southern Italy. Sources of inquiry include literature, film, and music. Prerequisite: ITAL 104.

ITAL 385. Corsets and Curses. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

This course aims at exploring the contributions of Italian women writers, musicians and filmmakers to Italian culture in different cities. It will take into account different time periods and will relate them to give a complete picture of Italian feminist thought. Prerequisite: ITAL 104.

ITAL 390. Independent Study. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Subject to be selected by student in consultation with the instructor. Prerequisite: permission of the instructor.

ITAL 395. Advanced Topics in Italian Studies. 1 Credit.**Offered Fall, Spring or Summer; Lecture hours:3; Repeatable**

Advanced study of themes or topics in Italian culture, literature, and/or civilization.

Japanese (JAPN)

JAPN 101. Japanese I. 1 Credit.**Offered Fall Semester Only; Lecture hours:5,Recitation:2**

Beginning language skills. Training in speaking and comprehending the basic sentence patterns of modern Japanese. Introduction to reading and writing.

JAPN 102. Japanese I. 1 Credit.**Offered Spring Semester Only; Lecture hours:5,Recitation:2**

Beginning language skills. Training in speaking and comprehending the basic sentence patterns of modern Japanese. Introduction to reading and writing. Prerequisite: JAPN 101 or the equivalent.

JAPN 103. Japanese II. 1 Credit.**Offered Fall Semester Only; Lecture hours:5,Other:2**

Continued training in the four language skills. Review of basic and introduction to complex sentence patterns. Reading of texts in basic Japanese. Prerequisite: JAPN 102 or the equivalent.

JAPN 104. Japanese II. 1 Credit.**Offered Spring Semester Only; Lecture hours:5,Other:2**

Continued training in the four language skills. Review of basic and introduction to complex sentence patterns. Reading of texts in basic Japanese. Prerequisite: JAPN 103 or the equivalent.

JAPN 201. Japanese III. 1 Credit.**Offered Fall Semester Only; Lecture hours:5,Other:1**

Application of the four language skills. Reading of texts written in standard Japanese and exercises in content-controlled conversation. Prerequisite: JAPN 104 or equivalent.

JAPN 202. Japanese III. 1 Credit.**Offered Spring Semester Only; Lecture hours:5,Other:1**

Application of the four language skills. Reading of texts written in standard Japanese and exercises in content-controlled conversation. Prerequisite: JAPN 201 or equivalent.

JAPN 203. Japanese IV. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Continued application of the four language skills. Reading and guided discussion of texts related to a variety of topics. Prerequisite: JAPN 202 or the equivalent.

JAPN 204. Japanese IV. 1 Credit.**Offered Spring Semester Only; Lecture hours:4**

Continued application of the four language skills. Reading and guided discussion of texts related to a variety of topics. Prerequisite: JAPN 203 or the equivalent.

JAPN 301. Japanese V. 1 Credit.**Offered Fall Semester Only; Lecture hours:4; Repeatable**

Reading and discussion of selected materials. Exercises in the research skills of writing and presenting reports in Japanese. Prerequisite: JAPN 204 or the equivalent.

JAPN 302. Japanese V. 1 Credit.**Offered Spring Semester Only; Lecture hours:4; Repeatable**

Reading and discussion of selected materials. Exercises in the research skills of writing and presenting reports in Japanese. Prerequisite: JAPN 301 or the equivalent.

JAPN 310. Japanese Studies Advanced Seminar. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3; Repeatable**

Advanced study of Japanese/English translation. Prerequisite: JAPN 202 or higher.

JAPN 319. Independent Studies in Japanese. 1 Credit.

Offered Fall Semester Only; Lecture hours:3; Repeatable

Independent projects conducted in Japanese in the student's area of special interest. Prerequisite: permission of the instructor.

JAPN 320. Independent Studies in Japanese. 1 Credit.

Offered Spring Semester Only; Lecture hours:3; Repeatable

Independent projects conducted in Japanese in the student's area of special interest. Prerequisite: permission of the instructor.

Lang, Lit & Cultural Studies (LLCS)

Latin (LATN)

LATN 101. Introductory Latin. 1 Credit.

Offered Fall Semester Only; Lecture hours:4

Introduction to the language. Emphasis upon forms and grammar, and rapid development of facility in reading.

LATN 102. Introductory Latin. 1 Credit.

Offered Spring Semester Only; Lecture hours:4

Continuing study of Latin grammar with review of basic material, including the introduction to Latin reading. Prerequisite: LATN 101 or equivalent.

LATN 151. Intermediate Latin. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Review of the grammar necessary for the introductory reading of selected Roman authors. Authors may include Plautus, Cicero, Catullus, and Vergil. Prerequisite: LATN 102 or equivalent.

LATN 221. Studies in Latin Literature. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3; Repeatable

Advanced readings in Latin authors. Authors vary by semester; prose and poetry offered in alternate semesters. May be repeated as topic varies. Prerequisite: LATN 151 or equivalent.

LATN 311. Independent Study in Latin. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable

Independent study of Roman authors, with concomitant study of secondary sources. Prerequisite: permission of the instructor.

Latin American Studies (LAMS)

LAMS 150. Latin America: An Introduction. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Introduction to the history, cultures, and societies of Latin America.

LAMS 201. Modernization and Social Revolution in Latin America. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

This class examines how technological and political processes combine focusing on the Latin American region. Crosslisted as IREL 201.

LAMS 202. Rainforests and Ecopolitics in Latin America. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Focusing on Amazonia as a key region in global environmental politics, the course examines climate policy debates and recent shifts in global environmentalism. Crosslisted as ENST 209 and ANTH 202.

LAMS 224. Becoming Latinos. 1 Credit.

Offered Occasionally; Lecture hours:3

Explores history, racial/ethnic identities and communities, and the social, political, economic and cultural dimensions of the Latin American (im)migration experience in the United States.

LAMS 245. Remaking America: Latin American Immigration. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

The processes and impacts of Latin American immigration on the U.S. and countries of origin. Special emphasis on how the immigration experience varies by ethnicity, location, and gender. Crosslisted as SOCI 245.

LAMS 250. Latin America: Challenges for the 21st Century. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Perspectives on the challenges facing Latin American peoples and nations in the 21st century. Crosslisted as ANTH 248.

LAMS 252. Ritual, Resistance, Rebellion in South America. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

The cultural and social groups inhabiting the South American west coast in historical context; implications for anthropological and social issues concerning Third World societies. Prerequisite: permission of the instructor. Crosslisted as ANTH 252.

LAMS 254. Topics on Indigenous Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Approaches to the indigenous peoples and cultures of Latin America.

LAMS 273. Latin American Economic Development. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

The course deals with historic and contemporary economic problems, starting from colonial times and reaching the present integration into world economy. Prerequisite: ECON 103. Crosslisted as ECON 273.

LAMS 285. Interdisciplinary Perspectives on Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected topics on Latin America addressed through disciplinary perspectives in the social sciences and the humanities.

LAMS 288. Global Cuisines, Local Contexts: Commensality and Conflict. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

We will consider how food both brings people together, and creates divisions between them, through an in-depth examination of the cases of French and Andean (South American) cuisines. Cuisine will be considered through aesthetic, cultural, and economic lenses as a mirror into larger social worlds. Crosslisted as ANTH 288 and UNIV 288 and FREN 288.

LAMS 292. Service-Learning in Nicaragua. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course focuses on the connections between Nicaraguan development processes and Brigade-based service-learning. Prerequisite: permission of the instructor. Crosslisted as IREL 292 and GEOG 292.

LAMS 295. Modern Latin America. 1 Credit.**Lecture hours:3**

This course traces and analyzes major developments in Latin American politics, society and culture from 1800 to the present. Crosslisted as HIST 282.

LAMS 296. Topics in Latin American Studies. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Topics in Latin American history: pre-Columbian to the present.

LAMS 297. Colonial Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Latin American history from pre-Columbian cultures to wars for independence.

LAMS 2NT. Latin American Studies Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional studies in a Latin American Studies topic. Prerequisite: permission of the instructor.

LAMS 319. Interdisciplinary Independent Study on Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Individual research with a member of the Latin American Studies faculty. Prerequisite: permission of the instructor.

LAMS 320. Interdisciplinary Non-Traditional Study on Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Student-initiated academic study of a Latin American topic in conjunction with service learning, research, or internship initiatives. Prerequisite: permission of the instructor.

LAMS 370. Seminar on Latin America in the Global System. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

In-depth study of Latin America in relation to other world regions. Prerequisite: permission of the instructor.

LAMS 3NT. Latin American Studies Non-traditional Study. 1-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study course in the Latin American Studies program. Prerequisite: permission of the instructor.

LAMS 450. Integrative Seminar in Latin American Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Integrative topics. Prerequisite: permission of the instructor.

LAMS 499. Interdisciplinary Honors in Latin American Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

Supervised individual work on a topic approved by the thesis adviser in Latin American Studies. Prerequisite: permission of the instructor.

Linguistics (LING)

LING 105. Linguistic Analysis: Sounds and Words. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

One semester of a two-semester introduction to linguistics. Topics include: phonetics, phonology, word forms, language change, language acquisition.

LING 110. Linguistic Analysis: Sentences and Dialects. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

One semester of a two-semester introduction to linguistics. Topics include: syntax, semantics, language variation, language and society.

LING 1NT. Linguistics Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Nontraditional study in Linguistics. Prerequisite: permission of the instructor.

LING 205. Phonetics and Phonology. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An investigation into the articulatory and acoustic properties and patterns of speech sounds, with applications to speech pathology, processing, and phonological theory. Prerequisite: LING 105.

LING 206. Morphology. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Explores the mental lexicon, the internal structure of words, and the processes by which words are formed in a wide variety of languages. Prerequisite: LING 105.

LING 210. Language and Race. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An introduction to "non-standard" dialects of English with a primary focus on African-American Vernacular English (AAVE). This course explores the linguistic and non-linguistic factors that give rise to language variation.

LING 215. Syntax. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Contemporary generative theories of phrase structure and its relation to meaning. Focus on comparative syntax and its implications for Universal Grammar. Prerequisite: LING 110 or permission of the instructor.

LING 216. Semantics. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An introduction to the fundamental notions, arguments, and techniques of linguistic semantics. Focus on how meaning is structured and represented by the human mind. Prerequisite: LING 110 or permission of the instructor.

LING 220. Bilingualism. 1 Credit.**Offered Occasionally; Lecture hours:3**

An introduction to the processes involved in the use of two or more languages. The course also examines the acquisition of multiple languages in infancy and after childhood.

LING 225. Language and the Brain. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An examination of the physical basis for language. Topics include the nature of language as a cognitive faculty, atypical language development in childhood, and acquired aphasia. Prerequisites: LING 105 or LING 110 or LING 230.

LING 230. Psycholinguistics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of psychological processes involved in language. Topics include language production and perception in children, adults, bilinguals, and exceptional populations.

LING 241. Teaching Foreign Languages. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The objectives, materials, and methods of teaching foreign language skills. Prerequisites: LING 105 and a course in the structure of one foreign language.

LING 295. Topics in Linguistics. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3; Repeatable**

A specific linguistic topic, to be selected. Prerequisite: LING 105 or LING 110 or permission of the instructor. May be repeated for credit.

LING 2NT. Linguistics Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Nontraditional study in Linguistics.

LING 315. Advanced Syntax. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Topics in advanced generative syntax, emphasis on new developments in syntactic theory. Prerequisite: LING 215 or LING 216.

LING 319. Undergraduate Research. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:1.5; Repeatable**

Research in psycholinguistics. Research topics may be posed by students or faculty. Prerequisite: LING 230 and permission of the instructor.

LING 326. Language and Cognition. 1 Credit.**Offered Occasionally; Lecture hours:3**

Advanced study of language perception, production, acquisition, evolution, computational models and neural mechanisms. Focus on recent developments in the field. Prerequisite: 200-level course from Cluster A in psychology or 200-level linguistics course. Crosslisted as PSYC 326 and PSYC 626.

LING 330. Advanced Topics in Psycholinguistics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3; Repeatable**

Advanced study in psycholinguistics. Includes topics such as language production, language comprehension, and bilingualism. Prerequisite: LING 230 or permission of the instructor.

LING 340. Typology and Universals. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Examination of the wide range of features in the world's languages. The course is mainly descriptive, with some theory regarding the source of linguistic universals. Prerequisite: one of the following: LING 205, LING 206, LING 215, or LING 216.

LING 390. Independent Study. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Subject to be selected by the student in consultation with the instructor. Prerequisite: permission of the instructor.

LING 395. Honors in Linguistics. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3**

Honors thesis in Linguistics. Prerequisite: permission of the instructor.

Literary Studies (ENLS)

ENLS 101. Literature and Composition. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to the critical study of literature and instruction in composition. First-year students only; others by permission of the instructor.

ENLS 103. Public Writing for Media: Rhetoric for a Digital Age. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will help students develop skills in effective writing for a public audience across a range of types of digital and print media—including journalism, blogs, short video scripts, email lists, and even social media such as Twitter. The course will draw on basics of Classical Rhetoric, the instructor's experience.

ENLS 107. Introduction to World Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course introduces students to literary works from several countries, covering five continents and many cultures. It also provides instruction in composition. Prerequisite: first-year students only; others by permission.

ENLS 109. Public Speaking in the 21st Century. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to public speaking with a focus on historical speeches. Study and practice of speech writing and organization, verbal and nonverbal communication.

ENLS 120. Literature and the Environment. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Interdisciplinary study of major texts which demonstrate an abiding interest in nature and in cultural and social values concerning the environment.

ENLS 150. Enlightenments. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

An interdisciplinary study of selected works in art, music, literature, science and philosophy from European Renaissance through the early 20th century. Crosslisted as HUMN 150.

ENLS 198. Ways of Reading. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to literary creation, criticism, and theory, with emphasis on reader/writer; text; context; and identity.

ENLS 199. Survey: English and American Literature. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

A survey of major authors, texts, concepts, and developments in English and American literature with participation of weekly guest lecturers from the English department.

ENLS 1NT. Literary Studies Non-traditional Study. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Literary Studies. Prerequisite: permission of the instructor.

ENLS 203. Introduction to Literary Race Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Intro to Literary Race Studies will examine the social phenomenon of race as it is expressed, queried, and subverted in literature. It will focus on minority and ethnic literatures of North America but extend to global literatures and theoretical models involving issues of race.

ENLS 205. Early American Colonial Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of American literature from Columbus through the American Revolution.

ENLS 206. Early American National Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of American Literature from the Revolution to the Civil War.

ENLS 207. American Romanticism 1800-1865. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of selected texts in various genres, read in their cultural contexts.

ENLS 208. American Realism and Naturalism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of selected texts by American writers from 1865 to 1900.

ENLS 209. Modern American Literature 1900-1950. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of selected texts by American writers from 1900-1950.

ENLS 211. Southern Exposure. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Twentieth-century literature of the American South. Probes the legacy of a culture that celebrated honor, but was built on slavery. Crosslisted as WMST 212.

ENLS 212. Contemporary American Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of selected texts by American writers from 1950 to the present.

ENLS 213. Special Topics in American Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected special topics in American literature.

ENLS 214. US Latino/a Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to literature written in English by Latinos/as in the United States. The course readings will include creative writing by various Latino/a groups, for example, Mexican-Americans, Puerto Ricans, Cuban-Americans, and Dominican-Americans. Additionally, the class will expose students to a variety of interpretive frameworks via secondary sources in US Latino/a Studies.

ENLS 215. Asian American Literature and Film. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course introduces students to significant 20th-century Asian American literary texts, plus recent work by emerging writers and filmmakers that may suggest new directions for the field. May include Miné Okubo, Maxine Hong Kingston, David Henry Hwang, Jhumpa Lahiri, Bao Phi, Ang Lee, Jennifer Phang, others. No prior knowledge necessary.

ENLS 216. Studies in American Literary Genres. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of a selected genre of texts in American Literature.

ENLS 217. Studies in Dramatic Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected movements and topics in drama such as Restoration drama, African American dramatic literature, the Theatre of the Absurd.

ENLS 218. Studies in Children's Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Fairy tales, fantasy, animal fables, and tales of adventure from 19th - 20th centuries, with a sampling of contemporary films, primarily American.

ENLS 219. Studies-Selected American Authors. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Authors selected from among Hawthorne, Emerson, Thoreau, Whitman, Dickinson, Cather, Melville, Wharton, James, H.D., Frost, Hemingway, Faulkner, O'Neill, Stein, Welty, O'Connor, and Morrison.

ENLS 220. Young Adult Fiction. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of literature that appeals to adolescent and young adult readers, with particular emphasis on British and American fiction and non-fiction prose from the 19th century to the present.

ENLS 221. Introduction to African American Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Provides a selection from across the vast array of examples collected under the inadequate rubric "African American Literature." We'll read poetry, fiction, non-fiction, and drama in order to understand how a group of people who have been written out of American history and culture write themselves back into these stories.

ENLS 222. Ethnic Comedy in the United States. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

History, theory, and practice of comedy in the United States, focused on works by comedians of many ethnicities. The course explores how comedy contributes to the national conversation on race, sometimes soothing social tensions with laughter and at other times sparking ethnic conflict.

ENLS 223. Questioning the Post-Racial. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The term "post-racial" has emerged within public discourse from time to time over the course of America's existence. From Frederick Douglass to Barack Obama, this expression has described an American aspirational goal. Our class will take a contemporary and literary approach to understanding the limits of the term.

ENLS 224. Visions of the Susquehanna. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines literature of the Susquehanna Valley. Prerequisite: permission of the instructor. Crosslisted as ENST 224.

ENLS 225. Susquehanna Country. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Interdisciplinary studies in environment, philosophy, literature and communities of the Susquehanna region. Crosslisted as ENST 225 and HUMN 290 and UNIV 241.

ENLS 226. Irish Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to Irish literature, with attention to Irish mythology, history, and politics as they affect Irish art.

ENLS 227. Caribbean Literature. 1 Credit.**Offered Fall, Spring or Summer; Lecture hours:3**

Introduction to selected literatures, cultures, and histories of the Caribbean, with close analysis of text and context. When taught in the summer, the course is the core of the Bucknell in the Caribbean summer study abroad program.

ENLS 228. Gender and Sexuality in America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Literature and popular culture exploring such topics as construction of gender identities, sexualities, GLBT cultures and gender-based violence.

ENLS 230. Modernism and Crisis. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An interdisciplinary study of major texts, figures, and concepts of the 20th century. Designed to follow HUMN 128 and HUMN 150.

ENLS 239. Modernism on the Margins. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Exploiting the exclusionary nature of "High Modernism," this course highlights literature on the margins of modernism, revealing literature's political investment in race, class, and sexuality.

ENLS 240. Medieval English Literature to 1485. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Survey of the poetry and prose of medieval England.

ENLS 241. The Green World. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An examination of the roots, contexts, and major texts of early British literature with emphasis on views of nature and subjectivity from an ecocritical perspective.

ENLS 243. Chaucer. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The major works and language of Chaucer.

ENLS 244. Elvish Writing: Chaucer, Spenser and Early Phenomenology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Major works of Chaucer and Spenser examined in the context of early Insular poetic traditions of intersubjectivity.

ENLS 248. Representing Human Rights and Development. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This IP course seeks to introduce the concept of human rights in historical context, asking basic questions about human rights and using art, literature, economics, and film to further explore these topics.

ENLS 249. Modern Literature: Modernism and Crisis. 1 Credit.**Offered Fall Semester Only; Lecture hours:2,Other:2**

This course will explore the pervasive sense in Western culture that fundamental shifts in cultural patterns and paradigms have occurred. Topics will include philosophy, art, film, modern physics, literary texts, and cultural criticism.

ENLS 250. Renaissance Literature, 1485-1660. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Survey of the poetry and prose of representative authors, including Spenser and Milton.

ENLS 251. Studies in Renaissance Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected major prose and poetry.

ENLS 257. Shakespeare. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Selected plays.

ENLS 258. Studies in Shakespeare. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Studies in such special topics as "Shakespeare and Film", "Shakespeare's History Plays," "Psychoanalysis and Shakespeare".

ENLS 260. Restoration and 18th-century Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Survey of the poetry and prose of representative authors.

ENLS 261. Studies in Restoration and 18th-century Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected authors and various genres, including the relationship between literature and politics, history, and the sciences.

ENLS 263. Sex and the Single Heroine. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to the 18th-century novel, focusing on issues of gender, sexuality, and class, in a wide range of novels and contemporary conduct books. Crosslisted as WMST 263.

ENLS 268. Jewish-American Literature and Film. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines the literary and cultural production of American Jews through the study of diverse series such as novels, short stories, plays and film. Crosslisted as UNIV 268.

ENLS 270. Romantic Literature, 1780-1832. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Examination of selected authors in poetry and prose, read in relationship to contemporary political and cultural influences.

ENLS 271. Studies in 19th-century English Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected major prose and poetry.

ENLS 275. Greece and Turkey: East and West. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

This course is based around a three-week summer study abroad experience in Greece and Turkey. Themes and materials will vary from year to year. Prerequisites: interview prior to admission and permission of the instructor. Crosslisted as CLAS 275 and HUMN 275.

ENLS 280. Modern Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

A selective introduction to the varied forms, significant authors, and literary movements from the turn of the century to the recent past.

ENLS 282. Modern Poetry: Rilke and Eliot. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

A close study of two major modernist poets, Rainer Maria Rilke and T.S. Eliot, whose work shaped generations of writers.

ENLS 283. The Early English Novel. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The rise of the novel as a genre, and analysis of representative novels.

ENLS 284. The 19th-century English Novel. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Major developments in the novel as a genre and representative novels.

ENLS 285. Modern British and American Poetry, 1890-1960. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Selected major poets of England, the United States, and other English-speaking cultures.

ENLS 286. The Modern Novel. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Selected major novelists (English, Irish, continental, American).

ENLS 287. Modern Drama. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Studies in modern dramatic literature, theatre history, and performance theory.

ENLS 288. Studies in Contemporary Literature. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
An intensive study of selected British and American authors of the past 40 years.

ENLS 289. Theatre in London. .5-1 Credits.

Offered Both Fall and Spring; Lecture hours:2,Other:3
This course is offered off campus in London through the Bucknell in London program. Introduces students to all aspects of the London theatre. Crosslisted as THEA 264.

ENLS 290. Special Topics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Flexible in subject matter and in method. Topics such as Literature and Psychology, Literature and Myth, Science Fiction.

ENLS 291. London in Literature. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3
How London's urban realities shape the literary imaginations of writers and readers, and how their imaginative visions shape our perceptions and experience of London. Only offered in London on occasion.

ENLS 294. Literary Arts Administration and Editing. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3
Focused on literary arts administration and editing, this course is particularly useful for students interested in careers in the world of arts administration and/or publishing. Prerequisite: permission of the instructor.

ENLS 297. The Teaching of English. 1 Credit.

Offered Fall Semester Only; Lecture hours:3
Discussion and practice related to the teaching of English in secondary schools. Required for 7 - 12 certification in English.

ENLS 2NT. Literary Studies Non-traditional Study. 1 Credit.

Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3; Repeatable
Non-traditional study in Literary Studies. Prerequisite: permission of the instructor.

ENLS 300. Seminar in Literary Theory and Criticism. 1 Credit.

Offered Fall Semester Only; Lecture hours:3
Introduction to graduate study, including literary and critical theory, research, and other elements of literary scholarship. Open to advanced undergraduates. Crosslisted as ENLS 600.

ENLS 301. Seminar in American Literature Topics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Advanced topics, such as Cross-Cultural Encounters, The American Novel, Gender and American Poetics, and Beat Generations. Crosslisted as ENLS 601.

ENLS 302. Seminar in Selected American Writers. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Study of the works of one or more major American writers. Crosslisted as ENLS 602.

ENLS 305. Seminar in Early American Literature. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Seminar in a special topic or genre of Early American and/or 18th-century American culture. Crosslisted as ENLS 605.

ENLS 306. US: Fever/Fantasy/Desire. 1 Credit.

Offered Fall Semester Only; Lecture hours:3
Seminar on American literature between 1770-1861 with an emphasis on psychoanalytic approaches to literary and cultural study. Authors may include Brown, Sansay, Poe, and Melville. Crosslisted as HUMN 306 and ENLS 606.

ENLS 307. Seminar in 19th-century American Literature. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Seminar in special topics, authors, or genre of 19th-century American literature and culture. Crosslisted as ENLS 607.

ENLS 310. Seminar in Modern American Literature. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable
Seminar in a special topic, author, or genre of modern American literature and culture. Crosslisted as ENLS 610.

ENLS 311. Seminar in Contemporary American Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Seminar in a special topics, author, or genre of contemporary American literature and culture. Crosslisted as ENLS 611.

ENLS 314. Digital Storytelling: Stories of the Susquehanna Valley Documentary Production and Editing. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Digital storytelling is an important new area of literary studies. This course will explore the intersection of digital humanities and environmental humanities in developing, producing, and editing documentaries (and at times multimedia digital editions of texts) for the Stories of the Susquehanna Valley project, for public audiences.

ENLS 315. Unsettling Memories. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Cultural analysis of unsettling, historically powerful racial ideas about purity and pollution written on the "lady's" and "black" bodies in 20th-century Southern fiction and photography. Crosslisted as WMST 315 and WMST 615 and ENLS 615.

ENLS 319. Individual Projects in Literary Studies. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Individual special projects supervised by instructor. Prerequisite: permission of the instructor. Crosslisted as ENLS 619.

ENLS 321. Seminar in African-American Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of selected thematic, aesthetic and ideological issues in Black American writing. Crosslisted as ENLS 621.

ENLS 326. Seminar in Irish Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced topics in Irish literature including Irish Women Writers, Nationalism and Literature, and Contemporary Irish Writers. Prerequisite: permission of the instructor. Crosslisted as ENLS 626.

ENLS 327. Seminar in Caribbean Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of selected thematic, aesthetic and ideological issues in Caribbean writing.

ENLS 340. Seminar in Early Literature to 1485. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Literatures of the pre-modern world. Prerequisite: permission of the instructor. Crosslisted as ENLS 640.

ENLS 341. The Hidden God of Nature: Christian Eco-poetics from Chaucer to Dostoevsky. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Explores how great works of European literature related nature and culture in Christian traditions from the 14th to the 19th century. Analyzes their legacy for environmental ethics and cultural creativity as a part of sustainability. Includes non-Christian and secular critiques in considering poetic, rhetorical, symbolic, and spiritual approaches to ecology. Crosslisted as ENST 341 and ENLS 641.

ENLS 350. Seminar in Renaissance Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Special topics. Student reports, oral and written. Crosslisted as ENLS 650.

ENLS 358. Seminar in Shakespeare. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Special topics on Shakespeare. Crosslisted as ENLS 658.

ENLS 360. Seminar in Restoration and 18th-century Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Studies in canonical and marginalized texts, cultural and philosophical formations, and the continuing historical and theoretical relevance of the period. Crosslisted as ENLS 660.

ENLS 361. Law and Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Studies in the relationship between law, narrative, and social and fictional forms in the 18th century and modern Britain and America, and how that relationship raises questions about identity, justice, historical power, God, and the nature of civil obligations. Crosslisted as ENLS 661.

ENLS 362. Seminar in Translation Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced seminar in the history, theory, and practice of translation, including investigation of the role of translation in intercultural communication and comparative studies. Facility in a language in addition to English is strongly recommended. Crosslisted as ENLS 662 and HUMN 340.

ENLS 370. Seminar in 19th-century English Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Examination of a wide range of poetry and prose by selected authors with emphasis given to the literature's historical and cultural groundings. Prerequisite: permission of the instructor. Crosslisted as ENLS 670.

ENLS 378. Thesis Workshop. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A colloquium on problems arising from the writing of a scholarly thesis. Prerequisite: permission of the instructor. Crosslisted as ENLS 678.

ENLS 379. Senior Thesis. 1 Credit.**Offered Spring Semester Only; Lecture hours:Varies,Other:3; Repeatable**

The writing of a scholarly or creative departmental senior thesis. Students must confer with and submit a proposal to an adviser prior to registering for the thesis.

ENLS 380. Honors Thesis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

The writing of a scholarly or creative honors thesis. Students must confer with and submit a proposal to a departmental adviser and to the University Honors Council for approval. Prerequisites: senior status.

ENLS 382. Seminar in Contemporary Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

A selective study of the most recent developments in English and American prose or poetry. Crosslisted as ENLS 682.

ENLS 391. Seminar in Poetry. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

A study of poetry as a genre and an analysis of the work of selected poets. Crosslisted as ENLS 691.

ENLS 392. Seminar in the Novel. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Special topics. Student reports, oral and written. Crosslisted as ENLS 692.

ENLS 393. Seminar in Contemporary Drama. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Special topics. Student reports, oral and written. Crosslisted as ENLS 693.

ENLS 394. History of Sexuality. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A cross-cultural and interdisciplinary examination of the signification of sexuality in literature, philosophy, scientific discourse, and the visual arts. Crosslisted as ENLS 694 and HUMN 320 and WMST 325.

ENLS 397. Seminar in Special Topics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics such as comparative literature, literature and the arts, queer theory, or satire. Crosslisted as ENLS 697.

ENLS 398. Issues in Literary/Critical Theory. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

The study of Continental and American critical positions or schools from Modernism through Post-Structuralism. Crosslisted as ENLS 698.

ENLS 399. Seminar in Cultural Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Introduction to significant issues and debates characterizing the field known as Cultural Studies. Crosslisted as ENLS 699.

ENLS 3NT. Literary Studies Non-traditional Study. 1-1.5 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Literary Studies. Prerequisite: permission of the instructor.

Management (MGMT)

MGMT 100. Management Past, Present and Future. .5 Credits.**Offered Fall Semester Only; Lecture hours:1.5**

Explores the historical context from which complex organizations have arisen, their evolution, and the emerging areas of inquiry necessary to understanding the future of organizations, management, and business.

MGMT 101. Introduction to Organization and Management. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Other:3**

Each section of 28 students learns management theories, concepts, and models, putting them into practice by designing and managing their own multi-divisional hybrid organizations that conduct major service projects funded by selling business products they created. Storytelling and writing are key pedagogies. Not open to first semester first-year students.

MGMT 102. Quantitative Reasoning for Managers. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Other:1**

This course serves as a student's introduction to quantitative modeling and basic statistical analysis, especially as they apply to managerial decision making.

MGMT 1NT. Management Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in management. Prerequisite: permission of the instructor.

MGMT 200. Foundations Accounting and Financial Management I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to accounting and financial management including financial statement preparation and analysis, financial forecasting, cost relationships, time value of money and capital budgeting.

MGMT 201. Marketing. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to principles of marketing. Examines how organizations facilitate exchange relationships by customers' needs and wants. Explores the intricacies of identifying and establishing market positions and understanding consumer behavior. Prerequisite: MGMT 101 or permission of the instructor.

MGMT 202. Operations. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course introduces students to the ways in which to model, analyze, and improve processes for producing services and goods. Prerequisite: MGMT 102. MATH 216 accepted with permission of the instructor.

MGMT 203. Managerial Finance. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Financial analysis, forecasting, and valuation of projects and companies incorporating risk-return tradeoffs and capital structure and dividend decisions. Employs 10-K research and presentations. Prerequisite: MGMT 200. Intended ACFM majors must take ACFM 370 instead of MGMT 203.

MGMT 270. South Africa: Social Entrepreneurship. 1 Credit.**Offered Occasionally; Lecture hours:15**

The course examines the legacy of apartheid and the role of social entrepreneurship in transforming communities. Students will be placed in community organizations in nearby townships. Crosslisted as ECON 270 and WMST 275 and PSYC 270. Prerequisite: permission of the instructor.

MGMT 285. Leadership in Management and Technology. 0 Credits.**Offered Summer Session Only; Lecture hours:1.5**

Interdisciplinary program for leadership in technology and management; macro and micro perspectives, design and TQM, ethical/professional considerations, environmental and energy management. Open only to students admitted to the Institute for Leadership in Technology and Management. Prerequisite: permission of the instructor. Crosslisted as ENGR 285.

MGMT 2NT. Management Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3; Repeatable**

A non-traditional study project arranged with an instructor and approved by the department or program chair and academic dean. Prerequisite: permission of the instructor.

MGMT 302. The Stakeholder Organization. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Students explore the moral and ethical challenges associated with complex organizational decisions in a variety of contexts. Prerequisite: MGMT 101. Juniors and seniors only.

MGMT 303. The Technological Organization. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Organizations solve a variety of problems by deploying information systems. This course explores a range of technological impacts on organizations from their behavior to survival.

MGMT 304. The Strategic Organization. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Students learn strategic concepts and explore the challenges of formulating and implementing organizational strategies. Prerequisite: MGMT 101. Senior BSBA and MGEG seniors only. MGEG sub-seniors and others by permission.

MGMT 310. Independent Study in Management. .25-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Individual study or projects, supervised by instructor. Prerequisite: permission of the instructor.

MGMT 315. Special Topics in Management. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

A seminar on selected topics in management. Prerequisite: permission of the instructor. Crosslisted as MGMT 615.

MGMT 384. Consumer Behavior. 1 Credit.**Offered Occasionally; Lecture hours:3**

Study of consumer buying decision processes within context of marketing strategies. Topics include models of information processing and product evaluation; historical changes in role of culture in assigning meaning to goods as indicators of social status; the diffusion of innovation; and marketing consumer products in international markets. Prerequisite: permission of the instructor.

MGMT 385. Internship in Management and Technology. .5 Credits.**Offered Summer Session Only; Lecture hours:1.5**

Internship in complex management challenges, the integral role of technology in organizations, and interdisciplinary decision making. Open only to students admitted to the Institute for Leadership in Technology and Management. Prerequisites: MGMT 285 and permission of the instructor. Crosslisted as ENGR 385.

MGMT 390. Honors Course in Management. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Special and independent studies for BSBA students selected under guidelines of the school and the University Honors Council. Honors thesis required. Prerequisites: nomination by the school and permission of the instructor.

MGMT 3NT. Management Non-traditional Study. 1-4 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:Varies; Repeatable**

Non-traditional Study in management.

MGMT 404. Honors Strategy Seminar. 1 Credit.**Offered Occasionally; Lecture hours:3**

An intensive honors seminar in the subject of strategy from its historical origins to its modern day application in business and government.

Prerequisites: MGMT 101 and permission of the instructor. Only open to BSBA or MGEG seniors.

Managing for Sustainability (MSUS)

MSUS 200. Managing for Sustainability I. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores how organizations manage toward social, environmental, and economic sustainability goals. Prerequisites: sophomores, juniors, or seniors only.

MSUS 301. Managing for Sustainability II. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced topics in sustainability, including triple-bottom line performance management and integrating other sustainability themes.

MSUS 310. Independent Study in Managing for Sustainability. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Individual study or projects, supervised by instructor. Prerequisite: permission of the instructor.

MSUS 315. Special Topics in Managing for Sustainability. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

A seminar on selected topics in managing for sustainability. Prerequisite: permission of the instructor.

MSUS 316. Organizing for Justice and Social Change. 1 Credit.**Offered Occasionally; Lecture hours:3**

Interdisciplinary approach to studying multiple ways of organizing for the purposes of promoting justice and social change. Prerequisite: MGMT 101 or permission of the instructor.

MSUS 320. Sustainable Development Management. 1 Credit.**Offered Occasionally; Lecture hours:3**

This cross-sectoral seminar explores civil society building, post-conflict reconstruction, humanitarian assistance and social, economic and political change, focusing on both sustainable development and development management.

MSUS 330. Sustainable Human Resource Management. 1 Credit.**Offered Occasionally; Lecture hours:3**

Focus is on how human resource management practices can contribute to organizations' economic sustainability while simultaneously enriching lives of employees and their communities. Prerequisite: MGMT 101 or permission of the instructor.

MSUS 335. Social Innovation and Entrepreneurship. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Focus is on the promise and peril of social innovation and entrepreneurship. Critically examine the promise, achievements, and problems with both. Students develop a pilot project in social innovation or entrepreneurship.

MSUS 390. Honors Course in Managing for Sustainability. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Special and independent studies for Managing for Sustainability majors selected under guidelines of the school and the University Honors Council. Honors thesis required. Prerequisites: nomination by the school and permission of the instructor.

MSUS 3NT. Managing for Sustainability Non-traditional Study. 1-4 Credits.**Offered Occasionally; Lecture hours:Varies; Repeatable**

Non-traditional study in managing for sustainability.

MSUS 400. Sustainability Action Learning Project. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

Action research course exposing students to principles of organization development and change. Requires students to draw on and integrate knowledge, skills, and experiences gained from core, major, and relevant CCC courses. In teams, students develop, organize, and manage significant projects that further key sustainability goals and involve multiple stakeholder groups.

Markets, Innovation & Design (MIDE)

MIDE 243. Social Media for Managers. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Exposes students to the opportunities and challenges that managers face in using social media tools for internal collaboration, marketing and outreach, and new product development. Prerequisite: seniors and non-management majors must have permission of the instructor.

MIDE 300. Markets, Innovation, and Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of the relationships among marketing, innovation, and design. Students will practice various approaches to creative and innovative thinking. Prerequisite: MGMT 201 or permission of the instructor.

MIDE 301. Understanding Consumers. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A toolbox of research methods for understanding consumer behavior with appropriate exposure to philosophical and theoretical underpinnings of various approaches. Prerequisite: MGMT 201 or permission of instructor.

MIDE 302. Design Realization. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Implementation of creative techniques for exploring ideas and transforming ideas into appropriate mediums for communication. Includes creative ideation, sketching, digital and physical modeling. Prerequisites: MGMT 201 and MIDE 300.

MIDE 303. Entrepreneurship. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Focuses on how to evolve an idea into an enterprise that generates economic, social, or aesthetic value in society.

MIDE 304. Marketing Management. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Integrating learned knowledge, students practice making marketing-related decisions through case analysis of various business scenarios. The predominant emphasis is on drawing together disciplinary experiences and providing a more coherent appreciation of the major's academic discipline. The educational goals of the class focus on critical, analytical, and synthetic thinking.

MIDE 305. New Product Development. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Study and application of innovation in product development. Learning is tied to a semester project which explores opportunities, value, brand, positioning, market and customer needs. Prerequisite: MGMT 201 or permission of the instructor.

MIDE 310. Independent Study in Markets, Innovation, and Design. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Individual study or projects, supervised by instructor. Prerequisite: permission of the instructor.

MIDE 315. Special Topics in Markets, Innovation, and Design. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

A seminar on selected topics in marketing, innovation, and design. Prerequisites: MGMT 201 and permission of the instructor.

MIDE 330. Innovating Organizations. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Looking at cases of success and failure, we will examine innovation's many inputs and innovations from standard managerial and corporate policies. How do organizations become innovative? Are there attractive or worthwhile practices or organizational structures that current companies overlook? Prerequisite: MGMT 101 or permission of the instructor.

MIDE 343. IS Project Management: If We Can Build It, Will They Come?. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Investigates the methods, tools, and techniques used to analyze and develop organizational information systems. Experiential focus includes feasibility analysis, identifying and modeling business requirements, and managing the systems development life cycle.

MIDE 375. Should We Start This Company?. .5 Credits.**Offered Alternate Fall or Spring; Lecture hours:2**

Project centered course in entrepreneurship, generating new business ideas, and product or service design and development through business planning. Prerequisite: permission of the instructor. Crosslisted as UNIV 375 and ENGR 375.

MIDE 382. Predictive Analytics. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Study and application of analytical methods for large scale datasets. Topics include clustering and classification methods, and association rules. Prerequisite: MGMT 102 or MATH 216 or equivalent.

MIDE 383. New Product Development. 1 Credit.**Offered Occasionally; Lecture hours:3**

Study and application of innovation in the product development process. Learning is tied to a semester-long project which explores identifying opportunities, value analysis, brand strategy, product positioning, market needs, customer needs, and team management. Prerequisite: permission of the instructor.

MIDE 387. Impact! Exploring Innovation. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

The goal of innovation is POSITIVE CHANGE, to make someone or something better. This class will examine innovation from an interdisciplinary and integrative perspective. We will explore both what makes something innovative and how innovation happens. Prerequisite: Permission of the instructor. Crosslisted as MECH 480 and UNIV 380.

MIDE 390. Honors Course in Markets, Innovation, and Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Special and independent studies for Markets, Innovation and Design majors selected under the guidelines of the school and the University Honors Council. Honors thesis required. Prerequisites: nomination by the school and permission of the instructor.

Mathematics (MATH)

MATH 112. Introduction to Mathematical Modeling. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Introduction for the non-specialist to mathematical modeling of real-world phenomena such as voting and networks, using graph theory, probability, and other accessible tools.

MATH 117. Introduction to Mathematical Thought. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:1.5**

An investigation of number, numeration, and operations from the perspective of elementary school teachers and pupils. Open only to B.S. in Education Early Childhood Pre-K to 4 students. Required fieldwork.

MATH 118. Elementary Geometry and Statistics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Investigation of geometric, probabilistic, and statistical concepts related to Pre-K to 4 mathematics and how children learn and make sense of these concepts. Prerequisite: permission of the instructor. Prerequisite: MATH 117 or permission of the instructor.

MATH 192. Topics in Calculus. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Elementary calculus and applications taken primarily from economics. Topics include algebraic, exponential, and logarithmic functions, graphs, limits, derivatives and integration. Not open to students who have taken MATH 201.

MATH 201. Calculus I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:4**

An introduction to the calculus of algebraic, trigonometric and transcendental functions. Interpretation, significance and calculations of a derivative. Applications to geometry, biology, physics, economics, and other subjects. Introduction to the definite integral, including the Fundamental Theorem of Calculus. Not open to students who have taken MATH 192.

MATH 202. Calculus II. 1 Credit.**Offered Both Fall and Spring; Lecture hours:4**

Methods of integration including substitution, integration by parts, numerical approximations, and improper integrals. Series, including Taylor series. Complex numbers, polar coordinates, differential equations, and applications. Prerequisite: MATH 201.

MATH 207. The Teaching of Mathematics in Secondary Schools. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:.5**

Investigation into the components of effective secondary school mathematics instruction, including lesson design/ implementation (curriculum, tasks, discourse, and assessment). Required fieldwork. Prerequisite: EDUC 201 or permission of the instructor.

MATH 208. Mathematical Explorations. .5 Credits.**Offered Fall Semester Only; Lecture hours:1.5**

An exploration of topics from pure mathematics, applied mathematics and statistics, illustrating the power and beauty of mathematical reasoning. For students considering a major in mathematics. Corequisites: MATH 201 or MATH 202 or MATH 211 or MATH 212 or MATH 216. Open to first-year students only.

MATH 209. Mathematical Problem Solving. .5 Credits.**Offered Fall Semester Only; Lecture hours:Varies; Repeatable**

Mathematical problem solving, with an emphasis on problems and topics that appear in contests such as the Putnam Competition. Prerequisite: permission of the instructor.

MATH 211. Calculus III. 1 Credit.**Offered Both Fall and Spring; Lecture hours:4**

Calculus of vector-valued functions and functions of several variables. Multiple, line, and surface integrals; applications, and extrema. Green's, Stokes' and Divergence Theorems. Prerequisite: MATH 202.

MATH 212. Differential Equations. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Basic methods of solving ordinary differential equations. Systems of linear differential equations, Laplace transform, applications and selected topics. Prerequisite: MATH 211. Not open to students who have taken MATH 222.

MATH 216. Statistics I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Other:1**

Exploratory data analysis, sampling distributions, regression, sampling designs, confidence intervals, hypothesis testing, ANOVA. Statistical software is used and applications, including projects, are undertaken. Not open to students who have taken MATH 226 or PSYC 215.

MATH 217. Statistics II. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:1**

Exploratory data analysis, design of experiments and inference emphasizing applications to a range of disciplines. Includes multiple linear regression, analysis of variance, categorical data analysis, nonparametric statistics. Prerequisite: MATH 216 or equivalent. Crosslisted as MATH 617.

MATH 219. Topics in Applied Mathematics. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

Topics such as financial mathematics, mathematical biology, cryptography, social networks, etc. Topic varies by semester. Prerequisite: varies by topic.

MATH 222. Differential Equations for Engineers. .5 Credits.**Offered Spring Semester Only; Lecture hours:3**

First order differential equations, second order linear equations, higher order linear equations, numerical approximations. Prerequisite: MATH 211. Open only to civil engineering and computer science engineering students. Not open to students who have taken MATH 212.

MATH 226. Probability and Statistics for Engineers. .5 Credits.**Offered Fall Semester Only; Lecture hours:3**

Descriptive modeling and statistics, sampling and experimental design, discrete and continuous random variables, central limit theorem, and elementary inference. Prerequisite: MATH 202. Open only to engineering students and students in computer science. Not open to students who have taken MATH 216.

MATH 240. Combinatorics and Graph Theory. .5 Credits.**Offered Spring Semester Only; Lecture hours:3**

Counting techniques and traversal problems. Does not count toward the major. Students join MATH 241 mid-semester. Corequisite: MATH 280. Only for computer science students or students seeking secondary certification.

MATH 241. Discrete Structures. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Logic, sets; mathematical induction; relations, functions; combinatorics and graph theory. Does not count toward the mathematics major. Prerequisite: MATH 202.

MATH 245. Linear Algebra. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Linear equations, matrices, vector spaces, linear transformations, determinants, eigenvalues. Prerequisite: MATH 202.

MATH 260. Applications of Calculus to Medicine and Biology. 1 Credit.**Offered Occasionally; Lecture hours:3**

Biology has been described as the most mathematical science. Researchers in biology use mathematical models to design strategies for controlling epidemics, administering drugs, and managing ecosystems. In this class you will learn how to develop your own models, approximate solutions to your models, and compare these solutions to real data. Crosslisted as BIOL 360 or BIOL 662.

MATH 280. Logic, Sets, and Proofs. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Logic, sets; proof techniques; relations, functions, sequences and convergence; cardinality. Skills and tools for independent reading, problem solving and exploration. Prerequisite: MATH 211 or MATH 245.

MATH 291. Undergraduate Readings. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Readings and research in special topics at an intermediate level. Prerequisites: permission of the instructor, adviser, and department chair.

MATH 303. Probability. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Elementary probability, random variables, moments, central limit theorem, conditional expectation, statistical distributions derived from the normal distribution. Probability simulations and applications from various fields. Prerequisite: MATH 211. Crosslisted as MATH 603.

MATH 304. Statistical Inference Theory. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Point and interval estimation, hypothesis testing, Fisher's likelihood theory, frequentist versus Bayesian approach, computational statistics. Crosslisted as MATH 604.

MATH 308. Real Analysis I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Real numbers and elementary topology of Cartesian spaces, convergence, continuity, differentiation, and history of the development of analysis. Prerequisites: MATH 211, MATH 245, and MATH 280.

MATH 311. Theory of Numbers. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Classical number theory in an algebraic setting. Topics include unique factorization, diophantine equations, and linear and quadratic congruences. Advanced topics from algebraic or analytic number theory. Prerequisites: MATH 245 and MATH 280 and permission of the instructor. Crosslisted as MATH 611.

MATH 319. Topics in Advanced Mathematics. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3; Repeatable**

Special topics, to be selected from algebra, analysis, geometry, statistics, applied mathematics, etc. Crosslisted as MATH 619.

MATH 320. Abstract Algebra I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Groups and rings; homomorphisms and isomorphism theorems; history of the development of algebra. Additional selected topics. Prerequisites: MATH 245 and MATH 280.

MATH 333. Topology. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Topological spaces, connectedness, compactness, continuity, separation, and countability axioms. Metric, product, function, and uniform spaces. Prerequisites: MATH 211 and MATH 280, or permission of the instructor. Crosslisted as MATH 633.

MATH 335. Geometry. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Historical and axiomatic foundations of geometry. Euclidean and non-Euclidean geometries. Prerequisite: MATH 280 or permission of the instructor. Crosslisted as MATH 635.

MATH 343. Numerical Analysis. 1 Credit.**Offered Fall Semester Only; Lecture hours:3, Lab:2**

Floating point arithmetic, development of computational algorithms and error estimates for root approximation, interpolation and approximation by polynomials, numerical differentiation and integration, cubic splines, least-squares, linear systems, lab component. Prerequisites: MATH 211, CSCI 203, and one of MATH 241, MATH 245, or MATH 280; or permission of the instructor. Crosslisted as MATH 643.

MATH 345. Advanced Linear Algebra. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Systems of linear equations, determinants, vector spaces, canonical forms for linear transformations and matrices, bilinear forms, inner product spaces, applications to such other areas as geometry, differential equations, linear programming. Prerequisites: MATH 245 and either MATH 280 or permission of the instructor. Crosslisted as MATH 645.

MATH 350. Methods in Applied Mathematics. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Techniques drawn from partial differential equations, transform methods, Fourier and complex analysis, and variational calculus. Prerequisite: junior or senior status; MATH 212 or MATH 222 or permission of the instructor. Crosslisted as MATH 650.

MATH 358. Topics in Operations Research. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Mathematical and statistical techniques in operations research. Queueing theory. Additional topics may include simulation, forecasting, non-linear programming, inventory models. Methods and applications drawn from various fields. Prerequisite: MATH 303 or permission of the instructor. Crosslisted as MATH 658.

MATH 362. Complex Analysis. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Limits, analytic functions, integrals including contour integrals. Cauchy's Integral Theorem, entire functions and singularities. Prerequisites: MATH 211 and MATH 280, or permission of the instructor. Crosslisted as MATH 662.

MATH 378. Seminar. .5 Credits.**Offered Either Fall or Spring; Lecture hours:2; Repeatable**

Seminar based on topics from algebra, analysis, topology, differential equations, statistics, or applied mathematics; topics selected according to demand or interest. Prerequisite: permission of the instructor. Crosslisted as MATH 678.

MATH 391. Reading and Research. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Reading and research in various topics for qualified undergraduate students. Prerequisite: permission of the instructor.

MATH 405. Statistical Modeling. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Regression and analysis of (co)variance. Model diagnosis and remediation. Model selection, multicollinearity, logistic regression. R or SAS will be used. Prerequisites: MATH 245 and MATH 304. Crosslisted as MATH 605.

MATH 407. Statistical Design of Scientific Studies. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Experiments, observational studies. Completely randomized, block, mixed models, crossed, nested design. Simple random, stratified, cluster sampling. Estimation procedures, sample size calculations. Uses R or SAS. Prerequisite: MATH 304.

MATH 409. Real Analysis II. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Continuation of MATH 308. Integration theory and advanced topics in analysis. Prerequisite: MATH 308. Crosslisted as MATH 609.

MATH 416. Modern Applied Mathematics. 1 Credit.**Lecture hours:3**

Possible topics include wavelets, harmonic analysis, computational mathematics, nonlinear dynamics, dynamical systems, scientific computing, or cryptography. Prerequisites: MATH 212 and MATH 308, or permission of the instructor.

MATH 446. Abstract Algebra II. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Advanced topics in group theory including solvable groups, field theory and Galois theory. Prerequisite: MATH 320. Crosslisted as MATH 646.

MATH 491. Reading and Research. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Reading and research in various topics for qualified undergraduates or graduate students at a level appropriate for a Culminating Experience. Prerequisite: permission of the instructor, adviser, and department chair.

Mechanical Engineering (MECH)

MECH 151. Machining for Manufacturing Technology. 0 Credits.**Offered Fall Semester Only; Lecture hours:2,Other:2**

Develop an understanding of the processes needed to produce manufactured parts. Emphasis on hands-on machining and fabrication.

MECH 202. Graphics for Design and Manufacture. .5 Credits.**Offered Spring Semester Only; Lecture hours:1,Lab:2**

Graphical representation techniques for visualization and communication of mechanical engineering designs and concepts. Creation, storage, and manipulation of production drawings and 3-D geometric representations using state-of-the-art software.

MECH 213. Thermodynamics I. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Thermodynamic principles including properties of substances, the first and second laws of thermodynamics, efficiencies, power and refrigeration cycles. Prerequisites: MATH 201 and ENGR 214 or permission of the department. Not open to students who have taken ENGR 200 or CHEG 310.

MECH 216. Thermodynamics II. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

A continuation of MECH 213 with a focus on applications of thermodynamic principles including an extension of power and refrigeration cycles, psychometrics, reacting mixtures and combustion, and other selected topics. Prerequisites: MATH 211, MECH 213, MECH 222, or the permission of the department.

MECH 220. Mechanics. 1 Credit.**Offered Spring Semester Only; Lecture hours:4,Other:1**

Equilibrium of two- and three-dimensional force systems. Trusses and frames. Friction. Distributed force systems. Internal loads. One degree of freedom vibrations. Prerequisite: MATH 201. Not open to students who have taken ENGR 221 or ENGR 229.

MECH 222. Introduction to Mechanical Engineering Lab Practice. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Lab:2**

Sensors, measurement techniques for static and dynamic measurements, data processing, statistical data analysis, propagation of error, technical report preparation. Corequisite: ECEG 205 and MECH 222L or permission of the department. Prerequisites: MATH 202 and MECH 220.

MECH 252. Dynamics. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Kinematic and kinetic analysis of rigid bodies in planar and/or three-dimensional motion. Absolute and relative analysis of displacements, velocities, and accelerations; force, energy, and momentum methods; analysis of mechanical vibrations; analytical and computer-simulated solution techniques. Prerequisites: MECH 220 and MATH 212.

MECH 285. Independent Study for Sophomores. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:2,Other:3; Repeatable**

Independent investigation under the direction of a faculty member for students who have completed their first year. Sophomore standing in mechanical engineering and permission of the instructor.

MECH 2NT. Mechanical Engineering Non-traditional Study. .25-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in Mechanical Engineering. Prerequisite: permission of the instructor.

MECH 302. Finite Elements in Analysis and Design. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:4**

Introduction to finite element method (FEM) and commercial FEM software for design and analysis of mechanical components and thermal problems. Applications in mechanical and thermal component/system design. Co-Requisites: MECH 302L. Prerequisites: MECH 202 and MECH 353.

MECH 312. Heat Transfer. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Principles and engineering applications of heat transfer by conduction, convection, and radiation. Co-Requisites: MECH 312L. Prerequisite: MECH 313 or permission of the instructor.

MECH 313. Fluid Dynamics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Fundamentals of fluid dynamics including integral and differential control volume analysis, conservation equations, dimensional analysis, incompressible inviscid flows, internal and external viscous flows. Prerequisites: MATH 212, MECH 213, MECH 222, or permission of the department. Not open to students who have taken ENGR 222 or ENGR 233.

MECH 353. Solid Mechanics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Analysis of the stress, strain, and failure of engineering components under axial, bending, and torsional loading conditions. Provide a bridge to more advanced material in the theory of elasticity and computational solid mechanics. Co-Requisites: MECH 353L. Prerequisites: MECH 220 and concurrent prerequisite MATH 212 or permission of the department.

MECH 355. Manufacturing Processes. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Analytical and technological study of manufacturing processes including metal deformation, casting, and cutting. Introduction to numerical control and CAD/CAM. Laboratory fabrication project and field trips. Co-Requisite: MECH 355L. Prerequisites: ENGR 240 and MECH 202.

MECH 385. Independent Study for Juniors. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:2,Other:3; Repeatable**

Independent investigation under the direction of a faculty member for students who have completed two years of study. Junior standing in mechanical engineering and permission of the instructor.

MECH 392. Mechanical Design. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Lab:2**

Principles and techniques for creative design of machines in relation to specifications and user requirements. Design using a solid modeling CAD package. Co-Requisites: MECH 392L. Prerequisites: MECH 252 and MECH 353 or permission of the instructor.

MECH 3NT. Mechanical Engineering Non-traditional Study. .25-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in Mechanical Engineering. Prerequisite: permission of the instructor.

MECH 401. Senior Design I. .5 Credits.**Offered Fall Semester Only; Lecture hours:2,Lab:2**

Emphasis on component design in areas of advanced mechanics and thermofluids. Student teams participate in design process which includes research, design formulation, and presentation. Co-Requisites: MECH 401L Prerequisites: MECH 302, MECH 312 and MECH 392, or permission of the instructor.

MECH 402. Senior Design II. .5 Credits.**Offered Spring Semester Only; Lecture hours:1,Lab:2**

Emphasis on fabrication, instrumentation, testing and presentation of mechanical or thermofluid components designed in MECH 401. Student teams will participate in presentation of their results. Co-Requisites: MECH 402L. Prerequisite: MECH 401 or permission of the instructor.

MECH 403. Thermal Design. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:2**

Design of thermal-fluid energy conversion systems; equipment selection; codes and standards; and economic analysis. Mini-design laboratories and group design project. Co-Requisites: MECH 403L Prerequisites: MECH 312.

MECH 405. System Dynamics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3**

Modeling and analysis of dynamic systems consisting of mechanical, electrical, fluid, and thermal elements. Frequency response methods. Sampled data systems. Experimental system identification. Co-Requisites: MECH 405L Prerequisites: MATH 212, MECH 252 and ECEG 205.

MECH 420. Solar Energy Conversion. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Fundamental aspects of the design and operation of solar energy conversion systems including photovoltaics, solar thermal power, solar heating and production. Prerequisite: MECH 312 or permission of the instructor. Seniors only. Crosslisted as MECH 620.

MECH 421. Advanced Engineering Thermodynamics. 1 Credit.**Offered Occasionally; Lecture hours:3**

Advanced engineering thermodynamics. Prerequisite: permission of the instructor. Crosslisted as MECH 621.

MECH 422. Renewable Energy Conversion. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:4**

Current energy demands, environmental effects, renewable energy resources, includes photovoltaic, thermal solar, wind, tidal, ocean thermal, wave energies; clean coal, nuclear energy, smart grid technology. Prerequisites: permission of the instructor and one of the following; CHEG 200, ENGR 200 or MECH 213. Crosslisted as MECH 622.

MECH 423. Thermal Environmental Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Heating, ventilating and air conditioning for small commercial and residential buildings. This course uses heat transfer, solar energy, thermal design, psychometrics, economics, physiological considerations and thermal design. Prerequisite: MECH 403 and MECH 216 or permission of the instructor. Crosslisted as MECH 623.

MECH 424. Internal Combustion Engines. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Description of internal combustion engines, methods of evaluating performance, the thermodynamics of combustion, engine testing, and design. Prerequisite: MECH 216 or permission of instructor. Crosslisted as MECH 624.

MECH 427. Engine Generated Emissions Control. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Combustion thermochemistry, availability analysis, emission formation, emission reduction technologies, greenhouse gas reduction, emission modeling and optimization, engineering system integration for emission control. Prerequisite: MECH 216 or permission of the instructor. Crosslisted as MECH 627.

MECH 431. Boundary Layers and Convection Heat Transfer. 1 Credit.**Offered Occasionally; Lecture hours:4**

Hydrodynamic and thermal boundary layers, both laminar and turbulent; derivation of governing equations; stability and transition; free and forced convection in both internal and external flows. Prerequisite: MECH 312 or permission of the instructor. Crosslisted as MECH 631.

MECH 432. Compressible Fluid Dynamics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Compressible flow, shock wave phenomena, potential flow, two-dimensional flow, numerical methods, acoustic wave propagation. Selected laboratory exercises. Prerequisites: MECH 213, MECH 313, and ENGR 214 (or equivalent) or permission of the instructor. Crosslisted as MECH 632.

MECH 433. Advanced Fluid Mechanics. 1 Credit.**Offered Occasionally; Lecture hours:4**

Ideal and viscous flow. Boundary layer theory. Turbulence and mixing. Non-Newtonian phenomena. Multiphase phenomena. Selected laboratory projects. Prerequisite: permission of the instructor. Crosslisted as MECH 633.

MECH 434. Environmental Fluid Dynamics. 1 Credit.**Offered Occasionally; Lecture hours:3**

Environmental fluid flow in lakes, rivers, oceans, and the atmosphere; contaminant transport; mixing; reaction and particle dispersion processes; applications to natural and engineering systems. Prerequisite: MECH 313, ENGR 222, ENGR 233 or permission of the instructor. Crosslisted as MECH 634.

MECH 435. Aerodynamics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Two-dimensional flow theory; vortex and momentum theories of finite wings; viscous flows, boundary layers and drag; high lift devices. Prerequisites: MECH 313 or equivalent and permission of the instructor. Crosslisted as MECH 635.

MECH 440. Turbomachinery. 1 Credit.**Offered Occasionally; Lecture hours:4**

Classification of turbomachinery; velocity triangles, dimensional analysis, centrifugal pumps and fans, centrifugal compressors, axial flow pumps, fans and compressors, radial flow turbines, axial flow turbines, steam turbines, hydraulic turbines. Prerequisite: MECH 216 or permission of the instructor. Crosslisted as MECH 640.

MECH 441. Gas Turbines. 1 Credit.**Offered Occasionally; Lecture hours:4**

Ideal gas turbine cycles. Diffusers, compressors, intercoolers, burners, turbines, and nozzles are analyzed for their individual and collective performance. Prerequisite: MECH 216 and MECH 313 or permission of the instructor. Crosslisted as MECH 641.

MECH 445. Engineering Acoustics and Noise Control. 1 Credit.**Offered Occasionally; Lecture hours:4**

Fundamentals of sound; instrumentation for noise measurement and analysis; sound sources; sound power, sound in enclosed areas; acoustic enclosures; muffling devices; vibration control; noise control of typical devices. Prerequisite: permission of the instructor.

MECH 446. Flow-induced Noise and Vibration. 1 Credit.**Offered Occasionally; Lecture hours:4**

Classification of flow-induced vibration; turbulence excitation; gust excitation, vortex shedding, galloping and stall flutter; flutter; impinging shear layers; cylinders and tube bundle vibrations; resonators and noise generation. Prerequisites: MECH 313 and ENGR 222 or permission of the instructor. Crosslisted as MECH 646.

MECH 447. Fundamentals of Combustion. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

The fundamentals of chemically reactive flow systems with application to jet, rocket, and other air-breathing engines and special interest paid to pollutant formation. Prerequisites: MECH 216, MECH 312, MECH 313 or permission of the instructor. Crosslisted as MECH 647.

MECH 451. Vibration Analysis. 1 Credit.**Offered Occasionally; Lecture hours:4**

Damped and undamped vibrations in free and forced systems. Resonance conditions. Vibration measuring equipment. Multi-degree of freedom discrete systems. Continuous systems. Prerequisites: MECH 252 or MATH 212 or permission of the instructor. Crosslisted as MECH 651.

MECH 452. Advanced Dynamics. 1 Credit.**Offered Occasionally; Lecture hours:4**

Kinematics and dynamics of particles and rigid bodies. Degrees of freedom. Partial velocities. Generalized active and inertia forces. Kane's equation. Lagrange's equation. Numerical simulation of motion. Prerequisites: MECH 252 or permission of the instructor. Crosslisted as MECH 652.

MECH 453. Robotics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

History, evolution, capabilities and applications of robotic devices. Introduction to robot kinematics, dynamics, and control. Research into current topics in robotics. Development and implementation of robotic operations using model and industrial robots. Prerequisites: MECH 252 or permission of the instructor. Crosslisted as MECH 653.

MECH 454. Vehicle Dynamics and Control. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Introduction to modeling of vehicles for analysis and control. Topics include tire models, handling response, stability control, suspension design, race tuning. Prerequisites: MECH 405 or permission of the instructor. Crosslisted as MECH 654.

MECH 455. Control Systems Design. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:4**

Design/implementation of control systems on hardware. Sensor and actuator selection. Development of linear/nonlinear control algorithms. Performance analysis and testing. Applications in automotive, HVAC, medical, aero/astro, robotics. Prerequisites: MECH 405 or permission of the instructor. Not open to students who have taken ECEG 480. Crosslisted as MECH 655.

MECH 457. Accident Analysis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Vehicle crash dynamics and crashworthiness. Non motor-vehicle accidents. Mechanics of injuries. Evaluation of designs intended to reduce risk of injury. Prerequisite: permission of the instructor. Crosslisted as MECH 657.

MECH 459. Optical Measurements Systems in Biomedical Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Course integrates basic and advanced principles of lasers, optics and optical systems and their applications in biomedical field. Analysis of laser-based characterization and processing techniques of tissues. Permission of the instructor. Crosslisted as MECH 659.

MECH 460. Engineering Optimization. 1 Credit.**Offered Occasionally; Lecture hours:4**

Applied methods of linear, nonlinear, discrete, and global optimization. Numerical techniques for constrained and unconstrained problems. Emphasis on engineering applications and solution methods using Matlab. Prerequisite: permission of the instructor. Crosslisted as MECH 660.

MECH 462. Computer Integrated Manufacturing. 1 Credit.**Offered Occasionally; Lecture hours:4**

Issues of integrated information in manufacturing systems. In-depth study of solid modeling. Computer control of manufacturing processes, computer-aided quality control, and computer-aided process planning. Prerequisite: MECH 355 or permission of the instructor. Crosslisted as MECH 662.

MECH 463. Introduction to Mechatronics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

This multidisciplinary course is the synergistic integration of mechanical engineering with electronic and computer engineering. This course will study actuators, drive systems, sensors, controllers, micro-controllers programming and interfacing, and automation systems integration. Prerequisite: permission of the instructor. Crosslisted as MECH 663 and ECEG 463 and ECEG 663.

MECH 464. Mechanism Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Design of traditional and compliant mechanisms. Topics include kinematics, analytical and graphical synthesis methods, and topics in research. Prerequisites: MECH 392 or permission of the instructor. Crosslisted as MECH 664.

MECH 465. Advanced Mechanics of Solids. 1 Credit.**Offered Occasionally; Lecture hours:3**

Fundamentals of the theory of elasticity and plasticity. Classical methods for solution of problems, thermal stress, plate bending torsion, residual stress, plastic collapse. Numerical analysis in plasticity. Prerequisite: permission of the instructor. Crosslisted as MECH 665.

MECH 466. Applied Fracture Mechanics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Fundamentals of fracture mechanics and its applications to the design of damage tolerant structures. Case studies in the fields of aerospace, pressure vessels, rotating machinery, railroads, etc. Illustrating fracture mechanics principles in design. Prerequisite: permission of the instructor. Crosslisted as MECH 666.

MECH 467. Finite Element Methods. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:2**

Fundamental theory and applications for civil and mechanical engineering. Multidimensional elements, and axisymmetric elements, and their formulations; stress recovery techniques; modeling considerations; convergence criteria and error estimates, includes use of commercial and developmental finite element analysis programs. Prerequisites: CEEG 401 or MECH 302 or permission of the instructor. Crosslisted as CEEG 408 and CEEG 608 and MECH 667.

MECH 468. Applied Finite Element for Mechanical Design. 1 Credit.**Offered Occasionally; Lecture hours:2,Other:3**

Practical uses of finite element software for problems common in research and mechanical design. Applications include sub-structure modeling, contact problems, stress concentrations and crack defects, elastic-plastic problems, and problems with dynamic loading. Prerequisites: MECH 302 or permission of the instructor. Crosslisted as MECH 668.

MECH 469. Computer-Aided Design. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Fundamentals of geometric modeling and computational geometry. Topics include geometric representation of surfaces, mesh generation, and design optimization. Prerequisite: MECH 302 or permission of the instructor. Crosslisted as MECH 669.

MECH 470. Engineering Composite Materials. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Fundamental composite mechanics, including micromechanics and laminated plate theory. Design and analysis of composite structures; composite manufacturing techniques; current research topics in composite area. Prerequisites: MECH 353 or permission of the instructor. Crosslisted as MECH 670.

MECH 472. Atomic Arrangement and Defects. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

The structure of crystalline and non-crystalline materials and the relationship between structure, defects, and mechanical properties. Prerequisite: ENGR 240 or permission of the instructor. Crosslisted as MECH 672.

MECH 474. Bulk Metallic Glasses. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:2**

Thermodynamics and kinetics of metallic glasses; deformation, fatigue and fracture behavior; and metallic glass composites. Alloy design, casting, and mechanical testing. Prerequisite: ENGR 240 or permission of the instructor. Crosslisted as MECH 674.

MECH 476. Biomechanics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Principles of mechanics applied to biological systems. Background in anatomy, physiology, and cell biology will be presented. Mechanical behavior of hard and soft biological materials. Topics in cellular, cardiovascular, musculoskeletal, implant, and sport/motion biomechanics. Prerequisite: permission of the instructor. Crosslisted as MECH 676.

MECH 480. Impact! Exploring Innovation. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

The goal of innovation is POSITIVE CHANGE, to make someone or something better. This class will examine innovation from an interdisciplinary and integrative perspective. We will explore both what makes something innovative and how innovation happens. Prerequisite: Permission of the instructor. Crosslisted as MIDE 387 and UNIV 380.

MECH 482. Computational Statistics for Engineers. 1 Credit.**Offered Occasionally; Lecture hours:4**

Hypothesis testing, Multivariate Regression, Time Series Analysis, Engineering System Optimization, Statistical Design of Experiments, and other Computational tools for engineers (e.g. PCA, RSM, FFT). MATLAB Based. Prerequisites: ENGR 214 or permission of the instructor. Crosslisted as MECH 682.

MECH 484. Artificial Intelligence for Engineering Systems. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

Engineering system modeling and optimization using artificial intelligence methods such as neural networks and genetic algorithms. MATLAB based. Prerequisites: ENGR 214 or equivalent or permission of the instructor. Crosslisted as MECH 684.

MECH 485. Advanced Engineering Problems. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:2,Other:3; Repeatable**

An investigation under the direction of a staff member. Topics not covered in other courses may be studied in this course. Prerequisite: permission of the instructor. Crosslisted as MECH 685.

MECH 495. Advanced Topics in Engineering Mathematics. 1 Credit.**Offered Fall Semester Only; Lecture hours:4**

Linear algebra and analytical/computational techniques for solving ordinary and partial differential equations relevant to engineering applications. Crosslisted as CEEG 495 and CHEG 495 and MECH 495 and ENGR 695 and ECEG 495 and ECEG 695. Prerequisite: permission of the instructor.

Military Science (MILS)

MILS 101. Foundation of Officership. 0 Credits.**Offered Fall Semester Only; Lecture hours:2,Other:1**

Focuses on developing comprehension of Army leadership dimensions, attributes and core leader competencies within the U.S. Army, and the Army's role in American society and government.

MILS 102. Basic Leadership. 0 Credits.**Offered Spring Semester Only; Lecture hours:2,Other:1**

Further studies focusing on developing comprehension of Army leadership dimensions, attributes and core leader competencies within the U.S. Army, and the Army's role in American society and government.

MILS 201. Individual Leadership Studies. 0 Credits.**Offered Fall Semester Only; Lecture hours:2,Other:1**

Builds upon student development of the leadership attributes and core leader competencies through the understanding of Army organizational structures and its duty in American society.

MILS 202. Leadership and Teamwork. 0 Credits.**Offered Spring Semester Only; Lecture hours:2,Other:1**

Further studies the theoretical basis of Army leadership requirements model by exploring the dynamics of adaptive leadership in the context of military operations.

MILS 301. Adaptive Team Leadership. 0 Credits.**Offered Fall Semester Only; Lecture hours:3,Other:1**

Develops critical thinking skills through practical application of the fundamentals of Army leadership at the lowest organizational levels in the United States Army.

MILS 302. Leadership Under Fire. 0 Credits.**Offered Spring Semester Only; Lecture hours:3,Other:1**

Further studies in developing critical thinking skills through practical application of the fundamentals of Army leadership at the lowest organizational levels in the United States Army.

MILS 401. Developing Adaptive Leaders. 0 Credits.**Offered Fall Semester Only; Lecture hours:3,Other:1**

Transitions the student learning from being trained to becoming a leader. Students study the U.S. Constitution and how it relates to their role as an Army officer.

MILS 402. Leadership in a Complex World. 0 Credits.**Offered Spring Semester Only; Lecture hours:3,Other:1**

Explores the dynamics of leading soldiers in full spectrum operations in the contemporary operating environment. Course prepares them for their future role as an Army officer.

Music (MUSC)

MUSC 114. Composition Studio. .25 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable

Analytical and creative study of contemporary musical composition. Prerequisite: permission of the instructor.

MUSC 121. Introduction to Music Fundamentals. 1 Credit.

Offered Fall Semester Only; Lecture hours:3,Other:2

The study of the fundamentals of music, including standard notation, simple and compound meter, spelling triads, and simple harmonic progressions. The skills in this course are required for MUSC 200. Does not fulfill the requirements for the music major or music minor.

MUSC 122. Introduction to Music. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An examination of various types of music in cultural and historical context; topics range from classical to jazz and the avant-garde. Not open to music majors. Students may not take both MUSC 122 and MUSC 123.

MUSC 123. Introduction to Music. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An introduction to the fundamentals of music from around the world. Explores music's basic characteristics (pitch, rhythm, timbre, etc.) and processes (form, improvisation, technology, etc.). Students may not take both MUSC 122 and MUSC 123. Not open to music majors.

MUSC 126. Introduction to Popular Music in the U.S.. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

A survey of principal style periods in American popular music from ca. 1840 to the present.

MUSC 135. Introduction to Music Education. 1 Credit.

Offered Alternating Fall Semester; Lecture hours:3

This course provides music education majors with basic foundations in the discipline of music teaching and pedagogy. Prerequisite: permission of the instructor.

MUSC 136. Music for Classroom Teaching. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course provides education majors with basic musical foundations as well as techniques and materials for incorporating music into the general education classroom.

MUSC 142. String Methods. .25 Credits.

Offered Alternating Spring Semester; Lecture hours:Varies,Other:2

Intended for music education majors. An introductory course in string instruments. Prerequisite: open to Bachelor of Music majors only.

MUSC 143. Woodwind Methods. .25 Credits.

Offered Alternating Fall Semester; Lecture hours:Varies,Other:2

Intended for music education majors. An introductory course in woodwind instruments.

MUSC 144. Brass Methods. .25 Credits.

Offered Fall Semester Only; Lecture hours:Varies,Other:2

Intended for music education majors. An introductory course in brass instruments.

MUSC 145. Percussion Methods. .25 Credits.

Offered Alternating Fall Semester; Lecture hours:3

Intended for music education majors. An introductory course in percussion instruments.

MUSC 146. Voice Methods. .25 Credits.

Offered Fall Semester Only; Lecture hours:Varies,Other:2

Intended for instrumental music education majors. An introductory course in voice.

MUSC 147. Voice Methods. .25 Credits.

Offered Alternating Fall Semester; Lecture hours:Varies,Other:2

Intended for voice and piano music education majors. An introductory course in voice pedagogy.

MUSC 152. Functional Keyboard. 0 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable

A requirement for all, and open only to Bachelor of Music majors. Functional keyboard skills including harmonization, transposition, and improvisation. Students will register for the course each semester until it is completed successfully. Failure to complete the requirement will prevent a student from continuing in the degree program.

MUSC 170. Piano Lessons. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable

Piano lessons. Prerequisite: permission of the instructor.

MUSC 171. Organ. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Organ lessons. Prerequisite: permission of the instructor.

MUSC 172. Voice. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Voice lessons. Prerequisite: permission of the instructor.

MUSC 174. Violin. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Violin lessons. Prerequisite: permission of the instructor.

MUSC 175. Viola. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Viola lessons. Prerequisite: permission of the instructor.

MUSC 176. Violoncello. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Violoncello lessons. Prerequisite: permission of the instructor.

MUSC 178. String Bass. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
String bass lessons. Prerequisite: permission of the instructor.

MUSC 179. Flute. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Flute lessons. Prerequisite: permission of the instructor.

MUSC 181. Clarinet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Clarinet lessons. Prerequisite: permission of the instructor.

MUSC 182. Bass Clarinet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Bass clarinet lessons. Prerequisite: permission of the instructor.

MUSC 183. Oboe. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Oboe lessons. Prerequisite: permission of the instructor.

MUSC 185. Bassoon. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Bassoon lessons. Prerequisite: permission of the instructor.

MUSC 187. Saxophone. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Saxophone lessons. Prerequisite: permission of the instructor.

MUSC 188. Balinese Gamelan. .25-.5 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Lessons in advanced techniques for Balinese music. Students may study gender wayang, reyong, kendang, and/or suling. Prerequisite: permission of the instructor.

MUSC 189. Trumpet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Cornet/trumpet lessons. Prerequisite: permission of the instructor.

MUSC 191. French Horn. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
French horn lessons. Prerequisite: permission of the instructor.

MUSC 192. Trombone. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Trombone lessons. Prerequisite: permission of the instructor.

MUSC 193. Tuba. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Tuba lessons. Prerequisite: permission of the instructor.

MUSC 194. Euphonium. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Baritone horn lessons. Prerequisite: permission of the instructor.

MUSC 196. Guitar. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Guitar lessons. Prerequisite: permission of the instructor.

MUSC 197. Percussion. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Percussion lessons. Prerequisite: permission of the instructor.

MUSC 198. Harp. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Harp lessons. Prerequisite: permission of the instructor.

MUSC 199. Improvisation I. .25 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Studio lessons in improvisation. Prerequisite: permission of the instructor.

MUSC 1NT. Music Non-traditional Study. 1 Credit.

Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3; Repeatable
Non-traditional course in music. Prerequisite: permission of the instructor.

MUSC 200. Diatonic Theory. 1 Credit.

Offered Spring Semester Only; Lecture hours:3,Other:2

Study of diatonic triads and dominant seventh chords, progressions, cadences, secondary dominants, diatonic modulation, musical forms, orchestration, and score reading. Students lacking sufficient music theory background to begin theory sequence with MUSC 200 should first enroll in MUSC 121 or pursue an individualized course of instruction on their own.

MUSC 201. Chromatic Theory. 1 Credit.

Offered Fall Semester Only; Lecture hours:3,Other:1

Chromatic harmony, modulations, a study of basic classical and romantic forms. Includes ear training, keyboard harmony, and sight singing. Prerequisite: MUSC 200.

MUSC 202. Advanced Theory. 1 Credit.

Offered Spring Semester Only; Lecture hours:3,Other:1

A thorough knowledge of major compositional techniques from approximately 1910 to the present. Class requires advanced knowledge of the Sibelius notation program. Prerequisite: MUSC 201.

MUSC 203. Jazz Theory and Arranging. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Study of the language of improvisation and analysis of techniques used by composers and arrangers throughout jazz history. Emphasis placed on original creative work and music in the style of historically important figures. Prerequisite: MUSC 200 or permission of the instructor. Crosslisted as MUSC 603.

MUSC 209. Composition I. 1 Credit.

Offered Both Fall and Spring; Lecture hours:2; Repeatable

Analytical and creative study of contemporary musical composition. Prerequisite: permission of the instructor.

MUSC 210. Composition II. 1 Credit.

Offered Both Fall and Spring; Lecture hours:2; Repeatable

Analytical and creative study of contemporary musical composition. Prerequisite: permission of the instructor.

MUSC 213. Women in Music. 1 Credit.

Offered Occasionally; Lecture hours:3

A survey of women's involvement in music from the Middle Ages to today. Gender roles in society and the arts will also be discussed.

MUSC 214. Composition Studio. .25 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable

Analytical and creative study of contemporary musical composition. Prerequisite: permission of the instructor.

MUSC 219. Vocal Chamber Music Seminar: Medieval, Renaissance, and Baroque. 1 Credit.

Offered Spring Semester Only; Lecture hours:1.5,Other:1.5; Repeatable

An exploration of performance practice in the Medieval, Renaissance, and Baroque periods. Repertoire considered through a scholarly lens, observing trends in notation, style, text, purpose, and in relation to historical and cultural contexts. Each topic will be approached from the performer/ensemble perspective, with focus on developing collaborative ensemble skills.

MUSC 220. Performance for Laptop. 1 Credit.

Offered Occasionally; Lecture hours:Varies,Other:2; Repeatable

Students will explore the laptop as a performing instrument and will be immersed in the performance and practice of "classical," contemporary, and improvisatory electro-acoustic music.

MUSC 230. Music for Exceptional Children. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

This course prepares prospective teachers for teaching students with diverse needs through the exploration of the ways in which curriculum, instruction, and assessment may be adapted.

MUSC 231. English Language Learners for Music Educators. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

This course prepares prospective teachers to effectively engage English Language Learners through the exploration of various concepts, tools, and methods for modifying content for successful student learning.

MUSC 232. Music Technology. .5 Credits.**Offered Either Fall or Spring; Lecture hours:3**

A survey of music technology. Topics include recording technology, digital audio, spectral analysis and synthesis, MIDI/OSC, sequencing, sampling, computer music languages, and synthesis techniques.

MUSC 233. Technology Impact: Electronic to Pop. 1 Credit.**Offered Occasionally; Lecture hours:3**

An examination of the impact of technology on the creation of electro-acoustic and popular music.

MUSC 235. Principles of Teaching Music. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

In this course, music education majors develop knowledge and skills necessary for successful K-12 music teaching including curricular design, philosophical foundations, assessment strategies, and various methodologies. Prerequisite: MUSC 135.

MUSC 239. Choral Methods and Literature. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:2**

Intended for music education majors having a choral emphasis. Elementary and secondary school choral methods and materials. Program pedagogy and administration.

MUSC 241. Instrumental Methods and Literature. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:2**

Intended for music education majors having an instrumental emphasis. Orchestral, concert, marching, and jazz band repertoire. Elementary and secondary school methods and materials. Program administration.

MUSC 247. Music and Culture: Performing Indonesia. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:1**

Focused introduction to Indonesia through the lens of the arts. Examines the nation's history, politics, society, and culture, incorporating weekly hands-on music activities. Class time is divided equally between traditional classroom work and active, participatory music learning/training. No previous formal musical experience required. All students are welcome.

MUSC 248. Music and Culture: History of Jazz. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

A critical examination of musicians, movements, and cultural intersections within the development of jazz.

MUSC 249. Cross-Cultural Perspectives in Music. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to the study of music in cross-cultural perspective. Examines various musics' sounds, contexts, and meanings through several intersecting themes: identity, ritual, dance, etc.

MUSC 252. Music and Culture: Chant to Beethoven. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A survey of western European art music from Gregorian chant to Beethoven.

MUSC 253. Music and Culture: Beethoven to Virtual Music. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

A survey of western European art music from the early 19th century to the present. When possible, MUSC 252 should be taken before enrolling in MUSC 253.

MUSC 254. Music and Culture: Africa and the Diaspora. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Explores music-making practices in selected parts of Africa, South America, the Caribbean, and North America. Examines relationship between musical styles, creative processes, and cultural contexts.

MUSC 255. Music and Culture: The Silk Road and Beyond. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Investigates various musical cultures along and around the historical Silk Road; includes selected contexts in the Middle East and South, East, and Southeast Asia.

MUSC 256. Music and Culture: Popular Music. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A study of popular music in selected national and historical settings.

MUSC 257. Music and Culture: Jazz, Rock, and Race. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A thorough examination of historically important musicians and movements within the context of race and culture.

MUSC 258. Music and Culture: Music in American Life. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An examination of music and identity formation among various cultural and religious groups in selected periods of United States history.

MUSC 259. Conducting I. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Standard beat patterns, basic conducting problems, analysis of instrumental and choral scores. Prerequisite: MUSC 200.

MUSC 260. Ensemble. .25 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Non music majors may receive 1/4 credit per ensemble (maximum of 1/2 credit per semester, limit of two full-course credits in all). Music majors audit ensembles. Audition or permission of the instructor required for first-time members. 01-Symphonic Band, 02-Orchestra, 03-Chorale, 04-Chamber Choir, 05-Opera, 06-Handbells, 07-Jazz Band, 08-Gamelan.

MUSC 262. Orchestration. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:1**

Arrangements for school instrumental groups where instrumentation may be limited; also for full orchestra and concert band. Prerequisite: MUSC 201.

MUSC 263. Musical Cultures of Children and Youth. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course seeks to explore children and youth as musical culture sharing groups through engagement with ethnomusicological, sociological, anthropological, and music educational materials and techniques.

MUSC 270. Piano. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Piano lessons. Prerequisite: permission of the instructor.

MUSC 271. Organ. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Organ lessons. Prerequisite: permission of the instructor.

MUSC 272. Voice. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Voice lessons. Prerequisite: permission of the instructor.

MUSC 274. Violin. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Violin lessons. Prerequisite: permission of the instructor.

MUSC 275. Viola. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Viola lessons. Prerequisite: permission of the instructor.

MUSC 276. Violoncello. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Violoncello lessons. Prerequisite: permission of the instructor.

MUSC 277. String Bass. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

String Bass lessons. Prerequisite: permission of the instructor.

MUSC 278. String Bass. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

String bass lessons. Prerequisite: permission of the instructor.

MUSC 279. Flute. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Flute lessons. Prerequisite: permission of the instructor.

MUSC 280. Jazz Improvisation. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An exploration of improvised jazz including the elements of harmony, form and styles. Students will perform in class. No prior jazz experience necessary.

MUSC 281. Clarinet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Clarinet lessons. Prerequisite: permission of the instructor.

MUSC 283. Oboe. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Oboe lessons. Prerequisite: permission of the instructor.

MUSC 284. English Horn. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
English horn lessons. Prerequisite: permission of the instructor.

MUSC 285. Bassoon. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Bassoon lessons. Prerequisite: permission of the instructor.

MUSC 287. Saxophone. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Saxophone lessons. Prerequisite: permission of the instructor.

MUSC 288. Balinese Gamelan. .25-.5 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Lessons in advanced techniques for Balinese music. Students may study gender wayang, reyong, kendang, and/or suling. Prerequisite: permission of the instructor.

MUSC 289. Trumpet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Cornet/trumpet lessons. Prerequisite: permission of the instructor.

MUSC 291. French Horn. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
French horn lessons. Prerequisite: permission of the instructor.

MUSC 292. Trombone. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Trombone lessons. Prerequisite: permission of the instructor.

MUSC 293. Tuba. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Tuba lessons. Prerequisite: permission of the instructor.

MUSC 294. Euphonium. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Baritone horn lessons. Prerequisite: permission of the instructor.

MUSC 296. Guitar. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Guitar lessons. Prerequisite: permission of the instructor.

MUSC 297. Percussion. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Percussion lessons. Prerequisite: permission of the instructor.

MUSC 298. Harp. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Harp lessons. Prerequisite: permission of the instructor.

MUSC 299. Improvisation II. .25 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Studio lessons in improvisation.

MUSC 2NT. Music Non-traditional Study. 1 Credit.

Offered Occasionally; Lecture hours:Varies,Other:3; Repeatable
Non-traditional study in music; may include but not limited to internships on or off campus. Prerequisite: permission of the instructor.

MUSC 313. Extreme Creativity. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Extreme Creativity generates student engagement with the creative process through theoretical, pragmatic, and interactive explorations of creative writing, film, visual arts, music, drama, theatre, and performance. Prerequisites: Must have already taken an Art and Art History course (ARST or ARTH) and permission of the instructor.

MUSC 314. Composition Studio. .25 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Analytical and creative study of contemporary musical composition. Prerequisite: permission of the instructor.

MUSC 317. New Orleans in 12 Movements. 1 Credit.**Offered Summer Session Only; Lecture hours:24,Other:33**

Compares 12 movements in the history of N.O.L.A. (Civil War, Louisiana Purchase, birth of Jazz) and its relationship to the Mississippi. Prerequisite: permission of the instructor. Crosslisted with UNIV 226.

MUSC 322. Music and Social Justice. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course explores music that has been created to advance the goals of social justice movements in various cultures and time periods.

MUSC 335. Student Teacher Seminar. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course provides student teachers in music with the opportunity to refine their teaching practices through guided reflection, discussion, reading, writing, and various other activities. Corequisite: EDUC 439. Prerequisite: MUSC 235.

MUSC 340. Performance Seminar I. .5 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:1.5; Repeatable**

Covers performance-related issues including collaboration, memorization, performance anxiety, wellness, and music cognition. Students will be able to perform in master classes with visiting artists. Open to music majors; others by permission.

MUSC 341. Performance Seminar II. .5 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:1.5; Repeatable**

Covers performance-related issues including collaboration, memorization, performance anxiety, wellness, and music cognition. Students will be able to perform in master classes with visiting artists. Open to music majors; others by permission.

MUSC 342. Repertoire and Pedagogy. .5 Credits.**Offered Occasionally; Lecture hours:3**

Elements of repertoire and pedagogy necessary for the training of students in the performance degree or concentration. Prerequisites: Only open to performance majors and those in the performance concentration.

MUSC 350. Studies in Music. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4.5,Other:4.5; Repeatable**

Particular theatre topics selected by the instructor. Prerequisite: permission of the instructor.

MUSC 351. Topics in Music History: pre-ca. 1800. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced critical study of repertoires, performance practices, performers, composers, and patrons from selected musical cultures and style periods prior to ca. 1800. May be repeated for credit when topics differ.

MUSC 352. Topics in Music: ca. 1800-1900. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced studies in topics pertaining to performance and literature, theory and analysis, or forms and genres of the 19th century. May be repeated for credit when topics differ.

MUSC 353. Topics in Music: ca. 1900-present. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced studies in topics pertaining to performance and literature, theory and analysis, composition and technology, or forms and genres of the 20th or 21st centuries. May be repeated for credit when topics differ.

MUSC 362. Music Projects: Selected Topics. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

A W2 course designed to facilitate intensive research and writing on a music topic of the student's choice. Prerequisites: one MUSC course and topic for research project and permission of the instructor.

MUSC 369. Conducting II. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Advanced baton technique, rehearsal methods, and score analysis. Prerequisites: MUSC 259 or permission of the instructor.

MUSC 370. Piano. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Piano lessons. Prerequisite: permission of the instructor.

MUSC 371. Organ. .25-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Organ lessons. Prerequisite: permission of the instructor.

MUSC 372. Voice. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Voice lessons. Prerequisite: permission of the instructor.

MUSC 374. Violin. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Violin lessons. Prerequisite: permission of the instructor.

MUSC 375. Viola. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Viola lessons. Prerequisite: permission of the instructor.

MUSC 376. Violoncello. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Violoncello lessons. Prerequisite: permission of the instructor.

MUSC 377. String Bass. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
String bass lessons. Prerequisite: permission of the instructor.

MUSC 378. String Bass. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
String bass lessons. Prerequisite: permission of the instructor.

MUSC 379. Flute. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Flute lessons. Prerequisite: permission of the instructor.

MUSC 381. Clarinet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Clarinet lessons. Prerequisite: permission of the instructor.

MUSC 382. Bass Clarinet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Bass clarinet lessons. Prerequisite: permission of the instructor.

MUSC 383. Oboe. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Oboe lessons. Prerequisite: permission of the instructor.

MUSC 384. English Horn. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
English horn lessons. Prerequisite: permission of the instructor.

MUSC 385. Bassoon. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Bassoon lessons. Prerequisite: permission of the instructor.

MUSC 387. Saxophone. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Saxophone lessons. Prerequisite: permission of the instructor.

MUSC 388. Balinese Gamelan. .25-.5 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Lessons in advanced techniques for Balinese music. Students may study gender wayang, reyong, kendang, and/or suling. Prerequisite: permission of the instructor.

MUSC 389. Trumpet. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Cornet/trumpet lessons. Prerequisite: permission of the instructor.

MUSC 391. French Horn. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
French horn lessons. Prerequisite: permission of the instructor.

MUSC 392. Trombone. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Trombone lessons. Prerequisite: permission of the instructor.

MUSC 393. Tuba. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Tuba lessons. Prerequisite: permission of the instructor.

MUSC 394. Euphonium. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Baritone horn lessons. Prerequisite: permission of the instructor.

MUSC 396. Guitar. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Guitar lessons. Prerequisite: permission of the instructor.

MUSC 397. Percussion. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Percussion lessons. Prerequisite: permission of the instructor.

MUSC 398. Harp. .25-1 Credits.

Offered Both Fall and Spring; Lecture hours:Varies; Repeatable
Harp lessons. Prerequisite: permission of the instructor.

MUSC 399. Improvisation III. .25 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Studio lessons in improvisation.

MUSC 414. Composition Studio. .25 Credits.

Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable
Analytical and creative study of contemporary musical composition. Prerequisite: permission of the instructor.

Neuroscience (NEUR)

NEUR 100. Introduction to Neuroscience. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

A survey of the study of the nervous system and its structure and function, ranging from molecular analyses of neurons to electrical and other correlates of human cognition.

NEUR 142. Introduction to Neuroethology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:1

This introductory biology course explores the science of neuroethology, a discipline that combines the study of animal behavior and study of neuroscience. This class is appropriate for non-science majors who are interested in learning about animal behavior. Crosslisted as BIOL 142 and ANBE 142.

NEUR 217. Psychopharmacology. 1 Credit.

Lecture hours:Varies

Psychopharmacology, the study of drugs that affect behavior, begins with an appreciation of neurochemical, pharmacological and behavioral principles in order to understand actions and effects of therapeutic compounds and addictive substances, the two major categories of psychopharmacological drugs. Crosslisted as PSYC 217.

NEUR 244. Introduction to Behavioral Neuroscience. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Introductory neuroscience coursework offering a foundation in cellular and molecular neuroscience and neurophysiology. Prerequisites: BIOL 205.

NEUR 245. Neuroscience Techniques. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Research methods and techniques course emphasizing empirical methodology underlying neuroscience. Prerequisites: NEUR 244.

NEUR 248. Developmental Psychobiology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Addresses development in humans from conception through adolescence with some comparative analysis with non-humans. Emphasis on both normal and atypical cognitive, neuropsychological and neurobiological development. Prerequisite: PSYC 100 or NEUR 100. Crosslisted as PSYC 248.

NEUR 250. Biopsychology. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

Biological bases of behavior and their relationship to motivation, learning, and perception. Prerequisite: one of the following: NEUR 100, PSYC 100, BIOL 206, ANBE 266 or permission of the instructor. Crosslisted as PSYC 250.

NEUR 253. Neural Cell Biology. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

A core course for neuroscience focused on structure/function relationships in neural cells. Basic protein biochemistry, ion channel activity, protein receptors, cell signaling, electrical properties and response patterns will be emphasized. Recommended for sophomores. Prerequisites: BIOL 205 and PSYC 250 and permission of the instructor.

NEUR 305. Developmental Psychopathology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Addresses the behavioral phenotypes of a variety of neurodevelopmental and neuropsychiatric disorders in the context of theories and processes of normal development. Genetic and neurobiological underpinnings of disorders are discussed. Prerequisites: NEUR 248 or PSYC 248 and permission of the instructor. Crosslisted as PSYC 305 and PSYC 605.

NEUR 313. Researching Behavioral Neuroscience. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Following a general orientation to behavioral genetics and pharmacology using mice, we will conduct group experiments. Each student will then develop and conduct an independent research project. Prerequisites: PSYC 215 or MATH 216 and PSYC 250 or an applied research methods course and permission of instructor. Crosslisted as PSYC 313 and PSYC 613 and NEUR 613.

NEUR 319. Topics in Neuroscience. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Occasional seminars on selected topics of current interest in neuroscience. Prerequisites: BIOL 205, BIOL 207 and NEUR 100, junior or senior status and permission of the instructor.

NEUR 330. Neuroscience of Addiction. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A study of the changes in neurocircuitry and neurobiology that occur in the brain due to drugs of abuse and addiction. Prerequisites: NEUR 100 and BIOL 205 or permission of the instructor.

NEUR 332. Developmental Neurobiology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Recitation:1**

Primary literature-based senior seminar on topics in developmental neurobiology. Prerequisites: BIOL 205, BIOL 207, and either BIOL 206 or NEUR 100, junior or senior status, and permission of the instructor. Crosslisted as BIOL 332 and BIOL 632.

NEUR 340. Behavioral Neuroscience. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced study of the relationship between the brain and behavior. Seminar discussion of complex problems in the field of behavior neuroscience including genetics, mood disorders, drug abuse, cognition and consciousness. Prerequisite: PSYC 250 or permission of the instructor. Crosslisted as PSYC 340 and PSYC 640 and NEUR 640.

NEUR 344. Developmental Brain Research. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

Students learn a variety of assessment techniques in developmental neuropsychology and neuroscience (including EEG) and conduct quantitative research culminating in written and oral reports. Crosslisted as PSYC 344 and PSYC 644 and NEUR 644. Prerequisite: permission of the instructor.

NEUR 348. Behavioral Pharmacology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Focus on drugs that affect the nervous system, drugs of abuse, therapeutic drugs, drug action, behavioral changes as a result of long-term drug use, animal models and human studies. Prerequisites: PSYC 250 or BIOL 205 and permission of the instructor. Crosslisted as PSYC 348 and PSYC 648.

NEUR 360. Honors Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:15; Repeatable**

Prerequisite: permission of the department and permission of the instructor.

NEUR 399. Undergraduate Research. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Research on any aspect of neuroscience. Research topics may be posed by students or faculty. Prerequisite: permission of the instructor.

NEUR 3NT. NEUR Non-traditional Study. 1-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study course in neuroscience. Prerequisite: permission of the instructor.

NEUR 400. Senior Seminar in Neuroscience. .25 Credits.**Offered Spring Semester Only; Lecture hours:1**

NEUR majors may elect to attend a lecture series in the spring semester to satisfy the Culminating Experience requirement. Students will prepare written reactions to each seminar, graded as pass/fail. Prerequisites: senior status and NEUR majors and permission of the instructor.

Off Campus Study (OCST)

OCST 100. Off-Campus Study. 1-4 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Off-campus study. Prerequisite: permission of the instructor.

Philosophy (PHIL)

PHIL 100. Introduction to Philosophy. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

An introduction to the main topics, fields and figures of philosophy. Multiple sections of this course are offered every semester, under a variety of titles.

PHIL 103. Logic. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An introduction to informal and formal ways of reasoning. The structures and general forms of argument as well as the standards and criteria needed to evaluate arguments, and the historical development of logical reasoning, will be studied.

PHIL 201. Symbolic Logic. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Careful work on the concepts/problems of modern logic will direct the course. It will investigate topics in propositional and quantificational logic and general logical theory (completeness, consistency, independence, rigor). It will conclude with a study of the system of Wittgenstein's Tractatus. Prerequisites: PHIL 103 and permission of the instructor.

PHIL 204. Scientific and Everyday Reasoning. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

The concepts and problems in inductive reasoning will be studied, and attention given to how our ordinary language influences traditional logical principles and criteria. A careful examination of fallacies and mistakes in reasoning will introduce the more formal aspects of the course. Prerequisite: PHIL 103 or permission of the instructor.

PHIL 205. Greek Philosophy. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Studies of the ancient Greek notions of kosmos, society, and soul, through readings of the Presocratics, Plato, and Aristotle. Some attention will also be paid to the mythic/poetic background from which philosophy arises for the ancient Greeks. Prerequisite: PHIL 100 or PHIL 103 or PHIL 201 or permission of instructor.

PHIL 206. Medieval Philosophy. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

A comparative examination of Jewish, Christian, and Islamic traditions in medieval philosophy. Questions will focus on God, free will, the problem of evil, the meaning of history, the fate of the soul, and the good life. Readings in Augustine, Avicenna, Maimonides and Aquinas. Prerequisite: PHIL 100 or permission of instructor.

PHIL 207. History of Modern Philosophy. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Philosophical thought in the classical modern age, including Continental Rationalism, British Empiricism, and Kant. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 212. Philosophy of Art. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Analysis of the creative process, the work of art, natural beauty, aesthetic experience, and principles of criticism. Prerequisite: PHIL 100 or permission of the instructor. Crosslisted as ARTH 222.

PHIL 213. Ethics. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

An attempt to formulate adequate criteria for the basic moral conceptions of good and bad, right and wrong, and duty, by a study of leading ethical view points from Plato to the present. Prerequisite: PHIL 100 or PHIL 103 or PHIL 201 or permission of the instructor.

PHIL 214. Social and Political Philosophy. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Problems such as individual and state, freedom and organization, power and rectitude, philosophy of law, equity and differences, the sociomoral basis of rights. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 215. Philosophy of Music. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An exploration of the concepts and problems involved in a (self-reflective) investigation of music. Learning to talk and ask questions about the nature of sound and silence is a goal of this course. (Philosophers such as Rousseau, Schopenhauer, Thoreau, Camus, and Wittgenstein provide direction for discussions/lectures.) Crosslisted as MUSC 215.

PHIL 218. Ecology, Nature, and the Future. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An examination of the biological and philosophical underpinnings of ecology and environmental science. The course will consider such questions as: What is life? How are organisms and the environment connected? Is nature "in balance?" What is our relation to the natural world?.

PHIL 219. The Problem of False Consciousness. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of leading theories of individual and mass deception, as well as theories of self-deception, as these theories bear on the task of informed decision making. Philosophers to be studied may include: Freud, Marx, Sartre, Jung, Foucault, Lukacs, Habermas. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 220. Philosophy of Science. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to foundational metaphysical, epistemological, methodological, and ethical questions concerning science and scientific practice. Particular attention will be paid to theory confirmation, observation and experiment, explanation, scientific progress and revolution. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 222. Analytic Philosophy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to the analytic style of philosophy by way of selected topics illustrating its subject matter, methods, and historical development. Readings may include Frege, Russell, Wittgenstein, Moore, Austin, Carnap, Quine, and others. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 223. Philosophy of Religion. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Problems for rational inquiry arising from the claims and practices of religious faith; the nature of religious experience and language, arguments for God's existence, evil. Prerequisite: permission of the instructor. Crosslisted as RELI 216.

PHIL 224. Theory of Knowledge. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Addresses topics related to the nature and acquisition of knowledge, such as belief, justification, evidence, perception, testimony, and skepticism. Readings may include both classic and contemporary authors, such as Plato, Descartes, Russell, Austin, Davidson, Goldman, McDowell, and Sosa. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 225. Metaphysics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An inquiry into the nature of being/reality. Topics may include the ontological status of universals, mind, personal identity, freedom, time and God. Readings in such thinkers as Plato, Aristotle, Ockham, Descartes, Leibniz, Berkeley, Kant, Bergson and Heidegger. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 226. Philosophy of Mind. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A study of topics in the philosophy of the mind, such as the mind-body problem, thought, consciousness, perceptual experience, and artificial intelligence. Readings may include both classic and contemporary authors, such as Descartes, Hume, Ryle, Davidson, Fodor, Dennett, and Chalmers. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 227. Philosophy of Language. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An examination of philosophical problems concerning the nature of language, meaning, and communication. Readings may include both classic and contemporary authors, such as Locke, Mill, Frege, Russell, Wittgenstein, Austin, Quine, Davidson, Dummett, Kripke, and Kaplan. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 228. Contemporary Ethical Theory. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Contemporary approaches to the problems of ethics: universality, moral vs. non-moral judgments, facts and values, etc. Readings in such thinkers as Hare, Rawls, Gilligan, Williams, MacIntyre, Nussbaum, and Rorty. Prerequisite: PHIL 100 or PHIL 103 or PHIL 201 or permission of the instructor.

PHIL 229. Philosophy and Race. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Critical examination of the nature and meaning of "race" in terms of aesthetic theories, biology, social constructionism, justice, and redress. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 230. Feminist Philosophy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An examination of feminist philosophy primarily as it occurs in the U.S. from the late 18th century to the present. Prerequisite: PHIL 100, or WMST 150, or permission of the instructor. Crosslisted as WMST 230.

PHIL 233. The Philosophy of Peace and Nonviolence. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A course in Peace Studies that will investigate the arguments and spirit of Pacifism and nonviolent philosophies. Crosslisted as UNIV 233.

PHIL 246. Philosophy of Law. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of some central philosophical issues relating to law, including law's relation to economics, literature, democracy, rules, integrity, and interpretation. Prerequisite: PHIL 100 or PHIL 103 or PHIL 201 or permission of the instructor.

PHIL 256. From Hegel to Nietzsche. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

The rise, fall, and reaction to German Idealism in 19th-century continental thought. Philosophers to be studied may include: Hegel, Schopenhauer, Marx, Kierkegaard, and Nietzsche. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 258. Existentialism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of selected texts of Kierkegaard, Dostoevsky, Camus, or Sartre. Special attention given to the relation of existentialism to problems of post-Cartesian thought. Prerequisite: PHIL 100 or PHIL 103 or PHIL 201 or permission of the instructor.

PHIL 260. Phenomenology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of selected texts of Husserl, Heidegger, or Merleau-Ponty. Some consideration of the interpretation of the history of philosophy offered by phenomenology. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 262. Contemporary Continental Philosophy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of some major currents and figures in 20th-century philosophy. Philosophers to be studied may include: Husserl, Heidegger, Sartre, Merleau-Ponty, Benjamin, Barthes, Foucault, Derrida, Levinas. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 265. Contemporary Philosophy of Art. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An investigation of and focused study of contemporary philosophical issues in the arts and aesthetics more generally. Prerequisite: PHIL 100, or ARTH 207 or ARTH 208. Crosslisted as ARTH 265.

PHIL 266. Chinese Philosophy. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Major philosophical schools of the classical age, Buddhist philosophy, Neo-confucianism. Crosslisted as EAST 266 and HUMN 266. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 267. Islamic Philosophy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of major figures and movements in the Islamic philosophical tradition. Topics discussed include the good life, death and the afterlife, God, prophecy, the relation between reason and revelation, etc. Figures studied include al-Farabi, Avicenna, al-Ghazali, Averroes and others. Prerequisite: PHIL 100 or permission of instructor.

PHIL 268. Topics in Metaphysics. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Focused study of a specific topic in metaphysics, such as space and/or time, substance, possible worlds, the mind-body problem, truth, and abstract objects (propositions, universals, values, numbers, etc.). Prerequisite: PHIL 100 or permission of the instructor.

PHIL 269. Indian Philosophy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of the Indian philosophical tradition, from its beginnings in the Vedas and Upanishads through the development of the major philosophical schools. Multiple perspectives on topics such as the nature of reality, knowledge and freedom will be examined. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 270. Jewish Philosophy. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

A survey of major figures and topics in the Jewish philosophical tradition. Figures studied include Philo of Alexandria, Maimonides, Spinoza, Hannah Arendt, Emmanuel Levinas and others. Topics considered include God, creation, freedom, the problem of evil, ethical obligation, religious law, prophecy, etc. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 271. Eating Animals: Philosophical Perspectives. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines traditional philosophical justifications for using nonhuman animals to satisfy human needs and desires, particularly using animals as food. The course also examines leading philosophical challenges to the human use of animals as instrumentalities. This course counts toward the Food Systems minor. Prerequisite: PHIL 100.

PHIL 272. Philosophy of Biology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

We will survey the central epistemological and metaphysical problems addressed in the 20th-century philosophy of biology. Prerequisite: PHIL 100 or permission of the instructor.

PHIL 280. Buddhist Philosophy in Comparative Perspective. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to Buddhist thought in comparative perspective, through a close reading and discussion of primary texts of the classical, medieval, modern and contemporary traditions. Prerequisite: PHIL 100. Crosslisted as HUMN 280.

PHIL 309. Seminar in Historical Studies: Individual Philosophers. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Intensive study of the works of a single philosopher chosen from the ancient, medieval, modern, or contemporary period of the history of philosophy. In recent years: Plato, Aristotle, Descartes, Kant, Nietzsche, Heidegger, Wittgenstein. Prerequisites: two courses in philosophy and permission of the instructor.

PHIL 310. Seminar in Historical Studies: Historical Periods. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Study of a selected period in the history of ancient, medieval, modern, or contemporary philosophy. In recent years "Philosophy of Ordinary Language," "Habermas and (Post) Modernity," "Plato, Aristotle, Sophists." Prerequisites: two courses in philosophy and permission of the instructor.

PHIL 311. Seminar in Philosophical Problems. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

A selected problem of philosophy as this occurs historically in the ancient, medieval, or modern periods, or in contemporary thought. In recent years: "Philosophy of Mind," "Environmental Aesthetics," "Perception," "Philosophical Heretics," "Friendship," "Doubt, Disagreement and Dogmatism." Prerequisites: two courses in philosophy and permission of the instructor.

PHIL 319. Individual Studies in Philosophy. 1 Credit.**Offered Fall Semester Only; Lecture hours:Varies; Repeatable**

Open to advanced students who wish to pursue individual programs of study under the supervision of a professor, or of a committee of professors if the subject falls within two or more departments. May be conducted as a seminar for three or more students pursuing similar programs.

PHIL 320. Individual Studies in Philosophy. 1 Credit.**Offered Spring Semester Only; Lecture hours:Varies; Repeatable**

Open to advanced students who wish to pursue individual programs of study under the supervision of a professor, or of a committee of professors if the subject falls within two or more departments. May be conducted as a seminar for three or more students pursuing similar programs.

PHIL 321. Honors Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies**

Substantial independent work on some problem or topic approved by the department of philosophy as honors work. Prerequisite: permission of the instructor.

PHIL 322. Honors Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies**

Substantial independent work on some problem or topic approved by the department of philosophy as honors work. Prerequisite: permission of the instructor.

PHIL 323. Senior Thesis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Independent research on a philosophical issue, in consultation with staff members. The thesis should show integrative and creative abilities. Prerequisite: major in philosophy or permission of the instructor.

Physics (PHYS)

PHYS 140. Physics for Future Leaders. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:3**

The science behind key issues facing us as engaged citizens and future leaders. Topics include energy, climate change, space travel, and technology, as well as the processes that lead to scientific progress. Designed for non-science majors. No prerequisites. Not open to students who have completed a 200-level physics course.

PHYS 141. Secrets of the Universe. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

The great ideas of 20th-century physics (symmetry principles, relativity, and quantum mechanics) and their application to cosmology and the evolution of the universe. Also, historical development and philosophical implications of these ideas. Designed for non-science majors. No prerequisite. Not open to students who have successfully completed a 200-level physics course.

PHYS 142. Light and Vision. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

Particle and wave theories of light, cameras and optical instruments, the visual process, lasers, and optical communications. Designed for non-science majors. No prerequisite. Not open to students who have successfully completed a 200-level physics course.

PHYS 144. How Things Work. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

This course introduces the ideas of physics in the context of everyday phenomena, including common inventions and topics in medicine, sports, and music. Designed for non-science majors. No prerequisite. Not open to students who have successfully completed a 200-level physics course.

PHYS 147. Energy and Sustainability. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

Examination of energy, its transformations, its effects on resource depletion, and environmental degradation. Models of sustainability for transportation, architecture, waste management, and personal lifestyle choices. Designed for non-science majors. No prerequisite. Not open to students who have successfully completed a 200-level physics course.

PHYS 211. Classical and Modern Physics I. 1 Credit.**Offered Fall Semester Only; Lecture hours:2,Other:5**

The first course in a two-course sequence that surveys major areas of physics. Topics include Newtonian mechanics, relativity, thermodynamics and statistical mechanics, and gravity. Corequisite: MATH 201.

PHYS 212. Classical and Modern Physics II. 1 Credit.**Offered Spring Semester Only; Lecture hours:2,Other:5**

The second course in a two-course sequence that surveys major areas of physics. Topics include electricity and magnetism, light and waves, quantum mechanics, and particle physics. Prerequisite: PHYS 211 or permission of the instructor. Corequisite: MATH 202 or another mathematics course numbered above MATH 202.

PHYS 212E. Classical and Modern Physics II. 1 Credit.**Offered Spring Semester Only; Lecture hours:4,Lab:3**

Same topics as PHYS 212 with more emphasis on mathematical modeling, computer applications and extensions of the theory. This course is intended for students with a strong background in mathematics and physics. Prerequisite: PHYS 211 or permission of the instructor. Corequisite: MATH 202 or another mathematics course above 202.

PHYS 221. Classical Mechanics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Lab:3**

Newtonian mechanics including conservation laws, rotational dynamics, forced damped harmonic motion, and coupled oscillations. Prerequisites: PHYS 211 and MATH 202.

PHYS 222. Wave Mechanics and Quantum Physics. 1 Credit.**Offered Spring Semester Only; Lecture hours:4**

Physics of coupled oscillations and waves, including classical wave equation. Wave-particle duality; origin and elementary applications of quantum mechanics; the Schroedinger wave equation; atomic and nuclear physics. Prerequisites: PHYS 212 (or PHYS 212E) and MATH 211.

PHYS 235. Applied Electronics. 1 Credit.**Offered Spring Semester Only; Lecture hours:2,Lab:4**

Circuit fundamentals, linear and digital integrated circuits, transducers, analog to digital conversion, filtering, Fourier methods, microcomputers, and computer interfacing. Designed for science and computer science majors. Prerequisite: PHYS 212 (or PHYS 212E). Open to electrical engineering students by permission only.

PHYS 301. Astrophysics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

An introduction to general astrophysics covering mechanics of orbiting bodies, radiation laws, stellar spectra, stellar atmospheres, the internal constitution of stars, stellar energy, galaxies, and cosmology. Prerequisites: PHYS 222 and MATH 212. Crosslisted as ASTR 301.

PHYS 303. Modern Optics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Geometrical optics, interference and diffraction, quantum optics, optical properties of matter, lasers and holography. Prerequisite: PHYS 222 or permission of the instructor.

PHYS 309. Condensed Matter Physics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Crystal structure, phonons, free electron theory of metals, band theory, semi-conductors, magnetism, superconductivity and superfluidity, liquid crystals and other special topics. Prerequisite: PHYS 222 or permission of the instructor.

PHYS 310. Experimental Physics. 1 Credit.**Offered Spring Semester Only; Lecture hours:1,Other:5**

Methods and techniques used in experimental and computational physics, including data analysis and numerical methods, use of standard research equipment, and documentation of laboratory work emphasizing written and oral communication of scientific results. Prerequisite: PHYS 222 or permission of the instructor.

PHYS 317. Thermodynamics and Statistical Mechanics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The laws of thermodynamics, thermodynamic functions, kinetic theory of gases, statistical mechanics. Prerequisites: PHYS 212 (or PHYS 212E) and either PHYS 221 or PHYS 222, or permission of the instructor.

PHYS 331. Advanced Classical Mechanics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Kinematics and dynamics of particles, systems, and rigid bodies. Hamilton's principles, Lagrange's equations, theory of small vibrations, orbital mechanics, accelerated frames, and nonlinear dynamics. Prerequisites: PHYS 221 and MATH 212, or permission of the instructor.

PHYS 332. Quantum Mechanics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Basic postulates and applications, perturbation theory, angular momentum, scattering theory, relativistic effects. Prerequisites: PHYS 221, PHYS 222 and MATH 211, or permission of the instructor.

PHYS 333. Electromagnetic Theory I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Classical electromagnetic theory, including scalar and vector potentials, electrostatics, magnetostatics, time-dependent fields, and culminating with Maxwell's equations. Prerequisites: PHYS 212 (or PHYS 212E) and MATH 211.

PHYS 334. Electromagnetic Theory II. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Continuation of PHYS 333. Electromagnetic waves, radiation theory, theory of relativity, and elements of plasma physics. Prerequisite: PHYS 333.

PHYS 336. Mathematical Methods in Physics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Topics will include two or three of the following: complex variables, special functions, tensor analysis, group theory, partial differential equations. Prerequisites: PHYS 221 and PHYS 222, MATH 212 and MATH 245, or permission of the instructor. Crosslisted as PHYS 636.

PHYS 337. Independent Study in Physics. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Independent study in areas of current interest in the physics and astronomy community. Prerequisites: permission of the department and permission of the instructor. Crosslisted as PHYS 637.

PHYS 338. Contemporary Study in Physics. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

Seminar in topics of current interest in the physics and astronomy community. Co- and prerequisites are dependent on topic and instructor. Prerequisite: permission of the instructor. Crosslisted as PHYS 638.

PHYS 339. Advanced Quantum Mechanics and Particle Physics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Advanced topics in quantum mechanics including applications to elementary particle physics. Prerequisite: PHYS 332.

PHYS 340. Biophysics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Physics of cellular structures and processes, with emphasis on mechanics and thermodynamics. Juniors and seniors only. Prerequisite: PHYS 212 or PHYS 212E and either PHYS 221 or PHYS 222 or permission of the instructor.

PHYS 350. Undergraduate Research. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Undergraduate research. Prerequisite: permission of the instructor.

PHYS 3NT. Physics Non-traditional Study. 1-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:4**

Non-traditional study in Physics.

Political Science (POLS)

POLS 140. American Politics. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

A critical examination of the principles, structures, and processes that shape American politics. An emphasis on political behavior and institutions with applications to contemporary political issues.

POLS 170. International Politics. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to major dynamics of international politics; the international system, decision making, perceptions, cooperation, conflict, and policy instruments, such as diplomacy and war. Analysis is linked to specific international events and issues.

POLS 1NT. Political Science Non-traditional Study. .5-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Political Science. Prerequisite: permission of the instructor.

POLS 205. Comparative Politics. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Politics and policy outside the United States; concepts for the comparison of political systems. Democracy, Third World politics, revolution, political stability and change, international effects on political processes.

POLS 210. Political Theory. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Examination of the moral dimensions of politics. Authors include Plato, Aristotle, Milton, Hobbes, Locke, Rousseau, and Marx. Major concepts include justice, freedom, rights, and authority.

POLS 211. Third World Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Politics in Latin America, Africa and Asia. The Third World in the modern world system. Politics and economic development. Instability, militarism, and democracy.

POLS 219. Latin American Politics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The dynamics of politics in Latin American social, economic, and cultural context, with use of general comparative concepts of politics.

POLS 220. British Political System. 1 Credit.**Offered Occasionally; Lecture hours:3**

Structure and functioning of Britain's political institutions, and the social and constitutional contexts in which they operate. For Bucknell in London.

POLS 221. Political Economy of the European Integration. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to core issues and theories related to the economic and political processes of European integration. Offered through Bucknell in London.

POLS 222. Russian Politics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The politics of transition in Russia, from authoritarianism toward democracy with a market economy.

POLS 223. European Politics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Comparative analysis of institutions and policy-making in European political systems, including the European Union.

POLS 224. Government and Politics of the Middle East. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course provides students with an understanding of the domestic political systems of the region. More specifically, the course tries to explain the lack of democracies in the region. We examine such topics as state formation, persistence of authoritarianism, economic development, culture, Islamic challenge, and prospects for democratization.

POLS 225. Chinese Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines China's rich political history, its dynamic economic and social changes, its lasting political culture, its enduring struggle for modernization, and its evolving relations with the rest of the world. Crosslisted as EAST 269 and IREL 225.

POLS 226. East Asian Politics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course surveys political history, political institutions, economy, and society of major countries in East Asia, with focus on the continuity and changes in politics and policies of China, Japan, and Korea. Crosslisted as EAST 226 and IREL 226.

POLS 231. American Public Policy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Course introduces students to theories of the policy-making process in America, and also provides an overview of the major policy areas in American politics.

POLS 234. State and Local Internship Program. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Participants explore politics and policy at the state and local level through integrated class work, independent research, and real world work experiences. Prerequisite: permission of the instructor.

POLS 235. Media and Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the role of the news media in American politics. Ideas to be discussed include: the relationship between elected officials and the media, campaign advertising and media coverage of elections, and the role of the media in shaping public opinion and public policy.

POLS 236. Campaigns and Elections. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

This course explains and evaluates the impact of elections on American politics. It is focused on three central objectives: improving students' understanding of the American electoral process; familiarizing students with the current electoral cycle; and improving students' ability to analyze the role of elections in American politics.

POLS 238. Women and Politics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

An analysis of women and politics generally with specific focus on feminism and its relationship to political discourse and political action. Crosslisted as WMST 238.

POLS 239. Latino Politics in the United States. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course focuses on the electoral and non-electoral political participation and behavior of Latinos, as well as to some key policy issues of relevance to Latinos at all levels.

POLS 240. The American Congress. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination and evaluation of representative government in America. Detailed investigation of the U.S. House of Representatives and Senate.

Prerequisite: POLS 140 or permission of the instructor.

POLS 241. Constitutional Law: Civil Rights. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to civil rights under the 13th, 14th, and 15th Amendments, focusing on discrimination based on race, sex, sexual orientation, class, and alien status.

POLS 242. Constitutional Law: Civil Liberties. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of civil liberties policy in the U.S. through a study of U.S. Supreme Court decisions.

POLS 243. The American Presidency. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Origins and development of the presidency and an analysis of the sources and nature of executive power in American national government.

POLS 244. American Judicial Politics. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Survey of the process and substance of policymaking in the Federal court system, with an emphasis on Supreme Court decision making and on the policy impact of court decisions.

POLS 246. Race Ethnicity and American Politics. 1 Credit.**Lecture hours:3**

Looks at the connections between race, ethnicity and power through various forms of political behavior including electoral, policymaking, and citizen participation. Explores mutually constitutive relationship between politics and race.

POLS 247. Religion and Constitutional Law. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the developing relationship between religion and American constitutional law, focusing on historic documents and Supreme Court decisions relating to the First Amendment. Crosslisted as RELI 280.

POLS 248. Political Behavior. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of the ways in which citizens form, update, and act on political preferences. Topics include: political psychology, voting, civic participation, and social movements.

POLS 250. History of Western Political Thought I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Western political thought in its historical context from Greek and Hebrew antiquity to the end of the Middle Ages.

POLS 254. Sex and Social Order. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Analysis of connections between sex and social structure to determine how our understanding of sexuality is implicated in our political system, economy, and cultural ideology. Crosslisted as WMST 254.

POLS 256. Topics in Social and Political Ethics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of the types of arguments and analysis used in social and political ethics, in part through an examination of social issues.

POLS 257. Ethics and Public Policy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An examination of competing ethical arguments regarding contentious issues in public policy, such as same-sex marriage, abortion, racial reparations, capital punishment, and war.

POLS 258. States of Nature. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Study of the conceptual connections between understandings of nature, society, and the good in historical and contemporary contexts.

POLS 260. Topics in Legal Thought. 1 Credit.

Offered Occasionally; Lecture hours:3

Subjects will vary, e.g., morality and the legal process; religion and law; contemporary jurisprudence.

POLS 261. Twentieth-century American Legal Thought. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Analysis of dominant and critical trends through the century including legal realism, liberalism, law and morality, feminist legal theory, law and economics, and critical race theory.

POLS 263. Race and Ethnicity in American Legal Thought. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

An examination of legal theories on race and ethnicity, including race-based citizenship, affirmative action, school desegregation, busing, voting rights, racial gerrymandering, tribal sovereignty, and immigration.

POLS 266. Nationalism East and West. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Examination of the theory and practice of nationalist movements in Europe, the United States, India, and the Middle East.

POLS 268. Contemporary Democratic Theory. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Analysis of the moral foundations of democracy and the institutional means for achieving it, including voting systems, political parties, alternative representation and workplace democracy.

POLS 271. American Foreign Policy. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

Analysis of American foreign policy institutions and decision-making processes; examination of the history and of current issues and problems of U.S. foreign policy.

POLS 272. U.S. National Security Policy. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

The evolution of U.S. national security policy since World War II. Topics include defense in the nuclear area, strategic doctrine, arms control, WMDs budgeting, policy making.

POLS 273. The Atlantic Alliance. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

This course concerns North Atlantic political and security relations and uses of NATO alliance as its vehicle. The course examines binding and dividing intra-alliance issues during and after the Cold War.

POLS 275. Global Governance. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

This course explores the rationales, processes, and institutions of multilateral governance in a globalized world. We examine the U.N. nongovernmental organizations, conflict resolution, economic development, environment, human rights, and international law. Not open to first-year students. Crosslisted as IREL 275.

POLS 276. Comparative Foreign Policy. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

This course has two over-arching objectives. Introduce students to the various ways foreign policy can be explained. The second objective is to acquaint students with the substantive foreign policies of specific international actors, notably the EU, Japan, India, Israel, United Kingdom, Brazil, China, and others. Crosslisted as IREL 276.

POLS 277. International Political Economy. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

This course examines the politics of international economic relations including trade, finance, and development. Crosslisted as IREL 277.

POLS 278. International Law. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

The nature, historical development, and sources of international law; substantive and procedural international law and its role in international relations. Crosslisted as IREL 255.

POLS 279. Government and the Economy. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

This course studies the government and economy with special topics including history, analysis and critique of capitalism and democracy.

POLS 280. War. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

This course focuses on the causes of wars. Theories from many disciplines are examined in relation to interstate wars. Applying these theories to different wars, through the use of case studies, will comprise a large part of the course.

POLS 281. Peace Studies: Conflict Resolution. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Topics examined include pacifism, conflict resolution techniques and approaches, and finally actual case studies to illustrate peacemaking in two contexts: interstate wars and internal or civil strife. Crosslisted as UNIV 219 and IREL 231.

POLS 282. European Security. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

European security issues, including NATO enlargement, the military campaigns in the Balkans, the Iraq War, terrorism, and ballistic missile defense. For Bucknell in London. Crosslisted as IREL 282.

POLS 283. East Asian International Relations. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course offers an overview of international relations in East Asia, with focus on political, economic, and social interactions among major states in the region. Crosslisted as EAST 248 and IREL 283.

POLS 284. International Relations of Europe. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course will examine the foreign policies of European countries, individually and collectively through the European Union, toward each other, regional and global intergovernmental organizations and other regions/countries. Crosslisted as IREL 218.

POLS 285. The International Relations of Latin America in the 21st Century. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course will examine the emergence of the New Left, the production of regional spaces, the impact of the BRICS and South-South cooperation in Latin America. Crosslisted as IREL 285.

POLS 286. Nonstate Actors in International Relations. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course explores the role nonstate actors (such as nongovernmental organizations, multinational corporations, violent nonstate actors, and individuals) can and do play in various substantive areas of international relations. Crosslisted as IREL 286.

POLS 287. U.S. Foreign Policy and the Middle East. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course examines U.S. foreign policy toward the Middle East. The focus is on the economic, security, and political interests of the United States in the region. Major topics include: Cold War, Arab-Israeli conflict, energy security, Islamic threat, war on terror, and promotion of democracy.

POLS 288. French Foreign Policy Since 1945. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of French foreign policy, institutions, and decision-making processes in the Fourth and Fifth Republics. Current issues and problems of French foreign policy. Offered through Bucknell en France.

POLS 289. The Arab-Israeli Conflict. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course examines the roots and transformation of the conflict, role of outside actors, and how it can be resolved.

POLS 290. Topics in Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Attention will focus on specific thinkers, problems, concepts, or issues of recurring and continuing significance in political analysis. Topics will vary.

POLS 291. Environmental Policy and Politics. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An introduction to understanding the role of political institutions, stakeholders, and policy processes (in the U.S. and internationally) in addressing environmental problems. Crosslisted as ENST 245.

POLS 292. Political Economy of Growth. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

We will study how institutions affect the immediate determinants of economic growth. Topics include population growth, microfinance, democracy, geography, international trade, culture, and foreign aid.

POLS 294. Dance, Performance, and the Political Body. 1 Credit.**Offered Either Fall or Spring; Lecture hours:2,Other:1**

This course explores how dance as an embodied practice is an effective medium for analyzing ideologies and practices of power, privilege, and inequality in the arts and in the greater social and political sphere, particularly with reference to race, ethnicity, gender, and class.

POLS 295. Internship. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Reserved for non-traditional study.

POLS 296. Quantitative Methods. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Introduction to the tools used in basic quantitative political methodology. Students will learn to understand and apply a variety of statistical methods and research design that are essential for political science and public policy research.

POLS 297. Qualitative Methods. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Introduction to various qualitative methods of inquiry and research design in Political Science, such as focus groups, case studies, interview techniques, interpretive approaches, and critical argumentation.

POLS 2NT. POLS Non-traditional Study. 1-2 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3

Non-traditional study in Political Science. Prerequisite: permission of the instructor.

POLS 350. Seminar in Comparative Politics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

Selected topics. Prerequisite: POLS 205 or permission of the instructor.

POLS 351. Social Policies in Rich Democracies. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Application of comparative analysis to social policies and policymaking in established democracies, on such issues as income supports, health care, education, reproductive rights, etc. Prerequisite: successful completion of POLS 205.

POLS 352. Politics of Economic Development. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

This course critically engages the tools, concepts, and theories that are used to examine the politics of economic development in poorer countries.

Prerequisite: POLS 205 or permission of the instructor.

POLS 356. Nationalism, Identity and Nature. 1 Credit.

Offered Occasionally; Lecture hours:3

This course explores the geographies and politics of nationalism, the ways in which nature is nationalized, the construction of nature in environmental contestations and reactions to nationalism, and the intersection of nationalism with other social constructions. Crosslisted as ENST 356 and IREL 356.

POLS 360. Seminar in Political Theory. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

Selected topics. Prerequisite: POLS 210 or permission of the instructor.

POLS 362. American Constitutional Theory. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

A careful analysis of theories of American constitutional democracy, focusing on the role and legitimacy of judicial review within the democratic political system. Prerequisite: POLS 210 or permission of the instructor.

POLS 364. Justice and Public Policy. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An examination of competing theories of justice and the application of these theories to various issues in public policy, such as taxation, welfare, health care, education, immigration, and foreign aid. Prerequisite: POLS 210 or permission of instructor.

POLS 370. Seminar in American Politics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

Selected topics. Prerequisite: POLS 140 or permission of the instructor.

POLS 371. Minority Politics. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3

This course is designed to provide students with a comprehensive understanding of how minority groups operate within the U.S. political system.

POLS 373. Public Opinion. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3

Theoretical and quantitative approaches to the study of public attitudes in the United States. Prerequisite: POLS 140 or permission of the instructor.

POLS 375. Analyzing Legislatures. 1 Credit.

Offered Alternate Fall or Spring; Lecture hours:3

An in-depth examination of American legislative politics through empirical social-science research methods. Prerequisite: POLS 140.

POLS 380. Seminar in International Politics. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3; Repeatable

Selected topics. Prerequisite: POLS 170 or permission of the instructor.

POLS 381. Arab-Israeli Conflict, Peace Process. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the failures/successes of the peace process among Israel, the Arab States, and the Palestinians. Special focus is on Oslo peace process, outstanding issues, and the involvement of outside actors, particularly the role of the U.S. Prerequisite: POLS 170 or permission of instructor. Crosslisted as IREL 381.

POLS 382. U.S.-China Relations. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Through tracing the evolution of U.S.-China relations from the 18th century to the present, this course discusses major issues and challenges between the two countries. Future trends of the relationship will also be explored. Prerequisite: POLS 170. Preference given to POLS/IREL/EAST seniors. Crosslisted as EAST 382 and IREL 482.

POLS 389. Human Rights. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The seminar will study human rights, primarily from an international perspective, including self-determination, cultural rights, ethnic and racial rights, women's rights, religious rights, and lesbian and gay rights. Preference given to international relations majors. Prerequisite: permission of the instructor. Crosslisted as IREL 415.

POLS 393. International Environmental Aid. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This advanced seminar focuses on an applied and critical examination of international aid for solving environmental problems. It explores topics including: theories of international relations, environmental politics, and development; how international organizations, states, and non-governmental actors relate, and problem-solving case studies. Prerequisite: permission of the instructor. Crosslisted as ENST 393.

POLS 395. Independent Study. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Open to qualified students who wish to pursue individual programs of advanced study in political science. Prerequisites: approval of a proposal submitted to the department normally at least two weeks prior to registration and permission of the instructor.

POLS 396. Independent Study. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Open to qualified students who wish to pursue individual programs of advanced study in political science. Prerequisites: approval of a proposal submitted to the department, normally at least two weeks prior to registration and permission of the instructor.

POLS 397. Honor Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Independent research on some topic approved as honors work by the department and Honors Council. Prerequisite: permission of the instructor.

POLS 3NT. POLS Non-traditional Study. 1-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study in Political Science. Prerequisite: permission of the instructor.

POLS 425. Topics Seminar. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will examine the causes and the international consequences of human displacement. It will consider the economic, political, social, and cultural components of international migration. Crosslisted as IREL 425.

Psychology (PSYC)

PSYC 100. Introduction to Psychology. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Other:2**

A survey of concepts, principles, and theories of an empirical science of behavior.

PSYC 116. Statistic Literacy for 21st Century. 1 Credit.**Offered Summer Session Only; Lecture hours:6**

An investigation of the concepts and the reasoning underlying the interpretation of data and chance to enable students to critically evaluate statistical information, data-related arguments, or random phenomena they may encounter in diverse contexts. Emphasis on how statistical analysis is useful. Basic methods for gathering trustworthy data, elementary graphical and numerical techniques for analyzing. Open to students enrolled in the BCCSP program only.

PSYC 132. An Exploration of Gender. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

This course will consider biological bases and social construction of gender from anthropological, psychological, and literary perspectives. Open to BCCSP students only.

PSYC 133. Black Psychology. 1 Credit.

Offered Occasionally; Lecture hours:4

Black self-concept, the black family and self-awareness, "black English", skin color and physical attractiveness standards, black self-esteem, black views on prejudice and discrimination. Open to BCCSP students only.

PSYC 135. Psychology of Health and Adjustment. 1 Credit.

Offered Summer Session Only; Lecture hours:3

This course examines adjustment of individuals to their personal and social environments. Both physical and psychological adjustment will be examined. Special emphasis will be placed upon developing an understanding of skills in the area of stress, effective coping, interpersonal relationships, sexuality, work, achievement of adult maturity, psychological and physical well-being and psychotherapy. This course is designed to promote personal growth. Open to BCCSP students only.

PSYC 169. Psychology of Attraction and Relations. 1 Credit.

Offered Summer Session Only; Lecture hours:6

Examination of how biology influences: what our mate preferences are and where they come from, the correlates of beauty, relationship initiation and maintenance, love, jealousy and mate expulsion. Open to BCCSP students only.

PSYC 1NT. Psychology Non-traditional Study. 1-2 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies

Non-traditional study in psychology. Prerequisite: permission of the instructor.

PSYC 203. Learning. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

The study of basic mechanisms of associative learning in motivated behavior, especially Pavlovian and operant conditioning in the behaviors of various species. Prerequisite: PSYC 100 or ANBE 266 or NEUR 100 or permission of the instructor.

PSYC 204. Human Cognition. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

A survey of the theories and methods employed in studying human mental abilities. Issues include attention, memory, language, problem solving, and decision making. Prerequisite: NEUR 100 or PSYC 100 or permission of the instructor.

PSYC 207. Developmental Psychology. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

Study of stages, sequences, and processes in normal child development, prenatal through childhood. Emphasis on interaction of nature and nurture in cognitive, social, emotional development. Prerequisite: PSYC 100, EDUC 201 is accepted as an alternate prerequisite for students who are Education Bachelor of Science majors, or permission of the instructor.

PSYC 209. Social Psychology. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3

Theories of social influence and social interaction, their empirical foundations and implications for the individual and society. Prerequisite: PSYC 100 or permission of the instructor.

PSYC 210. Psychopathology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3,Other:1

Covers theories and research on psychological disorders. Emphasis is on empirically based approaches to psychopathology including (but not limited to) developmental, cognitive and neuroscientific approaches. Prerequisite: PSYC 100 or permission of the instructor.

PSYC 211. Health Psychology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

An introduction to theory and research in health psychology. Prerequisite: PSYC 100 or permission of the instructor.

PSYC 212. Emotion. 1 Credit.

Offered Fall Semester Only; Lecture hours:3

An introduction to theory and research in the psychology of emotion. Prerequisite: PSYC 100 or permission of the instructor.

PSYC 213. Abnormal and Clinical Psychology. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Other:1

A critical introduction to psychological disorders, theories of their causes, and approaches to their treatments. Includes an observational practicum in a psychiatric facility. Prerequisite: PSYC 100 or permission of the instructor.

PSYC 215. Psychological Statistics. 1 Credit.

Offered Both Fall and Spring; Lecture hours:3,Other:1

An introduction to basic statistical analyses in psychology. Prerequisite: PSYC 100, NEUR 100, or ANBE 266 or permission of the instructor.

PSYC 216. Research Methods in Psychology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:2,Other:1

An introduction to the methods used and issues faced by psychological researchers. Topics include ethics, study design (true-experimental, correlational, and quasi-experimental), data collection and analysis, and communication of empirical findings. A foundation for other research-based courses in Psychology. Prerequisites: PSYC 100 and PSYC 215 or MATH 216.

PSYC 217. Psychopharmacology. 1 Credit.**Lecture hours:Varies**

Psychopharmacology, the study of drugs that affect behavior, begins with an appreciation for neurochemical, pharmacological and behavioral principles in order to understand actions and effects of therapeutic compounds and addictive substances, the two major categories of psychopharmacological drugs. Crosslisted as NEUR 217.

PSYC 228. Personality Psychology. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Evaluation of theory and research on personality, including consideration of classic theories and their applications in current research. Prerequisite: PSYC 100 or permission of the instructor.

PSYC 229. Directed Study in Psychology. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:3; Repeatable**

An entry into psychological research or other independent study directed by a faculty member. Experiences might include library work, collecting data, entering and analyzing data, and other activities associated with engagement in research and in faculty-directed inquiry. Prerequisite: PSYC 100 and instructor permission.

PSYC 232. Psychology of Women. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Considers experiences of girls and women, gender differences, attitudes toward women, and issues of particular concern to women such as domestic violence, body image, and sexual assault. Crosslisted as WMST 231.

PSYC 233. Black Psychology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Black self-concept, the black family and self-awareness, "black English", skin color and physical attractiveness standards, black self-esteem, black views on prejudice and discrimination.

PSYC 234. Introduction to Sport Psychology. 1 Credit.**Offered Occasionally; Lecture hours:3**

Considers the individual difference factors influencing athletic performance (e.g., cognitive, behavioral, and emotion). Also considers psychological processes operating in groups (e.g., cohesion, leadership, aggression and audience effects).

PSYC 236. Drugs and Behavior. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

How drugs of abuse work in the brain and how they affect behavior. Theories of addiction and addiction treatment, and issues of how drug use impacts individuals, families, and societies will be discussed. Prerequisite: PSYC 100.

PSYC 242. Positive Psychology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course explores the scientific study of factors that enable individuals and communities to thrive. The class is taught at a nearby prison with both Bucknell and incarcerated students. Prerequisites: permission of the instructor. Not open to first-year students.

PSYC 248. Developmental Psychobiology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Addresses development in humans from conception through adolescence with some comparative analysis with non-humans. Emphasis on both normal and atypical cognitive, neuropsychological and neurobiological development. Prerequisite: PSYC 100 or NEUR 100. Crosslisted as NEUR 248.

PSYC 250. Biopsychology. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Biological bases of behavior and their relationship to motivation, learning, and perception. Prerequisite: one of the following: NEUR 100, PSYC 100, BIOL 206, ANBE 266 or permission of the instructor. Crosslisted as NEUR 250.

PSYC 252. Sensation and Perception. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Anatomy and functions of the sensory systems: vision, audition, kinesthesia, vestibular sensation, taste and smell, with emphasis on theory and abnormalities of the human sensory systems. Prerequisites: NEUR 100 or PSYC 100 and permission of the instructor.

PSYC 266. Animal Behavior. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

A survey of important theories, issues, and empirical techniques in the interdisciplinary field of animal behavior, emphasizing both proximate and ultimate explanations for behavior. Crosslisted as ANBE 266 and BIOL 266.

PSYC 270. South Africa: Social Entrepreneurship. 1 Credit.**Lecture hours:15**

The course examines the legacy of apartheid and the role of social entrepreneurship in transforming communities. Students are placed in community organizations in nearby townships. Crosslisted as ECON 270 and MGMT 270 and WMST 275. Prerequisite: permission of the instructor.

PSYC 288. Research Methods in Language. 1 Credit.

Offered Either Fall or Spring; Lecture hours:3

Research methods in language; especially development and acquisition in infants and toddlers. Prerequisites: PSYC 215 or MATH 216 and PSYC 216 or PSYC 100.

PSYC 289. Research Methods in Health Psychology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Introduction to research methods commonly used in health psychology. Prerequisites: PSYC 215 or MATH 216 and prerequisite or corequisite PSYC 211.

PSYC 290. Research Methods in Biopsychology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Laboratory research to accompany PSYC 250 Biopsychology. Prerequisites: PSYC 215 or MATH 216, PSYC 216 or PSYC 296 or ANBE 296, and prerequisite or corequisite PSYC 250.

PSYC 291. Research Methods in Abnormal Psychology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Laboratory and/or field research to accompany PSYC 213 Abnormal and Clinical Psychology. Prerequisites: PSYC 215 or MATH 216, and prerequisite or corequisite PSYC 213.

PSYC 292. Research Methods in Sensation and Perception. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Laboratory and/or field research to accompany PSYC 252 Sensation and Perception. Prerequisites: PSYC 215 or MATH 216 and prerequisite or corequisite PSYC 252.

PSYC 293. Research Methods in Learning. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3; May require dissection or live animal experimentation

Laboratory and/or field research to accompany PSYC 203 Learning. Prerequisites: PSYC 215 or MATH 216, PSYC 216 or PSYC/ANBE 296, and prerequisite or corequisite PSYC 203.

PSYC 294. Research Methods in Human Cognition. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Laboratory to accompany PSYC 204 Human Cognition. Prerequisites: PSYC 215 or MATH 216 and prerequisite or corequisite PSYC 204.

PSYC 295. Research Methods in Emotion. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Laboratory-based research on the psychosocial causes, characteristics, and consequences of human emotion. Prerequisite: PSYC 100 and PSYC 215 or MATH 216 or permission of the instructor.

PSYC 296. Research Methods in Animal Behavior. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Laboratory and/or field research to accompany ANBE 266, BIOL 266, or PSYC 266. Prerequisites: PSYC 215 or MATH 216, PSYC 216 or BIOL 205 and prerequisite or corequisite ANBE 266, BIOL 266, or PSYC 266. Crosslisted as ANBE 296.

PSYC 297. Research Methods in Developmental Psychology. 1 Credit.

Offered Either Fall or Spring; Lecture hours:Varies,Other:3

Students conduct observational research of children's behavior at Sunflower Child Care Center near campus. Prerequisites: PSYC 100 and PSYC 215 or MATH 216 and any PSYC 200-level course.

PSYC 298. Research Methods in Personality. 1 Credit.

Offered Occasionally; Lecture hours:Varies,Other:3

Laboratory, field, or applied research to accompany PSYC 228 Personality Psychology. Prerequisites: PSYC 100 and PSYC 215 or MATH 216.

PSYC 299. Research Methods in Social Psychology. 1 Credit.

Offered Both Fall and Spring; Lecture hours:Varies,Other:3

Laboratory and/or field research to accompany PSYC 209 Social Psychology. Prerequisites: PSYC 100, PSYC 215 or MATH 216.

PSYC 2NT. Psychology Non-traditional Study. .5-2 Credits.

Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies

Non-traditional study in psychology. Prerequisite: permission of the instructor.

PSYC 300. Infancy. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

Advanced seminar on human infancy as viewed from cognitive, developmental, and evolutionary psychology. Includes implications for infant survival and early education. Prerequisites: PSYC 204 or PSYC 207 or PSYC 248 or PSYC 252 or PSYC 266 and permission of the instructor. Crosslisted as PSYC 600.

PSYC 301. History of Psychology. 1 Credit.

Offered Spring Semester Only; Lecture hours:3

A history of scholarly ideas about thought, feelings, and behavior. Prerequisite: PSYC 100 or permission of the instructor. Crosslisted as PSYC 601.

PSYC 302. Cognitive Development. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Advanced seminar on how our cognitive system changes from the prenatal period to adolescence. Focuses on selected topics in the development of attention, memory, language, and concepts. Includes implications for education in formal and informal settings. Prerequisite: PSYC 204 or PSYC 207.

PSYC 303. Critical Psychologies. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Critical psychologies (e.g., critical liberation, radical) are progressive alternatives to mainstream psychology, emphasizing untoward consequences of the mainstream focus on the individual. Prerequisite: PSYC 100 or permission of the instructor. A service-learning practicum is part of the course. Crosslisted as PSYC 603.

PSYC 304. Advanced Developmental Psychology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of selected topics in human development, such as gender issues, or religious and spiritual development, or other topics. Prerequisite: PSYC 207 or permission of the instructor. Crosslisted as PSYC 604.

PSYC 305. Developmental Psychopathology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Addresses the behavioral phenotypes of a variety of neurodevelopmental and neuropsychiatric disorders in the context of theories and processes of normal development. Genetic and neurobiological underpinnings of disorders are discussed. Prerequisites: NEUR 248 or PSYC 248 and permission of the instructor. Crosslisted as NEUR 305 and PSYC 605.

PSYC 306. Trauma Psychology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of specific topics in the fields of psychopathology and/or clinical psychology. Prerequisite: PSYC 100 or permission of the instructor. Crosslisted as PSYC 606.

PSYC 307. Culture and Child Development. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of culture-specific and universal processes in child development in diverse societies. Focus on cultural influences on social, emotional, and cognitive development, and on parenting, family, and education contexts and practices. Prerequisite: PSYC 207 or permission of the instructor. Crosslisted as PSYC 607.

PSYC 309. Appetite and Eating Behavior. 1 Credit.**Offered Occasionally; Lecture hours:3**

Advanced seminar considering psychological factors involved in appetite, food preferences, and food intake. Prerequisite: PSYC 203. Crosslisted as PSYC 609.

PSYC 311. Advanced Health Psychology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced seminar considering current topics in health psychology, potentially including health behavior change, adolescent risk behavior, and/or social determinants of health. Prerequisite: permission of the instructor. Crosslisted as PSYC 611.

PSYC 313. Researching Behavioral Neuroscience. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Following a general orientation to behavioral genetics and pharmacology using mice, we will conduct group experiments. Each student will then develop and conduct an independent research project. Prerequisites: PSYC 215 or MATH 216 and PSYC 250 or an applied research methods course and permission of instructor. Crosslisted as NEUR 313 and NEUR 613 and PSYC 613.

PSYC 314. Cognitive Development Research. 1 Credit.**Offered Occasionally; Lecture hours:3**

Advanced seminar examining how very young children understand words. Students conduct collaborative research projects culminating in oral and written reports. Prerequisites: PSYC 204 or PSYC 207 or PSYC 288 or LING 230 and permission of the instructor.

PSYC 315. Language Development. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced seminar examining how children learn sounds, words, and grammar. Focus on reading primary research sources. Special topics based on students' interests. Prerequisites: PSYC 207 or PSYC 204 or LING 230 and a PSYC methods course and permission of the instructor. Crosslisted as PSYC 615.

PSYC 316. Advanced Social Psychology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Consideration of experimental and theoretical issues in social psychology. Prerequisites: PSYC 209 or PSYC 228 and any PSYC research methods class or permission of the instructor. Crosslisted as PSYC 616.

PSYC 317. Comparative Animal Cognition. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced seminar in issues of nature/nurture, learning, development, and adaptation, in behaviors such as foraging, mating, and communication in several species. Prerequisites: PSYC 266 or ANBE 266 and PSYC 203. Crosslisted as PSYC 617.

PSYC 318. Cognitive Aging. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Seminar discussing the development and changes in cognition in senior citizens. Topics include memory, language, attention, and decision-making. Prerequisite: PSYC 252 or PSYC 204 or permission of the instructor. Crosslisted as PSYC 618.

PSYC 319. Topics in Psychology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Occasional seminars on selected topics of current interest in psychology. Prerequisite: permission of the instructor. Crosslisted as PSYC 619.

PSYC 320. Children's Studies. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:Varies**

Critical examination of childhood from multiple disciplinary lenses. Topics include children's advertising and consumerism, child labor, child soldiers, children's spirituality, children in diverse cultures, children and the arts. In this service-learning course students work with children/youth in field placements (e.g., Geisinger Children's Hospital, residential treatment centers). Prerequisites: senior status. Crosslisted as PSYC 620.

PSYC 324. Advanced Psychological Statistics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of advanced statistical techniques with emphasis on analysis and interpretation of experimental and correlational data. Prerequisites: PSYC 215 or equivalent and permission of the instructor. Crosslisted as PSYC 624.

PSYC 325. Personality, Psychopaths, and Serial Killers. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Considers personality disorders with a focus on psychopathy and serial murders. Biological and environmental causes of psychopathy are considered as well as the developmental course of the condition and ethics of treatment. Prerequisites: PSYC 228 or PSYC 209 or PSYC 210 or permission of the instructor. Crosslisted as PSYC 625.

PSYC 326. Language and Cognition. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Advanced study of language perception, production, acquisition, evolution, computational models and neural mechanisms. Focus on recent developments in the field. Prerequisite: a 200-level linguistics course or a 200-level psychology course from cluster A. Crosslisted as LING 326 and PSYC 626.

PSYC 327. Children's Social Development. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Seminar in children's relationships with parents, siblings, and peers in childhood/adolescence, and links between the social relationship and children's development in other domains. Prerequisite: PSYC 207 or permission of the instructor.

PSYC 328. Undergraduate Research II. 1 Credit.**Offered Fall, Spring or Summer; Lecture hours:Varies,Other:3; Repeatable**

Research or other independent study with a faculty member outside of the psychology department. Research topics may be posed by students or faculty. Cannot be counted toward the psychology major. Prerequisites: permission of the supervisor, Psychology Chair approval and permission of the instructor.

PSYC 329. Undergraduate Research. .5-1 Credits.**Offered Fall, Spring or Summer; Lecture hours:Varies,Other:3; Repeatable**

Research or other independent study on any aspect of psychology. Research topics may be posed by students or faculty. Prerequisite: permission of the instructor.

PSYC 336. Psychology Research in Denmark. .5 Credits.**Offered Summer Session Only; Lecture hours:Varies,Other:3; Repeatable**

Design and conduct research in Denmark on child development, family and parenting, and/or education as part of Bucknell in Denmark summer program. Corequisite: PSYC 337. Prerequisite: permission of the instructor.

PSYC 337. Child Development in Denmark. 1 Credit.**Offered Summer Session Only; Lecture hours:Varies,Other:3**

Core course in Bucknell in Denmark summer program. Focus on child development in Denmark and Nordic countries with comparison to U.S. Practicum included. Prerequisites: enrollment in Bucknell in Denmark program and permission of the instructor.

PSYC 339. Psychology of Music. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Seminar examining how musicians and non-musicians comprehend, remember, perform, and respond to music, including developmental aspects. Some background in music required. Prerequisites: PSYC 204 or PSYC 252 and permission of the instructor. Crosslisted as PSYC 639.

PSYC 340. Behavioral Neuroscience. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced study of the relationship between the brain and behavior. Seminar discussion of complex problems in the field of behavior neuroscience including genetics, mood disorders, drug abuse, cognition and consciousness. Prerequisite: PSYC 250 or permission of the instructor. Crosslisted as PSYC 640 and NEUR 340 and NEUR 640.

PSYC 344. Developmental Brain Research. 1 Credit.**Offered Spring Semester Only; Lecture hours:3; Repeatable**

Students learn a variety of assessment techniques in developmental neuropsychology and neuroscience (including EEG) and conduct quantitative research culminating in written and oral reports. Crosslisted as PSYC 644 and NEUR 344 and NEUR 644. Prerequisite: permission of the instructor.

PSYC 348. Behavioral Pharmacology. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Focus on drugs that affect the nervous system, drugs of abuse, therapeutic drugs, drug action, behavioral changes as a result of long-term drug use, animal models and human studies. Prerequisites: PSYC 250 or BIOL 205 and permission of the instructor. Crosslisted as NEUR 348 and PSYC 648.

PSYC 349. Cognitive Neuroscience. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Brain mechanisms of language, memory, and other processes as revealed by studies of human brain activity or pathology. Prerequisite: PSYC 204 or PSYC 250 or PSYC 252 or permission of the instructor. Crosslisted as PSYC 649.

PSYC 350. Culminating Research Experience+. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This seminar, worth 1 credit, turns a research project into a Culminating Experience. Covers research, ethics, proposal writing, public speaking, data presentation, and other professional issues. Course meets only 1 hour a week most weeks. Students should not register for PSYC 329 or PSYC 360. Prerequisite: permission of the instructor.

PSYC 352. Face Perception. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced seminar in face perception, including issues of holism, uniqueness, language, emotion, and race. Prerequisite: PSYC 204, PSYC 250, or PSYC 252 and permission of the instructor. Crosslisted as PSYC 652.

PSYC 360. Honors Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Prerequisites: permission of the department and permission of the instructor.

PSYC 369. Psychology of Beauty and Attraction. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of research on beauty and attraction from an evolutionary perspective. Prerequisites: PSYC 209, a Cluster C course and permission of the instructor. Crosslisted as PSYC 669.

PSYC 370. Primate Behavior and Ecology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; May require dissection or live animal experimentation**

Introduction to research on prosimians, monkeys, and apes with emphasis on the evolutionary origin of diversity, habitat use, social structure, social behavior, and cognitive abilities. Prerequisites: BIOL 122 or BIOL 208 or ANBE 266 or BIOL 266 or PSYC 266 and permission of the instructor. Crosslisted as ANBE 370 and ANBE 670 and BIOL 370 and BIOL 670 and PSYC 670.

PSYC 371. Primate Cognition. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3; May require dissection or live animal experimentation**

An investigation into the cognitive abilities and capacities of nonhuman primates emphasizing a comparative perspective. Prerequisites: ANBE 266 or BIOL 266 or PSYC 266 and permission of the instructor. Crosslisted as ANBE 371 and ANBE 671 and PSYC 671.

PSYC 372. Comparative Cognition. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Other:3**

Advanced seminar exploring cognition and behavior from evolutionary and comparative perspectives. Topics will include social behavior, memory, communication, spatial cognition, learning, and meta-cognition. Prerequisites: PSYC 266, ANBE 266, and permission of the instructor. Crosslisted as PSYC 672 and ANBE 372 and ANBE 672.

PSYC 373. Psychology of Race and Gender. 1 Credit.**Offered Occasionally; Lecture hours:3**

Critical analysis of major theories. Emphasis on experimental research findings in the areas of racism, discrimination, gender difference, sexual violence, etc. Prerequisite: permission of the instructor. Crosslisted as PSYC 673.

PSYC 3NT. Psychology Non-traditional Study. 1-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies**

Non-traditional study course in psychology. Prerequisite: permission of the instructor.

Religion (RELI)

RELI 100. Introduction to Religion. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

This course will introduce students to the academic study of religion to provide a foundation for religious literacy. Multiple sections of this course are offered every semester, under a variety of titles.

RELI 200. Buddhism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1**

An interdisciplinary introduction to Buddhism, including basic teachings of liberation from suffering, impermanence, no-self, ethics, and meditation. Also explores the historical development of various streams of Buddhism in Asia and the West, with attention to the mutual influence between Buddhism and society, politics, and material culture. Crosslisted as EAST 251.

RELI 201. Islam. 1 Credit.**Offered Occasionally; Lecture hours:3**

An overview of the many cultural expressions of Islam, which emerged in the 6th century and spread from Arabia to the larger world. The course will cover Muhammad as prophet, Qur'an as scripture, Hadith as religious narrative, and tensions between law, modernity, and mysticism.

RELI 202. Hinduism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A historical survey of Hindu religious traditions. This course traces the development of Hindu scriptures, rituals, philosophies, and ethics from the ancient to the contemporary world. Concepts such as karma, yoga, and reincarnation will be put in the broader contexts of Hindu dharma (religious law), theism, and ritual.

RELI 203. Hinduism and Film. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of Indian cinema and Hinduism, exploring early Hindu mythological films, the underlying religious messages of popular "secular" films, and the influence of Hindu worship practices on Indian cinema.

RELI 205. Hebrew. 1 Credit.**Offered Occasionally; Lecture hours:3**

Essentials of grammar, syntax, and vocabulary of Biblical Hebrew. Includes readings of narrative portions of the Hebrew Bible and additional texts in Hebrew.

RELI 206. Sacred Objects: Religion, Violence and History. 1 Credit.**Lecture hours:3; Repeatable**

This course examines religion and violence through a social history of sacred objects circulating in medieval and modern South Asia. It explores political ideologies of the Indian state by studying how objects (images, buildings, idols, books, jewels) become imbued with religious power and motivate cataclysmic violence. Crosslisted as IREL 206.

RELI 207. Holocaust: Event and Reception. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

During the Holocaust more than six million Jews, one third of the Jewish population of the world, were systematically killed. We study the event, reflections by major thinkers and scholars, and the aftermath of the Holocaust.

RELI 209. Israel: Land, People, and Tradition. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of the complex relationship between Judaism and the sacred traditions of the Jews as related to the Land of Israel including the cultural situation and the Israeli-Palestinian conflict.

RELI 210. Judaism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of Jewish religious traditions, addressing major historical developments (e.g., biblical, rabbinic, and modern periods) and basic rituals and theological issues (e.g., "chosenness", covenant, salvation).

RELI 211. Women In Judaism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of Jewish texts and films that focus specifically on women or use feminine imagery; considers feminist and historical-critical interpretations of the evolving role of Jewish women. Crosslisted as WMST 211.

RELI 212. Christianity. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A broad introduction to Christianity, including a survey of Christian scripture, various Christian doctrines and beliefs, and major traditions of thought and practice within Christianity.

RELI 213. God, Suffering, and Evil. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An investigation into the problem suffering and evil pose for western religious and Christian reflection on the existence and nature of God.

RELI 214. God, Nature, and Knowledge. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Study of various philosophical, religious, and scientific theories regarding the concept of divine nature, human nature, and non-human nature.

RELI 215. Essentials of Christian Thought. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of major topics in Christian thought, including God, creation, human nature, sin, salvation, the Christian life, the church, the status of other religions, and the future of human history and the world.

RELI 216. Philosophy of Religion. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Problems for rational inquiry arising from the claims and practices of religious faith, e.g., the nature of religious language, arguments for the existence of God, the concept of evil. Prerequisite: permission of the instructor. Crosslisted as PHIL 223.

RELI 217. Catholicism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A broad survey of Roman Catholicism, including its main beliefs and practices, within the larger context of the history of Christianity and the history of Christian thought.

RELI 218. Christian Ethics. 1 Credit.**Offered Occasionally; Lecture hours:3**

Major trends in Christian ethics, with particular attention to the diversity of sources and methods used by Christian thinkers to reflect on moral issues.

RELI 219. Contemporary Religion: Race, Gender, and Sexuality. 1 Credit.**Offered Occasionally; Lecture hours:3**

Through historical, political, and sociological analysis, this course will study how sexuality, race, and gender issues are affecting contemporary religious thought. Crosslisted as WMST 219.

RELI 220. Comparative Ethics. 1 Credit.**Offered Occasionally; Lecture hours:3**

An examination of the symbols, concepts, beliefs, and practices of a variety of religious traditions and their role in providing ethical guidance for human life. Special attention will be given to critical methods of comparative analysis and their application to diverse traditions.

RELI 221. God and Morality. 1 Credit.**Offered Occasionally; Lecture hours:3**

An overview of Western religious ethics, focusing on the relation between religion and morality, the connection between ideas of human selfhood and moral goodness, and the uses of argument to justify religious and moral claims.

RELI 222. Images of Jerusalem. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This is a writing class (W2) focusing on Jerusalem (Israel), its history, as a pilgrimage site, and the three Western religions (Judaism, Christianity, Islam) in the city.

RELI 223. History Western Religious Thought. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of the major religious ideas and problems which have shaped the Western intellectual tradition. Topics to be explored include conceptions of God, theories of human nature, and the relation between religious belief and cultural values.

RELI 224. Global Religions and the Politics of Pluralism. 1 Credit.**Offered Occasionally; Lecture hours:3**

Explores the presence and practice of global relations and analyzes the cultural and political challenges of religious pluralism. Students will examine a wide variety of religious traditions, assess how minority religions negotiate issues of acculturation, and evaluate the political problems often created by religious diversity. Prerequisite: permission of the instructor.

RELI 225. Religion and Literature. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

Examination of the religious, philosophical, and ethical quandaries confronting human beings through the study of literary works. Themes may include autobiography and the construction of identity; the nature of human freedom, love, and aspiration; the problems of evil, suffering, and alienation; the experience of moral conflict; and other topics.

RELI 226. Environmental Ethics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of the major theories of environmental ethics, with particular attention to the challenge of developing an ethic commensurate with increasing human power. Crosslisted as ENST 236.

RELI 227. Bioethics: Issues in Ethics, Medicine, and the Life Sciences. 1 Credit.**Offered Occasionally; Lecture hours:3**

Systematic study of the moral and social implications of practices and developments in medicine and the life sciences including abortion, human experimentation, genetic intervention, behavioral control, death and dying.

RELI 228. Religions in the Modern World. 1 Credit.**Offered Occasionally; Lecture hours:3**

An examination of how religious communities respond to contemporary issues such as nationalism, secularism, atheism, culture and history of a group. The formation of religious identities and institutions in contexts of cultural diversity and pluralism will be discussed.

RELI 229. The Ethics of Consumption. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of ethical issues related to human consumption, such as world hunger, poverty, environmental destruction, and the effects of consumerism on human values and interactions.

RELI 230. End of Nature, Posthuman Future. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Analysis of ethical issues related to human technological interventions (both environmental and medical), and their implications for our changing conceptions of nature and human nature.

RELI 232. What is Religion? Theories and Methods. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Exploration of theoretical models and methods in religious studies. Readings from major texts may include sociological, psychological, anthropological, and phenomenological approaches, along with challenges to such theories from thinkers of feminist, postmodern, and postcolonial perspectives. Prerequisite: sophomore, junior or senior status only. Open to others by permission of instructor.

RELI 233. Global Feminism and Religion. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course examines the relationship between developments in feminist thought and movements in various parts of the world and the array of religious ideologies and practices in those societies. Crosslisted as WMST 233.

RELI 234. Issues of Religion and Culture. 1 Credit.**Offered Occasionally; Lecture hours:3, Other:1; Repeatable**

Focus on interdependence of religion and cultural phenomena: ideology; alienation; formation of world view; understandings of time and space; relation between church and state; faith and science.

RELI 235. Religion and Popular Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the relationship of religion to contemporary popular culture, both in how religion is portrayed (in music, movies, sports, and consumer culture) and how it is replicated (in ritual, myth, and morality).

RELI 237. Judaism in Film. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This is an introduction to Judaism in Film. Judaism has been characterized as a culture, a civilization, a philosophy, a nation, an ethnic group, and a religion. In this introductory class we will discuss ritual, ethical and historical issues.

RELI 239. Queering (Christian) Theology. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the relationship between queer theories, sexuality studies, and Christian theology. In addition to the concepts of gender, race and sexuality, it offers a survey of major topics in Christian thought, including God, love, justice, sin, and salvation. Crosslisted as WMST 239.

RELI 240. Perspectives in Religion and Science. 1 Credit.**Offered Occasionally; Lecture hours:3**

Survey of theories, topics, and problems involved in understanding the historically evolved and complex relationship between western religion and science and their respective truth claims.

RELI 241. Religion and the Loss of Traditional Faith. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of new approaches (linguistical, philosophical, and hermeneutical) that challenge traditional Western religious ideas and the role of faith in contemporary world. Emphasis is on intersection of religion and critical theory.

RELI 242. Religious Naturalism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will examine some of the diverse perspectives and ideas associated with religious naturalism. Students will explore the ways religious naturalists reconceptualize traditional concepts (God or supernatural theism), and examine their various approaches to understanding evil, morality, human nature, and humans' connectivity to nature.

RELI 243. Religions of South Asia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Focused study of one or more South Asian religious traditions. This course centers on South Asian religions and on topics that may include, but will not be limited to: Hinduism, Jainism, Sikhism, Islam in Pakistan and India, and Buddhism in Tibet, Myanmar, and Sri Lanka.

RELI 244. Religions of East Asia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Focused study on one or more East Asian religious traditions. This course centers on religions and on topics that may include, but will not be limited to: Confucianism, Daoism, Buddhism, Shinto, and new East Asian religious movements. Crosslisted as EAST 244.

RELI 245. Marketing Chinese Religions. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Focus on the economic dimensions of Chinese religious institutions in modern and contemporary periods, with attention also paid to premodern precedents. Economics here indicates not only mechanisms of monetary exchange, but also negotiations of spiritual capital (ledgers of [de]merit) and of religious identities amidst rampant consumerism and commodification of sanctity. Crosslisted as EAST 252.

RELI 246. Religions of Japan. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1**

An introduction to the religious traditions of Japan through study of their origins, basic beliefs, practices and values, historical development, as well as their interaction and involvement with politics, culture, society, and each other. Focus on Shinto and the various forms of Japanese Buddhism. Crosslisted as EAST 253.

RELI 247. Epic India: Gods and Goddesses. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of the great Indian religious epics, focusing on the stories of the gods and goddesses and their interactions with humankind; and the place of these stories in classical India and throughout time as they are retold in new times and places as they are recast in new media.

RELI 248. Religions of the African Diaspora. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course examines the historical development of African-derived or African-inspired religions in the African diaspora, including in the United States. It also examines the expansion and appropriation of major world religions into particular African diaspora communities. Crosslisted as WMST 248.

RELI 249. Pilgrimage in South Asia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An exploration of the sacred spaces of South Asia and the religious journeying practices of Hindus and others throughout the Indian subcontinent.

RELI 252. New Testament and Christian Origins. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An exploration of the earliest Christians through the writings that later became the New Testament. We will examine these sources in the context of their specific social and historical concerns and consider the complex process in which some writings were included in Christian scripture while others were rejected.

RELI 253. Dying For God: Martyrs and Monks. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Early Christians were attracted to dramatic narratives of pain and suffering—whether about death in the arena or self-denial in the desert. This course explores the literature of martyrdom and asceticism in its historical context and considers why pain was linked to righteousness in the ancient world.

RELI 275. BU in Cape Town, South Africa. Addressing the Legacy of Apartheid through Social Justice Initiatives. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

This course introduces students to the historical, cultural, and economic factors that have been part of South Africa's apartheid past, offering them opportunities to explore and learn more about the varied steps taken by South Africans to move beyond the harsh realities of legal apartheid. Course counts as Integrative Perspectives. Crosslisted as WMST 274 and UNIV 274.

RELI 276. Judaism and Masculinity. 1 Credit.**Offered Occasionally; Lecture hours:3**

Theories of Judaism, masculinity and maleness applied to the bodies of athletes; Jewish/Black bodies; the body of soldiers; stereotyping; human and divine bodies; Jewish feet, nose, ideal bodies.

RELI 279. Judaism and Law. 1 Credit.**Offered Occasionally; Lecture hours:3**

Explores the cultural and ethical complexities of Jewish Law in the U.S., Europe, and the unique legal system of the state of Israel.

RELI 280. Religion and Constitutional Law. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the developing relationship between religion and American constitutional law, focusing on historic documents and Supreme Court decisions relating to the First Amendment. Crosslisted as POLS 247.

RELI 281. Religion and American Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the historical relationship of religion and American politics, focusing on the impact of religion in both domestic and foreign policy.

RELI 286. Imagining Sustainability. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An Integrated Perspectives course covering critical understandings and applications of sustainability across the humanities, the social sciences, and the natural sciences as integrative of environmental, social, economic, and cultural perspectives. Crosslisted as UNIV 286 and ENST 286.

RELI 305. The Male Body in Judaism. 1 Credit.**Offered Occasionally; Lecture hours:3**

Investigates the male body from Jewish and comparative perspectives: the body of athletes; Jewish/Black relations; theories of masculinity; the body of soldiers; stereotyping; human and divine bodies. Prerequisites: sophomore, junior, or senior status and permission of the instructor.

RELI 306. Messianism and Madness. 1 Credit.**Offered Occasionally; Lecture hours:3**

Judaism and Jewish sectarianism include numerous Messianic figures: from Jesus to Messiah Ephraim; Shabbetai Zvi; Zionism; kabbalistic, midrashic, philosophical, Hassidic, and contemporary ideas of redemption. Prerequisites: sophomore, junior, or seniors only. Others by permission of instructor.

RELI 307. Post-biblical Literature. 1 Credit.**Offered Occasionally; Lecture hours:3**

Survey of Jewish post-biblical literature and thought which may include literature of the Second Temple period and rabbinic literature (Pseudepigrapha, Dead Sea Scrolls, Targum, Josephus, Mishnah-Tosefta, Midrash, Talmud, and contemporary phenomena) in religious, historical, literary, and cultural contexts.

RELI 310. Topics in Religion and Law. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

This course will examine aspects of the relationship between religion and law in global, regional, tradition-based, and/or historical contexts. Prerequisite: sophomore, junior or senior status only. Open to others by permission of the instructor.

RELI 311. On Being Spiritual, Not Religious. 1 Credit.**Offered Occasionally; Lecture hours:3**

Study of the nature, role and meaning of mysticism and spirituality for Western audiences, examining the social/cultural variables influencing mystical quests; truth, reality, and transcendence in diverse mystical experiences; the role of the body in spiritual practices. Prerequisite: sophomore, junior or senior only. Open to others by permission of instructor.

RELI 312. Digesting Divinity: Religion and Food. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course considers the relationship between food, consumption, and the construction of religious identity. Students will read a wide range of sources from antiquity to the present, exploring the ways in which food customs structure human belief and function as a point of communication between humanity and divinity.

RELI 315. Topics in American Religion. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

This course will examine specific topics in American religion including in-depth analyses of religious movements and traditions in America. Prerequisite: sophomore, junior or senior status only. Open to others by permission of the instructor.

RELI 316. Topics in Religion and Culture. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

This course will examine the interrelation between religion and cultural phenomena in diverse contexts of human experience. Prerequisite: sophomore, junior or senior status only. Open to others by permission of the instructor.

RELI 317. Cultivating the Self. 1 Credit.**Offered Occasionally; Lecture hours:3**

Study of self-cultivation as a central theme in religious and philosophical reflection. Students will explore different meanings of self-cultivation as a practice of training the self's energies to attain an ideal of human excellence in multiple traditions. Prerequisite: sophomore, junior or senior only. Open to others by permission of instructor.

RELI 318. Jewish Thought. 1 Credit.**Offered Occasionally; Lecture hours:3**

Text-based class: cultural influences upon Jewish thought and practice in major Jewish books, traditional and contemporary Judaism, from Philo to Derrida: Human existence and identity. Prerequisite: sophomore, junior, or senior only. Open to others by permission of instructor.

RELI 320. Individual Studies In Religion. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:Varies; Repeatable**

Guided investigations. Open to qualified students with some previous study of religion who wish to pursue individual programs of study in the field. Prerequisite: Only by permission of the instructor.

RELI 321. Introduction to Jewish Law. 1 Credit.**Offered Occasionally; Lecture hours:3**

Jewish law: function, ethical and philosophical principles. Major sources: Bible, Rabbinics, Interpretations (Commentaries Codifications), science. Applications to contemporary legal issues. Prerequisite: sophomore, junior, or senior only. Open to others by permission of the instructor.

RELI 325. Major Religious Thinkers. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

The thought, historical setting, and influence of one or more classical religious thinkers, e.g., Paul the Apostle, Augustine, Kierkegaard, Confucius, Rosenzweig, Gandhi. Prerequisite: sophomore, junior, or senior only. Open to others by permission of the instructor.

RELI 326. Major Religious Movements. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

Origins, beliefs, and significance of selected religious communities and movements, e.g., Mysticism, Modern Catholicism, Evangelicalism, Monasticism, Religious Socialism. Prerequisite: sophomore, junior, or senior only. Open to others by permission of the instructor.

RELI 350. Honors Thesis. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Honors thesis. Prerequisite: permission of the instructor.

RELI 400. Senior Seminar - Culminating Experience. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The Senior Seminar is required for all majors in Religious Studies, and is designed to give majors an opportunity to integrate the knowledge and skills they have acquired, and to hone their research, writing, and oral skills. Prerequisites: Open to seniors in Religious Studies only.

Residential Colleges (RESC)

RESC 098. Foundation Seminar in Residential Colleges. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Foundation seminar offered only through the individual Residential Colleges. Prerequisite: permission of the instructor.

RESC 115. Community Service for Social Justice. .5 Credits.**Offered Either Fall or Spring; Lecture hours:1.5; Repeatable**

Students will be actively involved in service or advocacy work at community-based sites working for change and social justice. The course will meet once a week to examine history, concepts, and theory about the role of individuals and groups seeking justice. This will provide a focused opportunity to explore social movements and resource mobilization. Priority given to first- and second-year students from the social justice residential college. Permission of the instructor required.

RESC 120. Be The Change. .5 Credits.**Offered Alternating Spring Semester; Lecture hours:1,Other:1; Repeatable**

Students attend a weekly class to discuss topics in social, global and environmental justice that are explored in campus events, lectures, and films. Prerequisite: permission of the instructor. Open to first-year students only. May be repeated by permission of the instructor.

RESC 220. Residential College Sophomore Program. .25 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:1.5**

Students will build on capacities achieved during the first year by constructing and then engaging in a set of learning experiences in a group.

RESC 221. Residential College Sophomore Program. .25 Credits.**Offered Spring Semester Only; Lecture hours:Varies,Other:1.5**

Students will complete the set of learning experiences constructed in the fall and will present their work to first-year students in the same Residential College. Prerequisite: permission of the instructor.

Russian (RUSS)

RUSS 101. Elementary Russian I. 1 Credit.**Offered Fall Semester Only; Lecture hours:4,Recitation:1**

Fundamentals of speaking, reading, writing, and comprehending Russian, and an introduction to Russian culture.

RUSS 101A. Intensive Elementary Russian. 1 Credit.**Offered Spring Semester Only; Lecture hours:4,Recitation:1**

Intensive elementary Russian in speaking, reading, writing, and comprehending Russian. Fundamentals of first-year Russian covered in one semester.

RUSS 102. Elementary Russian II. 1 Credit.**Offered Spring Semester Only; Lecture hours:4,Recitation:1**

Fundamentals of speaking, reading, writing, and comprehending Russian, and an introduction to Russian culture. Prerequisite: RUSS 101 or equivalent is prerequisite for RUSS 102.

RUSS 103. Intermediate Russian I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Recitation:2**

Continued focus on all language skills combined with the study of cultural texts. Prerequisite: RUSS 101A or RUSS 102 or equivalent for RUSS 103; RUSS 103 is the prerequisite for RUSS 104.

RUSS 104. Intermediate Russian II. 1 Credit.**Offered Both Fall and Spring; Lecture hours:4,Recitation:1**

Advanced points of grammar and review of grammar. Training in all language skills combined with the study of cultural texts. Prerequisite: RUSS 102 or equivalent for RUSS 103; RUSS 103 is the prerequisite for RUSS 104.

RUSS 125. Topics in Russian Culture. 1 Credit.**Offered Fall Semester Only; Lecture hours:3; Repeatable**

An examination of everyday life in Russia, as a mirror of historical, ideological, sociological, and economic forces. In English.

RUSS 150. Russian History on Film. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3,Other:2**

Course examines differences between the actual and cinematic histories as they are reflected in Russian and American cinemas. In English.

RUSS 201. Advanced Russian I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Advanced topics of Russian grammar; review of intermediate grammar. Advanced reading, composition, and conversation. In Russian. Prerequisite: RUSS 104 or equivalent.

RUSS 204. Russian Conversation. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2**

Concentrated development of speaking skill. Conducted entirely in Russian by a native speaker. Intended for students enrolled in 200- and 300-level courses. This course cannot be taken more than twice.

RUSS 205. Russian for Business. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Designed for proficiency in business communication skills. Studies the grammar and lexicology of commercial offers, orders, contracts, complaints, shipping, and delivery. In Russian.

RUSS 209. Russian Complementary Reading. .5 Credits.**Offered Either Fall or Spring; Lecture hours:1**

Russian sources read in conjunction with English language courses. Independent course of study established by instructor and student. Prerequisite: the equivalent of four semesters of Russian. This course cannot be taken more than twice.

RUSS 215. Global Manager in Russia and Eurasia. .5-1 Credits.**Offered Spring Semester Only; Lecture hours:Varies**

The course is designed to prepare students in practical ways for their work in the global business environment and Russia in particular. In English.

RUSS 222. Russian Through Theater. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced study of Russian language, particularly phonetics and intonation patterns through reading, discussing, and performing plays. In Russian.

RUSS 225. Russian Cinema: From Revolution to Repentance. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Traces through viewing and detailed analysis of films the development of Russian cinematography; from the innovations of directors like Eisenstein, Pudovkin, to the poetic-metaphorical aesthetics of Tarkovsky and Abuladze. In English.

RUSS 230. Russian Song: Poetry, Politics, Pop. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

The role of song in Russian culture. Genres studied include art song, guitar poetry, contemporary pop and folk rock. In Russian.

RUSS 250. Crimes and Punishments: 19th-century Russian Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of major works of 19th-century Russian literature by Pushkin, Gogol, Dostoevsky, Tolstoy and Chekhov and their influence on Western European literary canon. In English.

RUSS 252. Russian Through Literature. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

A study of Russian through literary works by contemporary Russian writers. In Russian.

RUSS 255. Politics of Writing: 20th-century Russian Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Discussion of major trends and key literary figures in Russian literature from 1917 Revolution to the post-Soviet Russia. Examines the questions of political dissent and literature vs. state. In English.

RUSS 280. Topics in the Slavic Languages. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:Varies; Repeatable**

Study of a Slavic language other than Russian. Languages may include Ukrainian, Polish, Czech, and Serbo-Croatian. Prerequisite: permission of the instructor.

RUSS 295. Topics in Russian Studies. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3; Repeatable**

Readings and discussion of special interest relevant to Russian studies. Topics selected by students in consultation with the instructor. In Russian.

RUSS 301. Nineteenth-century Russian Culture and Civilization. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Cultural and ideological developments from Kievan Russia to 19th-century Russia: art and artistic trends in the context of historical events and everyday life. Extensive use of slides and video materials. For advanced students of Russian. In Russian.

RUSS 302. Twentieth-century Russian Culture and Civilization. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Cultural developments from Chekhov to the present—the arts of the Silver Age, Socialist realism, and post-Stalinism in the context of socio-political changes in 20th-century Russia. In Russian. Extensive use of slides and video materials. For advanced students.

RUSS 311. Readings in Russian Literature. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3; Repeatable**

An advanced study of the Russian language through close reading and discussion of short works by major Russian writers. In Russian. Not open to students who have taken RUSS 252.

RUSS 312. Readings in Russian Poetry. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An advanced study of Russian through close reading and discussion of Russian poetry. In Russian. Prerequisite: RUSS 201, RUSS 222, or RUSS 252. Not open to students who have taken RUSS 230.

RUSS 325. Dostoevsky and Tolstoy: Literary Philosophy. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

An introduction to the major philosophical ideas of the great Russian writers Fyodor Dostoevsky and Leo Tolstoy. In English. Crosslisted as HUMN 325 and HUMN 625.

RUSS 330. Nabokov and His Worlds. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Major works of one of the greatest authors of the 20th century. Nabokov's Russian and American periods examined in the context of both literary traditions. In English.

RUSS 340. Russian Through Film and Theater. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An advanced study of Russian through watching and analyzing films and taped theatrical productions. In Russian.

RUSS 350. Advanced Topics in Russian. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Readings and discussion of special topics at an advanced level. Topics selected by instructor in consultation with students. Prerequisite: successful completion of 200-level course or equivalent. Crosslisted as RUSS 650.

RUSS 390. Independent Study. .5-1 Credits.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Advanced independent research under the supervision of an instructor. Subject to be selected by student in consultation with the instructor. Prerequisite: permission of the instructor.

RUSS 393. Honors in Russian. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Independent study for RUSS 393 Honors in Russian. Prerequisite: permission of the instructor.

Sign Language (SIGN)

SIGN 101. Elementary American Sign Language I. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2**

An introduction to American Sign Language. Training and practice in signing together with approaches to communicating with deaf people.

SIGN 102. Elementary American Sign Language II. .5 Credits.**Offered Both Fall and Spring; Lecture hours:2**

An introduction to American Sign Language. Training and practice in signing together with approaches to communicating with deaf people. Prerequisite: SIGN 101 or equivalent.

Sociology (SOC)

SOCI 100. Introduction to Sociology. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

The concepts and methods sociologists use to investigate human groups. Focuses on the study of social organization, its variety and development.

SOCI 109. Sociology of Social Problems. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course offers a critical examination of major social problems in the contemporary United States within the context of wider global issues.

SOCI 110. Social Problems in the 21st Century. 1 Credit.**Offered Occasionally; Lecture hours:3**

Focuses on the sociological approach to social problems, studying existing problems like poverty and inequality plus new or changing problems such as war and terrorism.

SOCI 123. Law and Society. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to law and the legal system. The effects of economic, political, and other social institutions on the social organization of criminal and civil law.

SOCI 130. Medicine and Society. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Sociological analysis applied to health and medical care. Distribution of disease and services, behavior in response to illness, medical professions, hospital organization, national policy issues.

SOCI 140. American Culture and Society. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Exploration of topics including individualism, youth, culture, media, sport, health and the body, education, immigration, religion, sex, and death.

SOCI 1NT. Sociology Non-traditional Study. .5-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in sociology. Prerequisite: permission of the instructor.

SOCI 201. Field Research in Local Communities. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Participant-observation, interviewing, and other field research methods. Students will devise and conduct their own ethnographic research projects in a local community. Crosslisted as ANTH 201.

SOCI 202. Social Inequality. 1 Credit.**Offered Occasionally; Lecture hours:3**

An introductory course on the topic of social stratification. Various structures and forms of inequality will be examined including social class, racial and ethnic status, and gender.

SOCI 203. Social Psychology. 1 Credit.**Offered Occasionally; Lecture hours:3**

Survey of major theoretical/methodological approaches in social psychology (social cognition, exchange theory, group dynamics, etc.). Emphasis on evaluation/application of each theory.

SOCI 204. Growing up Rich/Poor in America. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course bridges the sociology of inequality, culture, childhood, and politics to make sense of the growing opportunity gap between middle-class American children.

SOCI 206. Video Ethnography. 1 Credit.**Offered Occasionally; Lecture hours:3**

A practicum in using video technology to conduct observational social research. Students will use archival materials to create short videos and then in the course they will shoot new footage to update the earlier material and to create a final film. Prerequisite: permission of the instructor.

SOCI 208. Methods of Social Research. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to various paradigms of social research with emphasis on the logic of social inquiry, research design and data collection. Requires two prior sociology courses and permission of the instructor.

SOCI 209. Analyzing the Social World. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

A course in sociological data analysis, using the General Social Survey and other data sets, promoting student research.

SOCI 210. Urban Condition. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Geographic and sociological inquiry into pressing urban issues of advanced industrialized societies, including inequality, housing, employment and how cities fit into the American present and future. Crosslisted as GEOG 210.

SOCI 211. Classical Sociological Theory. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A survey of major theories and theoretical traditions in sociology from roughly 1850 to 1920. The work of Karl Marx, Emile Durkheim, and Max Weber is often the centerpiece of the course.

SOCI 212. Contemporary Sociological Theory. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course introduces students to theory construction and development in the social sciences. We will explore a range of theoretical types and traditions (e.g., evolutionary theories, functionalism, conflict theories, structuralism, exchange theories, interactionism).

SOCI 213. Race in Historical and Comparative Perspectives. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Explores the evolution of the concepts of race and racism from antiquity to the present.

SOCI 214. Movements, Markets, and the Environment. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course focuses on examining the trend toward market-based environmental strategies such as green building certification and carbon offsets from a sociological perspective.

SOCI 215. Human Service Systems. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Historical and contemporary development of social services in relation to changing political-economic structures and human needs. Emergence and impact of service organizations and professions. Recommended as prerequisite for SOCI 318.

SOCI 216. Media, Power & Social Change. 1 Credit.**Offered Occasionally; Lecture hours:3**

Explores how changes in media technology create/affect opportunities for social/political change.

SOCI 217. Sport, Culture and Society. 1 Credit.**Offered Occasionally; Lecture hours:3**

Introduces several major sociological theorists. Examine roles of athletes/fans, inequalities in sports (gender, race, class).

SOCI 218. Health and Community. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Explores how community, family, and experiences with health institutions shape and affect well being, physical problems, and health.

SOCI 219. Culture and Power. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course enables students to develop critical perspectives on the ways in which culture serves to create and sustain social, economic, and political power and justifies inequality.

SOCI 220. Environmental Sociology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the relationship between human society and the natural environment. Focus will be on issues of environmental justice and inequality, consumption, technology, development, social movements, and the role of industry in the emergence and resolution of environmental problems.

SOCI 221. Sociology of Knowledge and Science. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to the sociological study of knowledge production, with emphasis on sociology of scientific knowledge. Examination of processes by which knowledge is produced, propagated, and sustained over time. Not open to students who have taken SOCI 321.

SOCI 225. Organizations in Society. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This class will cover topics in organizational sociology including basic organization theory. Topics to be considered may include corporate social responsibility, sector, organizational networks, markets and organizations and work/occupations.

SOCI 226. Policy Analysis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This class will develop the skills and abilities needed to examine policy questions from a sociological perspective. Prerequisite: permission of the instructor.

SOCI 234. Criminology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Theories and research in criminal behavior and the societal reaction to criminality. Causes and consequences of crime, including public policy formulations.

SOCI 235. Nongovernmental Organizations. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Nongovernmental organizations in the world context. The international "nonprofit" sector including the role, importance, dynamics, politics, and patterns of change among NGOs.

SOCI 238. Brain, Mind, Self, and Society. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course presents a biosocial perspective on the human self and personality. Examination of descriptions and explanations for human consciousness, agency, behavior, and experience of self from the social sciences and neurosciences.

SOCI 239. Deviance and Identity. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Social organization and personal action; group dynamics, identity, commitment, and deviant behavior.

SOCI 240. Sociology of Religion. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of the evolutionary roots of religion; the role of religion in "world-construction," social solidarity and social change; the secularization thesis; civil religion; fundamentalisms, cults, other new religious movements; terrorism.

SOCI 241. Marriages and Families in the 21st Century. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Focusing on courtship, marriages, and families in the 21st century U.S., we explore how work and family life vary by gender, race, and social class.

SOCI 242. Rural Communities. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1.5**

Explores dimensions of rural poverty and includes on-site experiences in local towns as class member explore the structure of community and economic inequality. Crosslisted as UNIV 242.

SOCI 243. Sociology of Race and Ethnicity. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Studies the concepts and social significance of race/ ethnicity and major race/ethnic groups within the United States. Emphasis on varying theoretical and methodological approaches to the sociological study of race/ethnicity.

SOCI 245. Remaking America: Latin American Immigration. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The processes and impacts of Latin American immigration on the U.S. and countries of origin. Special emphasis on how the immigration experience varies by ethnicity, location, and gender. Crosslisted as LAMS 245.

SOCI 251. Violence and Society. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The study of violent social, political, and legal institutions: domestic violence, sexual coercion, vigilantism, political conflict; the production and control of criminal violence.

SOCI 252. Faces of Death: Death in Human Nature and Culture. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course investigates the place of death in human nature and culture. We will look at death as a biological, social, and cultural fact for the human species. Funeral ritual and mourning will be studied in global and historical framework but with emphasis on the modern world.

SOCI 254. Punishment, Rehabilitation and Society. 1 Credit.**Offered Occasionally; Lecture hours:3**

Introduction/overview of punishment and rehab in corrections. Gain insight about corrections and the role of punishment and rehab.

SOCI 261. Sociology of the Arts. 1 Credit.**Offered Occasionally; Lecture hours:3**

An introduction to artistic work and its reception from evolutionary, social, and cultural perspectives. We will explore the reasons why humans make art, the forces that affect artistic works and careers, and the formation of artistic tastes.

SOCI 265. Culture and Politics of the 1960s. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This is a course on cultural and social movements (civil rights movement, New Left, student movement, anti-Vietnam War movement, counterculture), the change they produced in the U.S., and the consequences of that change for contemporary American society.

SOCI 270. Popular Culture. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The role of popular culture (e.g., music, television, film, and other media) in constructing individual and collective identities.

SOCI 275. Sociology of Mass Media. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examination of mass media institutions/production and their effect on media consumers and the broader culture.

SOCI 280. Twentieth-century Afro-Caribbean and African-American Thought. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Study of the intellectual contributions and scholarly vision of people of African descent to sociological theory, social philosophy, and social change in the 20th century. Crosslisted as HIST 261.

SOCI 290. Caribbean Society Music and Ritual. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Examines the history, politics, culture, society, ecology, and peoples of the Caribbean. It also focuses on the region's importance, its most pressing concerns and its future in the global political economy.

SOCI 299. Topics in Sociology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Topics will vary each semester.

SOCI 2NT. Sociology Non-traditional Study. 1-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies; Repeatable**

Non-traditional study in Sociology. Prerequisite: permission of the instructor.

SOCI 301. Conflict in Northern Ireland. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Students create story maps based on events described in our video archive.

SOCI 304. Public Service and Non Profit Organizations. 1 Credit.**Offered Either Fall or Spring; Lecture hours:1,Other:2**

Nonprofit organizations are major settings for the delivery of social services. Government increasingly is "privatizing" services. Nonprofits often involve an orientation toward public service and community action. Using case studies they conduct, students explore these issues. Open to juniors and seniors. Crosslisted as SOCI 604.

SOCI 309. How Holocausts Happen. 1 Credit.**Offered Alternate Fall and Spring; Lecture hours:3**

A comparative-historical analysis of genocide, politicide, and the Holocaust, from premodern colonial regimes through Darfur, examining social, psychological, political and economic determinants. Prerequisite: seniors only; juniors by permission of the instructor.

SOCI 310. The Sociology of Developing Societies. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Examines various conceptions of development and how they are implemented in selected countries. Prerequisite: any sociology or anthropology course, or permission of the instructor.

SOCI 311. Globalization, Technology, and Cultural Change. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Examination of the impact of the processes of global restructuring and the technological revolution on people, culture, and society. Prerequisite: permission of the instructor.

SOCI 312. Globalization and Conflict. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Both WWI and WWII were supposed to be the "war that ended all war." In this class, we'll analyze today's conflicts through the lens of social scientific research to help us understand how conflicts in remote parts of the world are intimately linked to our lives.

SOCI 313. Energy and Environmental Policy. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will examine energy and environmental policy focusing on current events and challenges within the field. Prerequisite: permission of the instructor.

SOCI 314. Education, Class, and Achievement in America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines education, especially schools, through the lens of social class. Focusing on habitus and cultural capital, it explores formal learning environments as sites where social mobility and social class reproduction are carried out. We will use a model where schooling, ideology, and political economy are interrelated to uncover the factors (e.g., tracking, social relations of schooling, class-based differences in linguistic codes) that sustain class distinctions.

SOCI 318. Social Services and Community: A Practicum. 1-2 Credits.**Offered Fall Semester Only; Lecture hours:3**

Exploration of the practicalities of work in social service institutions through supervised field work experiences, exposure to the range of social services and careers in social work, education, law, and medicine. Prerequisite: permission of the instructor.

SOCI 319. Honors Course in Sociology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:12; Repeatable**

Each student selects a project to be developed individually. Prerequisite: permission of the instructor.

SOCI 320. Honors Course in Sociology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:12; Repeatable**

Each student selects a project to be developed individually. Prerequisite: permission of the instructor.

SOCI 321. Sociology of Knowledge and Science. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Social influences on the development of ideas and the distribution of information, with special emphasis on scientific knowledge and the social organization of scientists.

SOCI 322. Sociology of Medicine. 1-1.5 Credits.**Offered Spring Semester Only; Lecture hours:Varies**

A seminar in which topics of interest to students in the area of the sociology of health, medicine, and medical policy will be discussed. Prerequisite: permission of the instructor.

SOCI 325. Advanced Reading in Sociology. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:12; Repeatable**

Readings developed around the interest of individual students. Prerequisite: permission of the instructor.

SOCI 326. Advanced Reading in Sociology. .5-2 Credits.**Offered Either Fall or Spring; Lecture hours:Varies,Other:12; Repeatable**

Readings developed around the interest of individual students. Prerequisite: permission of the instructor.

SOCI 327. Race, Citizenship and Human Rights. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course provides an understanding of the intersection of race, citizenship and human rights. It exposes students to these burning issues as they play themselves out in the world.

SOCI 328. Mating and Marrying in America. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This is a course on changing patterns in American courtship (dating), marriage, and family life from the 20th to the 21st century. Prerequisite: permission of the instructor. Crosslisted as WMST 328.

SOCI 329. Millennials in the Workplace. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course addresses core areas of the sociology of work, focusing on the challenges faced by the Millennial Generation entering the 21st-century workforce.

SOCI 332. Women and the Penal System. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the interface between inequality, crime, punishment, and justice, with an emphasis on women in the United States; the course is populated by both Bucknell students and incarcerated students at a nearby women's prison. Prerequisite: permission of the instructor. Crosslisted as WMST 332.

SOCI 335. Topics in Cultural Sociology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Substantive examination of particular topics/themes through the lens of cultural sociology.

SOCI 336. Energy and Environmental Policy. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course will be an introduction to energy and environmental policy focusing on current events and challenges within the field from a sociological perspective.

SOCI 337. America in Black and White. 1 Credit.**Lecture hours:3**

This course is focused on the White and Black American experiences. America in Black and White will explore the historical and present day government policies, private business interests and personal stereotypes that have resulted in social, political and economic advantages provided to one group while actively disenfranchising another.

SOCI 341. Seminar in Law and Society. 1 Credit.**Lecture hours:3**

Structure and process of legal institutions: police, courts, prisons, lawyers, juries, and extralegal mechanisms relevant to the legal system.

SOCI 350. Sociology of Emotions. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will engage with various perspectives on emotions, analyzing the ways in which these approaches both enable and limit our understanding of human experience.

SOCI 351. Field Research. .5-2 Credits.**Offered Alternating Spring Semester; Lecture hours:Varies; Repeatable**

Independent investigation in the field; formulation of hypotheses, construction of measuring instruments, data collection, data analysis, and test of hypotheses. Prerequisite: permission of the instructor.

SOCI 354. Development, Dictators and Diaspora. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course examines the cultural, social, and economic aspects of Latin America with investigation of both historical and contemporary forces that shaped the region of Latin America.

SOCI 365. Advanced Seminar in Sociology. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Focuses on selected topics of the discipline of sociology. Topics depend on professor and change with each offering. This culminating experience course is only open to senior sociology majors. Senior sociology minors and junior sociology majors by permission only.

SOCI 370. Senior Thesis. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies,Other:9; Repeatable**

Senior thesis. Prerequisite: permission of the instructor.

SOCI 3NT. Sociology Non-traditional Study. 1-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in Sociology. Prerequisite: permission of the instructor.

SOCI 410. Remember the Holocaust. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the Holocaust as a sociological, historical and political event, looking at memory and remembering and representing events more than 50 years later. Prerequisite: permission of the instructor.

Spanish (SPAN)

SPAN 101. Elementary Spanish I. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Recitation:2**

Beginning language skills, with practice of points of grammar, through listening, speaking, reading and writing, in the context of Hispanic cultures.

SPAN 101 is prerequisite to SPAN 102.

SPAN 102. Elementary Spanish II. 1 Credit.**Offered Spring Semester Only; Lecture hours:5,Recitation:1**

Continues development of basic language skills, with practice of points of grammar, in the context of Hispanic culture. Prerequisite: SPAN 101 or two years of Spanish in high school.

SPAN 103. Toward Intermediate Spanish. 1 Credit.**Offered Fall Semester Only; Lecture hours:4,Recitation:1**

Through grammar review and the development of new linguistic skills, in the context of Hispanic cultures, students reach intermediate competency in Spanish. Prerequisite: SPAN 102 or three years of secondary school Spanish.

SPAN 105. Intermediate Spanish. 1 Credit.**Offered Both Fall and Spring; Lecture hours:4,Recitation:1**

Review of grammar and development of new linguistic skills and cultural competency to reach high-intermediate level in Spanish. Prerequisite: SPAN 103 or four years of secondary school Spanish.

SPAN 207. Toward Advanced Spanish. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Recitation:1**

Students demonstrating high-intermediate skills progress toward advanced language proficiency. Reading, discussion and writing about brief literary or cultural texts advances cultural competency. Prerequisite: SPAN 105 or five years of secondary school Spanish.

SPAN 208. Advanced Conversation and Composition. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3,Recitation:1**

Advanced study and practice to enhance oral and written proficiency. A variety of texts and media, including literature, film and internet sources provide a point of departure for class discussion and written assignments. Prerequisite: SPAN 207 or six years of Spanish.

SPAN 220. Introduction to Spanish Literature. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to Spanish literature across major artistic and cultural periods: Middle Ages, Renaissance, Golden Age, Romanticism, Realism, and 20th-century literature in its cultural context.

SPAN 222. Introduction to Latin American Literature. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introduction to the authors, topics and genres that constitute the literary tradition of Latin America. Literary works are studied in their historical and cultural context.

SPAN 238. Language and Society in Latin American. 1 Credit.**Offered Occasionally; Lecture hours:3**

A linguistic survey of Spanish-speaking countries in Latin America with particular interest in the regional, social, and ethnic language use. Prerequisite: SPAN 208 or equivalent.

SPAN 239. Hispanic Linguistics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to phonetics and phonology, morphology, syntax, semantics, and dialects of the Spanish language. Prerequisite: SPAN 208.

SPAN 240. Vida y Cultura en Granada. .5 Credits.**Offered Occasionally; Lecture hours:3**

This course is designed to guide Bucknell students in their experience of life and culture in Granada, Spain, as well as to foster their reflection on and discussion of their learning experience in this Spanish-speaking country of Europe. Only offered on the Bucknell en Espana program.

SPAN 245. Vida y Cultura en Espana. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Guides students in their experience of life and culture in Spain, and fosters their reflection on the cross-cultural learning experience. Prerequisite: SPAN 207 or equivalent. Only given in the Bucknell en Espana program.

SPAN 264. Hispanic Topics. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

Given in English, this course will treat different topics of Spanish and Latin American civilization from year to year. Prerequisite: SPAN 208.

SPAN 266. Black Africans in the Hispanic Black Atlantic: Then and Now. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Taught in English. This course examines the variety of artistic, cultural, historical, and literary representations of black Africans and their descendants across the Spanish-speaking world, Africa, and the variety of Afro-Latina/o communities of the United States. Crosslisted as AFST 266.

SPAN 270. Spanish Cultural Tradition. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to the cultural tradition of Spain through the study of art, history, literature, and film. Prerequisite: SPAN 208.

SPAN 275. Structural Analysis of Spanish. 1 Credit.**Offered Occasionally; Lecture hours:3**

Advanced students/prospective teachers explore the interface between linguistics and actual language use by native Spanish speakers through analysis of morphology, syntax and semantics. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 280. Latin American Cultural Traditions. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An introduction to the cultural traditions of Latin America through the study of art, history, literature, and film. Prerequisite: SPAN 208.

SPAN 285. Latino Literature in the U.S.. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course focuses on issues of cultural identity within the literary and some film production of Hispanic peoples living in the U.S.

SPAN 290. Independent Study. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Subject to be selected by student in consultation with the instructor. Prerequisite: permission of the instructor. Prerequisite: SPAN 208.

SPAN 295. Topics in Spanish. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Deals with a different aspect of the literature or culture of Spanish-speaking peoples each time it is given. Prerequisite: SPAN 208.

SPAN 2NT. Spanish Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in Spanish. Prerequisite: permission of the instructor.

SPAN 315. Structure of Modern Spanish. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to morphology, syntax, semantics and discourse analysis with particular attention to the problems faced by the non-native learner of Spanish. Prerequisites: two courses at 200-level beyond SPAN 208.

SPAN 322. Modern Spanish Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Spanish literature of the 19th and 20th centuries. Course will be devoted to a different major author, movement, or genre each time it is given.

Prerequisites: two courses at 200-level beyond SPAN 208.

SPAN 323. Latin American Short Story. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Art and theory of the short story in Latin America. Topics include Colombian Short Stories, Stories by Women Writers, Children's Stories. Prerequisites: two courses at 200-level beyond SPAN 208.

SPAN 325. The Spanish Civil War. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the memory of the Spanish Civil War in the narrative and film from the 1940s to the present. Prerequisites: two courses at the 200-level beyond SPAN 208.

SPAN 326. Spanish Literature and Society of the 19th Century. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Devoted to major authors of the 19th century -- Galdos, Clarin, Pardo Bazan. Topics include science and literature, gender and sexuality, and class relations. Prerequisites: two courses at 200-level beyond SPAN 208.

SPAN 327. Translation and Advanced Grammar. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course focuses on translation and advanced Spanish grammar. The course explores different types of translations and reviews grammar as a tool to facilitate translation. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 328. Epics of the Spanish Empire. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines how epic poets portrayed conquistadors and explorers of the Spanish Empire and the rebels and pirates who threatened to undermine it. Prerequisites: two courses at 200-level beyond SPAN 208.

SPAN 339. Topics in Hispanic Linguistics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Advanced study of topics or issues in Hispanic Linguistics. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 346. Utopia/Dystopia in Urban Latin America. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This interdisciplinary course explores cities of Latin America through the lens of utopia and dystopia. Sources of inquiry include film, architecture, art, fiction, poetry, and readings in history, politics, economics, and environmental studies.

SPAN 348. Gender in 20th-century Latin American Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines the construction of gender in selected works by Latin American and Latino writers of the 20th and early 21st centuries. Prerequisites: two courses at 200-level beyond SPAN 208.

SPAN 354. Don Quijote. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

In this course students read, analyze and discuss Miguel de Cervantes' Don Quijote in light of its social, historical and cultural contexts. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 355. Colombia's Caribbean Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Studies literary expressions from Anglo-Hispanic islands of San Andres Providencia and Santa Catalina including traditional oral tales, religious poetry, historical novels, short stories, travel narratives, and communal plays. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 360. Literature and Film of the Hispanic World. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course will deal with the interrelationship of literature and film in the Hispanic World. In Spanish. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 361. Topics in Hispanic Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

These courses will deal with topics in Spanish or Latin American literature on an advanced level. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 362. Topics in Hispanic Literature. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

These courses will deal with topics in Spanish or Latin American literature on an advanced level. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 364. Topics in Spanish Civilization. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

This course will deal with different topics in the civilization of Spain on an advanced level. In Spanish. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 365. Topics in Latin American Civilization. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

This course will deal with different topics in the civilization of Latin America on an advanced level. In Spanish. Prerequisites: two 200-level courses beyond SPAN 208.

SPAN 366. Mexican Revolution: Literature and Art. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Charts the creation of a national identity, exploring literature and visual arts that depict the massive social changes brought about by the Mexican Revolution. Prerequisites: two courses at 200-level beyond SPAN 208.

SPAN 390. Independent Study. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

Subject to be selected by student in consultation with the instructor. Prerequisite: permission of the instructor.

SPAN 399. Honors Course in Spanish. 1 Credit.**Offered Either Fall or Spring; Lecture hours:Varies; Repeatable**

For selected seniors, who will be supervised in individual work. Prerequisite: permission of the instructor.

Theatre (THEA)

THEA 101. Technical Theatre Practicum. .25 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:2.5; Repeatable**

Quarter-course credit for supervised participation in any one of several aspects of theatrical production of the Department of Theatre and Dance's major productions. Prerequisite: permission of the instructor.

THEA 102. Theatrical Rehearsal and Performance. .25 Credits.**Offered Both Fall and Spring; Lecture hours:Varies,Other:4; Repeatable**

Quarter-course credit for substantial participation in a major theatrical production; for example, as actor, stage manager, vocal coach, choreographer.

Prerequisite: permission of the instructor.

THEA 103. Audition Technique. .25 Credits.**Offered Fall Semester Only; Lecture hours:Varies,Other:3; Repeatable**

Working on monologues as a form for the auditioning actor. This study culminates in actual presentations for graduate school and/or conservatory auditions. Prerequisites: seniors only and permission of the instructor.

THEA 109. Discovery of The Expressive Self. 1 Credit.**Offered Fall Semester Only; Lecture hours:1.5,Other:1.5**

Centered in an experiential model of learning, this course will focus on improvisational performance and writing as a means to explore questions such as what are the characteristics of a creative person and how can we develop our creative abilities?.

THEA 110. Acting I. 1 Credit.**Offered Both Fall and Spring; Lecture hours:4**

Introduction to acting: a critical approach to drama and personal expression, including physical, vocal, and interpretive aspects of performance.

Prerequisite: seniors by permission only.

THEA 145. Bucknell Backstage. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:1,Other:2**

Bucknell Backstage is an introductory course where craft, art and engineering intersect. Subject areas include Stage Management, Lighting, Sound, Properties, Painting, Stagecraft, Rigging and Wardrobe. Preference given to Theatre Majors. Prerequisite: permission of the instructor.

THEA 149. Live! On Stage. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3**

Introductory study of theatre (playwriting, directing, acting, movement, design, criticism); stresses the elements of drama, their interaction, and their realization in theatrical production.

THEA 207. Musical Theatre. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:1.5,Other:1.5**

An experiential study of musical theatre as an art form with unique conventions and aesthetics, focusing on the performance and production elements of the Broadway stage. Some experience suggested. Crosslisted as DANC 207. Prerequisite: permission of the instructor.

THEA 215. Introduction to Movement. 1 Credit.**Offered Occasionally; Lecture hours:1.5,Other:1.5**

This lecture/laboratory class encourages the discovery and exploration of basic movement principles, qualities, body alignment and cultural awareness. Suitable for students wanting to increase body consciousness. Crosslisted as DANC 215.

THEA 220. Acting Methods. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:Varies,Other:3**

Application of technique and improvisation to the performance of scenes, with emphasis on characterization and textual analysis. Prerequisites: THEA 110 and permission of the instructor.

THEA 230. Acting Styles. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:4**

Exploring styles of acting in plays from different periods, including Greek and Shakespearean tragedy and Comedy of Manners. Prerequisite: THEA 110 or THEA 220 or permission of the instructor.

THEA 240. Directing the Play. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The critical and creative responsibilities of the director; the principles of directing and their application. Prerequisite: THEA 110 or THEA 220 or permission of the instructor.

THEA 245. Entertainment Technology. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:1,Other:2**

From sawdust to soundboards this course focuses on today's technical stage environment including scenery construction, lighting, sound systems and rigging for theatre, dance, and music concerts. Prerequisite: permission of the instructor.

THEA 246. Scene Design. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Create an environment for the action. Through selected projects students explore how to convey mood, character, indicate time and place, and how to reinforce theme through the visual environment. Emphasis in this introductory class is on learning effective play analysis, period research, and how to express important themes and characterization visually. Students develop drawing, drafting and model building skills.

THEA 247. Visual Style. 1 Credit.**Lecture hours:3**

Scene, costume and lighting designers collaborate on plays and creative projects. Emphasis on exploring actor/audience relationships and looking to influential visual arts movements for inspiration. Prerequisite: one course in theatre, art, or art history.

THEA 248. Theatrical Lighting Design. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:1,Other:2**

An introduction to and practice in theatrical stage lighting. Primary emphasis in aesthetics and function of light in design. Prerequisite: permission of the instructor.

THEA 249. Mask and Makeup Design. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

The study of stage makeup (including corrective and character) progresses to the design of makeup as mask and then to the design of three-dimensional masks for performance. Our study emphasizes the ways that the performance, ritual, and festival traditions of the Americas, Africa, Asia, Europe and Oceania have influenced present performance styles in theatre and dance.

THEA 250. Costume and Fashion. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

An overview of the history of costume from the Egyptian period to the present; stresses fashion as the mirror of the attitudes of each age.

THEA 251. Costume Design. 1 Credit.**Offered Spring Semester Only; Lecture hours:1,Other:2**

Introduction to design of clothing for the stage; emphasis on character analysis and design for plays in different styles and periods.

THEA 252. Sound Design. 1 Credit.**Offered Fall Semester Only; Lecture hours:3,Other:2**

This course is directed at students with limited experience in sound design. The course will explore both theoretical and practical aspects of audio mixing and reinforcement.

THEA 253. World Dress. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores dress and clothing as an expression of culture. Topics include: agency, practice, identity, performance, cultural preservation, aesthetics, the body, gender, ethnicity, globalization.

THEA 255. The Art of Costume Craft. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:2,Other:3**

Use creativity and imagination in the studio to explore the sculptural and expressive nature of costume design as art. Prerequisite: permission of the instructor.

THEA 256. Rituals, Festivals, Institutions. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Investigates various theories concerning the origins of Western theatre in ritual performance and explores the development of theatrical institutions from the Greeks to Shakespeare in the context of social, philosophical, and religious values.

THEA 258. Modernism in Performance. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Addresses the diversity of dramatic styles and thematic interests of modernist playwrights: Buchner, Ibsen, Brecht, Beckett, and Handke; emphasizes historical context and analysis of production values.

THEA 260. Theatre and Revolution. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

Focuses on the relationship between ideology and media, specifically how theatre promotes, resists or escapes from the conflict between the status quo and revolutionary change.

THEA 261. Inner Journey: Sam Shepard and American Theatre. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3,Other:1**

Sam Shepard has his finger on the pulse of post-modern America. This study of his plays and films charts the transformation of his dramatic style, from absurdism through jazz and rock'n'roll to realism, and explores the profound changes in Shepard's vision of the theatre and American culture.

THEA 264. Theatre in London. .5-1 Credits.**Offered Both Fall and Spring; Lecture hours:3**

Theatrical productions on the contemporary London stage studied through attendance at performances, script analysis and discussions with actors, directors, designers, and production personnel. Prerequisite: permission of the instructor. Crosslisted as ENGL 289.

THEA 265. Special Studies in Theatre. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

In appropriate years, special topics such as stage combat, mime, or theatrical criticism will be studied.

THEA 2NT. Theatre Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study in theatre. Prerequisite: permission of the instructor.

THEA 314. Seminar in Contemporary Scenography. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Study of the visual art, theatre and dance movements that exert a pervasive influence on contemporary stage design. Emphasis is placed on relating contemporary performance styles to their antecedents such as the Ballets Russes, the New Stagecraft Movement, the Theatre of the Bauhaus, and experiments in actor/audience relationships.

THEA 319. Individual Projects. 1 Credit.**Offered Both Fall and Spring; Lecture hours:3; Repeatable**

Individual, special projects supervised by the instructor, honors thesis. Prerequisite: permission of the instructor.

THEA 342. Devising Performance. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

An exploration into the process of creating collaborative theatre. This class examines new ways of authoring performance with multiple artists (designers, writers, performers, etc.) working together to manifest a shared vision. Prerequisites: THEA 240 and/or DANC 262.

THEA 347. Visual Style. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

In this advanced seminar on design for the stage, scene, costume, and lighting designers collaborate on plays and projects. Emphasis on exploring actor/audience relationships, and looking to influential visual arts movements for inspiration. Prerequisite: one course in theatre, art, or art history. Crosslisted as THEA 247.

THEA 357. Performance Opus. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:Varies,Other:6**

The Performance Opus is an advanced theatre course that showcases the culmination of the Bucknell actor training experience. In addition, the class is a course in career preparation for performance. Prerequisite: permission of the instructor.

THEA 365. Independent Studies in Theatre. 1 Credit.**Offered Occasionally; Lecture hours:Varies,Other:3**

Independent special studies in theatre or dance performance, history, design, or technology. Prerequisite: permission of the instructor.

THEA 390. Applied and Interactive Theatre. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:Varies,Other:2**

Explores theatrical performance as a vehicle for social transformation. Uses techniques from Theatre of the Oppressed, Playback Theatre and improvisation to develop community-oriented service learning projects. Prerequisite: permission of the instructor.

THEA 393. Seminar in Avant-Garde Performance. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3; Repeatable**

This study of experimental aesthetics traces the development of a new paradigm for 20th-century and 21st-century "multi-media" art forms and the aesthetics of "total theatre." The course explores thematic topics such as The Theatre of Social Change, The Self as Content, Theatre and Therapy, The Poor Theatre, Environmental and Formalist Experiments, Happenings and Performance Art. Prerequisite: permission of the instructor.

THEA 397. Seminar in Special Topics. 1 Credit.**Offered Occasionally; Lecture hours:3; Repeatable**

Particular theatre topics selected by the instructor. Prerequisite: permission of the instructor. Crosslisted as THEA 697.

THEA 3NT. Theatre Non-traditional Study. .5-4 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Non-traditional study in theatre. Prerequisite: permission of the instructor.

University Course (UNIV)

UNIV 130. From Vine to Wine: An Introduction to Viticulture and Oenology. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This introductory survey explores the world of wine through lectures, readings, tastings, field trips and group projects. Topics include grape physiology, the chemistry of vinification, the influence of climate and soil on terroir, major grape varieties, wine styles and regions, and the principles of food and wine pairing.

UNIV 140. Social Science Methods. .5 Credits.**Lecture hours:2****UNIV 199. Arts Entrepreneurship. 1 Credit.****Offered Both Fall and Spring; Lecture hours:3**

This survey course explores the theories, processes and practices involved in entrepreneurship in arts practice and cultural organizations. The course features guest lectures by faculty and staff who are experts in arts entrepreneurship.

UNIV 1NT. Internship Credit. .25 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

Partial credit for nonpaid internship experiences. Requires submission of proposal to the UNIV 1NT coordinator and approval of proposal prior to enrollment. May repeat only once for a total of .5 credit. Prerequisites: permission of the coordinator and permission of the instructor.

UNIV 200. Integrated Perspectives Course. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Team-taught interdisciplinary course. Topics vary.

UNIV 201. Creative and Critical Approaches to New Media. .5 Credits.**Offered Fall Semester Only; Lecture hours:3**

In conjunction with the Music, Art, Design, and Engineering lectures, this course will examine new media through the disciplinary lenses of music, visual art, design and marketing, and engineering.

UNIV 202. Music and Mathematics: Exploring Balinese Culture. 1 Credit.**Offered Alternating Summers; Lecture hours:30,Other:30**

This course explores Balinese culture through two disciplinary lenses: mathematics-music. An immersive experience, this course is offered as a "Bucknell-in" program on the Indonesian island of Bali. Students will explore theoretical perspectives and hands-on activities related to the mathematical underpinnings/musical aspects of Balinese culture. Prerequisite: permission of the instructor.

UNIV 204. Naming violence: Language, space and power in the Israeli Palestinian conflict. 1 Credit.**Offered Spring or Summer; Lecture hours:3**

This IP course adopts an integrative approach of two fields of knowledge: sociolinguistics and political geography. The course aims to explore the Palestinian-Israeli struggle and how this struggle is constructed and reproduced in various spaces that are directly related and those that are assumed to be related to the struggle. Crosslisted as ARBC 204 and IREL 204.

UNIV 210. Bucknell in Washington D.C. Internship. 1 Credit.**Offered Spring Semester Only; Lecture hours:1,Other:15**

Required course for the Bucknell in Washington D.C. program. This course is designed to give students real world experience while analyzing their internship in relation to their academic goals. Open only to students in the Bucknell in Washington D.C. program. Prerequisite: permission of the instructor.

UNIV 211. Global Sustainable Development. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Required course for the Bucknell in Washington D.C. program. This course will provide a broad overview of sustainable development issues within a global context. Open only to students in the Bucknell in Washington D.C. program. Prerequisite: permission of the instructor.

UNIV 214. Fresh Water. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1**

The availability of fresh water will be a major issue in many regions around the world during the 21st century (the "global water crisis"). This course examines the problem from a variety of perspectives including religion, aesthetics, ethics, chemistry, biology, geology, engineering, economics, law, and sustainability.

UNIV 219. Peace Studies: Conflict Resolution. 1 Credit.**Offered Occasionally; Lecture hours:3**

Topics examined include pacifism, conflict resolution techniques and approaches, and finally actual case studies to illustrate peacemaking in two contexts: interstate wars and internal or civil strife. Crosslisted as POLS 281 and IREL 231.

UNIV 221. Bending the Curve. .5-1 Credits.**Offered Occasionally; Lecture hours:2**

Students will research problems related to public health and healthcare delivery in rural Pennsylvania. They will participate in a joint Bucknell University-Geisinger conference in November. Prerequisite: permission of the instructor.

UNIV 222. An Examination of the Daily Press in the US. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The course examines the history, tradition and current practice of the press in the United States. Students will analyze newspapers and learn the criteria for journalistic excellence.

UNIV 223. Editing for Careers in Publishing. 1 Credit.**Offered Occasionally; Lecture hours:3**

Covers the principles of editing and copy editing, reviews the basics of grammar, and studies the "Chicago Manual of Style", as well as other style guides.

UNIV 224. Cultivating Change. 1 Credit.**Offered Occasionally; Lecture hours:15,Other:15**

Explores limits to growth and sustainable alternatives. Includes work on an organic farm, and discussions of rhetoric and debates regarding sustainability. Crosslisted as ECON 225.

UNIV 225. Introduction to Public Policy. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Introduction to the study of public policy, including methods to identify social problems, analysis of the political process, policy analysis, and how individuals and institutions respond to policy using a variety of social science disciplines.

UNIV 226. New Orleans in 12 Movements. 1 Credit.**Offered Summer Session Only; Lecture hours:24,Other:33**

Compares 12 movements in the history of N.O.L.A. (Civil War, Louisiana Purchase, birth of Jazz) and its relationship to the Mississippi. Prerequisite: permission of the instructor. Crosslisted with MUSC 317.

UNIV 227. Representing Human Rights and Development. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This new, team-taught course will bring economics, film, and literary studies to bear on the issue of human rights. We will read basic documents related to human rights, along with philosophical, literary, and scholarly investigations into the subject.

UNIV 228. Legal and Ethical Issues of the Press. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A course on the press that focuses on more theoretical concerns, for example, First Amendment interpretations, libel, ethical issues, influences on the press and by the press. Prerequisite: permission of the instructor.

UNIV 229. Introduction to American Studies. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course introduces the interdisciplinary field of American studies, emphasizing key texts and methods for understanding American culture, values, peoples, and issues.

UNIV 230. Modernism and Crisis. 1 Credit.**Offered Fall Semester Only; Lecture hours:2,Other:2**

An interdisciplinary study of major texts, figures, and concepts of the 20th century. Designed to follow HUMN 128 and HUMN 150. Crosslisted as HUMN 250 and ENGL 230.

UNIV 231. Communicating Across Cultures. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course will introduce students to an interdisciplinary perspective on understanding the challenges and opportunities posed by cross-cultural interactions. Crosslisted as ANTH 231.

UNIV 233. The Philosophy of Peace and Nonviolence. 1 Credit.**Offered Occasionally; Lecture hours:3**

A course in Peace Studies that will investigate the arguments and spirit of Pacifism and nonviolent philosophies. Crosslisted as PHIL 233.

UNIV 234. Transformative Dialogue and Social Justice. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Students will explore the impact of systems of power at interpersonal, community, cultural, institutional and societal levels. Employing forms of dialogic communication designed for people to communicate across social, cultural and power differences, students will explore their own and other groups' experiences, also identifying actions to address social justice issues. Crosslisted as WMST 234.

UNIV 235. Transnational Queer. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines notions of Queer in France and North America. Topics include the body, sexual politics, citizenship, legal and aesthetic discourses. All readings and discussions in English.

UNIV 236. Israel: Literature, Film, Culture. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

Course explores Israeli culture in its historical, ethnic, religious, linguistic, and geographical context through literature, film, political discourse, photography, and other texts. Crosslisted as HEBR 236.

UNIV 239. Working with Writers: Theory and Practice. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Theory and Practice. An exploration of the social and intellectual dynamics of the writing and tutoring process. Prerequisite: permission of the instructor.

UNIV 240. Art of Structural Engineering. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Study of the development of the forms of buildings and bridges from scientific, social and symbolic perspectives using historical and modern examples. Students will analyze and critique structures through writing exercises, simple calculations (no calculus), and construction of physical models. Crosslisted as ARTH 240.

UNIV 241. Susquehanna Country. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An investigation of the place of the environment in the humanities from a variety of academic perspectives. May also be taught as UNIV 200. Crosslisted as ENGL 225 and ENST 225 and HUMN 290.

UNIV 242. Rural Communities. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:1.5**

Explores dimensions of rural poverty and includes An on-site experiences in study of a local towns as town carried out by class member explore members exploring the structure of community and and economic inequality. Crosslisted as SOCI 242.

UNIV 247. Vintage Futures: A Brief Survey of 20th Century Science Fiction Cinema. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

This course will take a primarily historical look at the evolution of science fiction films in order to examine genre tropes and conventions, analyze specific films within their cultural context, and to begin to apply those conventions and contexts to an understanding of science fiction's contemporary form.

UNIV 248. Intermediality: Italy, Film, and the Arts. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3,Other:3**

This IP course will focus on intermediality, film, and Italy. It seeks to examine the relationships of cinema with the other arts, in particular the arts of Italy. Crosslisted as ENFS 248 and ITAL 248.

UNIV 250. Jews and the City: Literature and Film. 1 Credit.**Offered Occasionally; Lecture hours:3**

The course explores the 20th-century Jewish urban experience in Warsaw, New York, Tel Aviv, and Jerusalem through literary, cinematic, and scholarly materials. Crosslisted as HEBR 250.

UNIV 251. Weird Art, Weird Poetry: Criticism, Creativity, and Social Life. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

IP Course: Team#taught exploration of art, language, and society in the twentieth century and today. Following the study of art and writing in Dada, Surrealism, and Fluxus, students will construct their own works of art and poetry as well as write collective manifestos and works of critical analysis.

UNIV 258. Star Power: Hollywood Films - 1920s - 1950. 1 Credit.**Offered Fall, Spring or Summer; Lecture hours:3,Other:2**

The course examines the role of acting in Hollywood cinema during its Golden Age (1920 - 1950). It discusses such issues as "film stardom", acting in the film, "genre acting", etc.

UNIV 261. Nazi Culture. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

A study of Nazi attitudes toward the arts, science, education, mass media, work, morality, sex, war, and religion. In English. Crosslisted as GRMN 261.

UNIV 266. Sustainable Building Design. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Environmental, social and economic perspectives on the impacts of buildings throughout their life-cycle. Introduces fundamental concepts related to materials, energy, water, indoor environmental quality, siting.

UNIV 268. Jewish-American Literature and Film. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Examines the literary and cultural production of American Jews through the study of diverse series such as novels, short stories, plays and film. Crosslisted as ENGL 268.

UNIV 269. Mindful Consumption. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

The study and practice of mindful consumption, from Buddhist (Thich Nhat Hahn) and Christian (Saint Benedict) traditions, applied to food, energy, electronics, and education.

UNIV 270. Technical Prospectives: Life, the Universe, and Engineering. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Technical and critical evaluation of issues in our society using principles of mass and energy conservation and engineering design methodology. Issues may include: global warming, disposal of hazardous waste, product and advertisements, pharmaceutical development and testing, product manufacturing, successes and failures.

UNIV 274. BU in Cape Town, South Africa. Addressing the Legacy of Apartheid through Social Justice Initiatives. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

This course introduces students to the historical, cultural, and economic factors that have been part of South Africa's apartheid past, offering them opportunities to explore and learn more about the varied steps taken by South Africans to move beyond the harsh realities of legal apartheid. Crosslisted as RELI 275 and WMST 274.

UNIV 282. Orientalizing the Landscape of England. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This interdisciplinary course will explore the impact of the Orient on British perceptions, from the Middle Ages until the 18th century in all aspects of British culture.

UNIV 286. Imagining Sustainability. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An Integrated Perspectives course covering critical understandings and applications of sustainability across the humanities, the social sciences, and the natural sciences as integrative of environmental, social, economic, and cultural perspectives. Crosslisted as RELI 286 and ENST 286.

UNIV 288. Global Cuisines, Local Contexts: Commensality and Conflict. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

We will consider how food both brings people together, and creates divisions between them, through an in-depth examination of the cases of French and Andean (South American) cuisines. Cuisine will be considered through aesthetic, cultural, and economic lenses as a mirror into larger social worlds. Crosslisted as ANTH 288 and FREN 288 and LAMS 288.

UNIV 289. Global London. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

The course uses London's resources to explore issues confronting heavily urbanized societies, including diversity, sustainability, urban development vs. historical preservation, and globalization. It will treat these from an interdisciplinary perspective, focusing on how government and the public interact to deal with society's concerns, using all of London as a classroom.

UNIV 2NT. University Non-traditional Study. 1-2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies; Repeatable**

Non-traditional study course. Prerequisite: permission of the instructor.

UNIV 303. Wright's Fallingwater Digital. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:2,Other:1**

This class will use digital approaches to explore Frank Lloyd Wright's Fallingwater. Students will produce an iBook about this famous house. Crosslisted as ARTH 303. Prerequisite: permission of the instructor.

UNIV 335. Practicing Democracy: Active Citizenship, Community Engagement, and Social Change. 1 Credit.**Offered Occasionally; Lecture hours:3,Other:1**

An examination of historic and contemporary concepts of democratic citizenship, this interdisciplinary course explores efforts promoting the common good. Students practice civic engagement through public service. Prerequisite: permission of the instructor.

UNIV 341. Transnational Queer Identities. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course examines, critiques and interrogates notions of what is Queer as constructed in, and through, France and North America. Readings and discussions in English. Crosslisted as WMST 341.

UNIV 350. Engineering: A Humanist Enterprise. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores engineering as a human activity geared towards meeting human goals and undertaken by humans. The course explores how multiple disciplinary perspectives are required to undertake good engineering, and how our nature as humans affects engineering activities to help students transcend disciplinary boundaries. Crosslisted as ECEG 409.

UNIV 371. Dance, Culture and Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An exploration of dance as cultural and political practice. Topics include: colonialism; the politics of tradition; gender, ethnicity, and nationalism; dance and violence. Prerequisites: not open to first-year students or students who have taken ANTH 271 or WMST 271 Dance and Culture. Crosslisted as WMST 371.

UNIV 375. Should We Start This Company?. .5 Credits.**Offered Occasionally; Lecture hours:2**

Project centered course in entrepreneurship, generating new business ideas, and product or service design and development through business planning. Prerequisite: permission of the instructor. Crosslisted as ENGR 375 and MIDE 375.

UNIV 380. Impact! Exploring Innovation. 1 Credit.**Offered Either Fall or Spring; Lecture hours:4**

The goal of innovation is POSITIVE CHANGE, to make someone or something better. This class will examine innovation from an interdisciplinary and integrative perspective. We will explore both what makes something innovative and how innovation happens. Prerequisite: Permission of the instructor. Crosslisted as MIDE 387 and MECH 480.

UNIV 399. Extreme Creativity. 1 Credit.**Offered Both Fall and Spring; Lecture hours:4.5,Other:4.5; Repeatable**

Extreme Creativity generates student engagement with the creative process through theoretical, pragmatic, and interactive explorations of creative writing, film, visual arts, music, drama, theatre, and performance. Prerequisites: Must have already taken a course in the arts and permission of the instructor.

UNIV 3NT. University Non-traditional Study. 1 Credit.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:3**

Non-traditional study course.

UNIV 401. Leadership: Theory, History, and Practice. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Leadership is a phenomenon studied by numerous social sciences and humanities. Their different perspectives are compared in a search for the determinants of successful leadership. Prerequisite: junior or senior status.

UNIV 4NT. University Non-traditional Study. 2 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies**

University non-traditional study course that serves as a capstone. Prerequisite: permission of the instructor.

Women's and Gender Studies (WMST)

WMST 150. Introduction to Women's and Gender Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Interdisciplinary introduction to the major theories, themes, methodologies, and issues of women's studies. Emphasis in the social sciences.

WMST 211. Women In Judaism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Survey of Jewish texts and films that focus specifically on women or use feminine imagery; considers feminist and historical-critical interpretations of the evolving role of Jewish women. Crosslisted as RELI 211.

WMST 212. Southern Exposure. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Twentieth-century literature of the American South. Probes the legacy of a culture that celebrated honor, but was built on slavery. Crosslisted as ENLS 211.

WMST 214. Sex, Lies and Capitalism. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

In this course – as we explore global patterns of inequality – we will rethink our habitual definitions of gender, race, sexuality, class, and human. This course employs feminist, queer, and critical race theory to investigate the myths, or socially-useful lies, that are essential to the functioning of global capitalism. Crosslisted as IREL 214.

WMST 219. Contemporary Religion: Race, Gender, and Sexuality. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Through historical, political, and sociological analysis, this course will study how sexuality, race, and gender issue are affecting contemporary religious thought. Crosslisted as RELI 219.

WMST 220. Introduction to Feminist Theory in Practice. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Explore the broad range of work that lays the intellectual and theoretical groundwork for contemporary feminist theory and politics, while providing student opportunities to experience such work critically through service learning experiences in the community. Prerequisite: WMST 150 or permission of the instructor.

WMST 221. Passion/Perversion: Japan Film. 1 Credit.**Offered Spring Semester Only; Lecture hours:3,Other:3**

A discussion class in which numerous modern Japanese films are used to explore the representation of desire, both passionate and perverse. WARNING: explicit sexual content. Crosslisted as EAST 222.

WMST 222. Queer Studies. 1 Credit.**Offered Alternating Fall Semester; Lecture hours:3**

This course examines social construction frameworks for analyzing contemporary sexualities, gendered identities, and the discourses and practices that maintain them. It introduces students to queer theory and its application to a variety of political and cultural fields.

WMST 224. African Political Economy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Analysis of topics in films and novels by Ousmane Sembene: pre-colonial history, colonialism, post-colonial independence, racial and gender oppression, worker exploitation, religious conflict, and modernization. Prerequisite: ECON 103. Crosslisted as ECON 224.

WMST 225. Modernism on the Margins: Race, Class and Sexuality. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Exploiting the exclusionary nature of "High Modernism," this course highlights literature on the margins of modernism, revealing literature's political investment in race, class, and sexuality. Crosslisted as ENGL 239.

WMST 226. Prince-Pimp/Princess-Pornstar. 1 Credit.**Offered Spring Semester Only; Lecture hours:1**

This course employs media studies to examine the role cultural texts - fairy tales, advertisements, music videos - play in shaping and reflecting gender roles and sexuality.

WMST 227. Race and Sexuality. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course explores the constructions of and intersections between race and sexuality. It also investigates the ways that these identities/locations have informed understanding of inequality in the U.S.

WMST 229. Women, Power and Politics. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course focuses on tools and concepts of gender analysis, the history of women's movements, and issues such as work and family, sexuality, race and class, violence, health, leadership, politics, the military, and the arts. Open only to students in the Bucknell in Washington, D.C., program.

WMST 230. Feminist Philosophy. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An examination of feminist philosophy primarily as it occurs in the U.S. from the late 18th century to the present. Prerequisite: PHIL 100 or WMST 150 or permission of the instructor. Crosslisted as PHIL 230.

WMST 231. Psychology of Women. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Considers experiences of girls and women, gender differences, attitudes toward women, and issues of particular concern to women such as domestic violence, body image, and sexual assault. Crosslisted as PSYC 232.

WMST 232. Gender and Sexuality in South Asia. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Explores issues of gender and sexuality in South Asia, primarily India and Sri Lanka. Topics include marriage, family, life cycle, religion and nationalism. Crosslisted as ANTH 232.

WMST 233. Global Feminism and Religion. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course examines the relationship between developments in feminist thought and movements in various parts of the world and the array of religious ideologies and practices in those societies. Crosslisted as RELI 233.

WMST 234. Transformative Dialogue and Social Justice. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Students will explore the impact of systems of power at interpersonal, community, cultural, institutional and societal levels. Employing forms of dialogic communication designed for people to communicate across social, cultural and power differences, students will explore their own and other groups' experiences, also identifying actions to address social justice issues. Crosslisted as UNIV 234.

WMST 236. Unemployment and Poverty. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A study of the causes of unemployment and poverty in the United States and policies to generate full employment and eliminate poverty. Prerequisite: ECON 236 or permission of the instructor. Crosslisted as ECON 236.

WMST 237. Ethnicity, Gender, and Identity in Antiquity. 1 Credit.**Offered Occasionally; Lecture hours:3**

Ancient Greek and Roman perceptions, both social and biological, of gender (including sexuality) and ethnicities. Includes discussion of the social position of women and other marginal members of society in antiquity. Crosslisted as CLAS 237.

WMST 238. Women and Politics. 1 Credit.**Offered Alternating Spring Semester; Lecture hours:3**

An analysis of women and politics generally with specific focus on feminism and its relationship to political discourse and political action. Crosslisted as POLS 238.

WMST 239. Queering (Christian) Theology. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This course explores the relationship between queer theories, sexuality studies, and Christian theology. In addition to the concepts of gender, race and sexuality, it offers a survey of major topics in Christian thought, including God, love, justice, sin, and salvation. Crosslisted as RELI 239.

WMST 240. Cape Town, South Africa. Coping With the Legacy of Apartheid: Social Justice in Theory and Practice. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

This course introduces students to the historical, cultural, and economic factors that have been part of South Africa's apartheid past, offering them opportunities to explore and learn more about the varied steps taken by South Africans to move beyond the harsh realities of legal apartheid. Course counts as Integrative Perspectives.

WMST 241. Women in Chinese Literature. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course examines various modes of representation of women in Chinese literature to understand China's literary past from a women-centered point of view. Crosslisted as EAST 241.

WMST 242. Sex, Gender and Family during the Age of Empire. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Despite their brutally violent nature, European empires were imagined as families consisting of European colonials and their "native" subjects. This course examines widow burning; imperialism and motherhood; mixed race families; European children and their colonial caregivers; British feminism; patriarchy and Islam; sexuality and the imperial archive; and imperial violence. Crosslisted as IREL 242.

WMST 243. Gender, Policy and Practice. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course focuses on gender-based policy and practice in relation to select social problems in the U.S. and globally (e.g., violence, trafficking, health, education, poverty, labor migration). This course is only open to students in the Bucknell in Washington, D.C., program.

WMST 244. Global Feminisms. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The course investigates the often conflicting meanings for the term "feminism" that cut across international feminist politics, academic debates and the local/global politics of place and identity. Crosslisted as IREL 244.

WMST 248. Religions of the African Diaspora. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course examines the historical development of African-derived or African-inspired religions in the African diaspora, including in the United States. It also examines the expansion and appropriation of major world religions into particular African diaspora communities. Crosslisted as RELI 248.

WMST 251. Women and Development. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course examines the relationship between women and development, as an ideological, economic, political, and social enterprise. Crosslisted as ANTH 251.

WMST 253. Gender and Migration. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

Role of gender in internal and international migration flows; economic restructuring; state policies; transnational domestic laborers and sex workers; and migration effects. Prerequisite: ECON 103. Crosslisted as ECON 253.

WMST 254. Sex and Social Order. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

Analysis of connections between sex and social structure to determine how our understanding of sexuality is implicated in our political system, economy, and cultural ideology. Crosslisted as POLS 254.

WMST 263. Sex and the Single Heroine. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Introduction to the 18th-century novel, focusing on issues of gender, sexuality, and class, in a wide range of novels and contemporary conduct books. Crosslisted as ENLS 263.

WMST 270. Special Topics in Women's and Gender Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

A course on special topics of interest to faculty members, offered occasionally. Subject varies.

WMST 271. Dance and Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An exploration of dance as a cultural practice. Topics include: the body and movement; gender and sexuality; race and ethnicity; colonialism and nationalism; aesthetics, ritual and healing; globalization; representation. Crosslisted as ANTH 271.

WMST 273. Women Writing Culture. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

This course explores the genre of ethnography as it has been used to examine women's lives and issues of gender around the world.

WMST 274. BU in Cape Town, South Africa. Addressing the Legacy of Apartheid through Social Justice Initiatives. 1 Credit.**Offered Summer Session Only; Lecture hours:3**

This course introduces students to the historical, cultural, and economic factors that have been part of South Africa's apartheid past, offering them opportunities to explore and learn more about the varied steps taken by South Africans to move beyond the harsh realities of legal apartheid. Course counts as Integrative Perspectives. Crosslisted as RELI 275 and UNIV 274.

WMST 275. South Africa: Social Entrepreneurship. 1 Credit.**Offered Summer Session Only; Lecture hours:15**

The course examines the legacy of apartheid and the role of social entrepreneurship in transforming communities. Students are placed in community organizations in nearby townships. May be crosslisted as ECON 270, MGMT 270, OR PSYC 270. Prerequisite: permission of the instructor.

WMST 290. Gender Issues in Education. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

An examination of how gender affects the teaching-learning process with an emphasis on theory, curriculum, pedagogy, and assessment. Prerequisite: EDUC 201 or permission of the instructor. Crosslisted as EDUC 290 and EDUC 690.

WMST 315. Unsettling Memories. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Cultural analysis of unsettling, historically powerful racial ideas about purity and pollution written on the "lady's" and "black" bodies in 20th-century Southern fiction and photography. Prerequisite: permission of the instructor. Crosslisted as ENLS 315.

WMST 318. Economic History of Women in the United States. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

Examination of the history of women in the U.S. economy, with particular attention to racial-ethnic and class differences among women. Prerequisites: ECON 256 or ECON 257 or ECON 258 or ECON 259 and permission of the instructor. Preference given to ECON and ECMA majors. Crosslisted as ECON 319.

WMST 319. Independent Studies. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Independent study supervised by a Women's and Gender Studies faculty member. Prerequisite: permission of the instructor.

WMST 320. Independent Studies. 1 Credit.**Offered Both Fall and Spring; Lecture hours:Varies,Other:3; Repeatable**

Independent study supervised by Women's and Gender Studies faculty member. Prerequisite: permission of the instructor.

WMST 324. Geographies of Identity. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Who are "we"? Seminar considers role of space in constituting society around the world. Explores nationalism, globalization, multiculturalism, citizenship, race, ethnicity, gender, sexuality, age, disability. Crosslisted as GEOG 324.

WMST 325. History of Sexuality. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

A cross-cultural and interdisciplinary examination of the signification of sexuality in literature, philosophy, scientific discourse, and the visual arts. Prerequisite: permission of the instructor. Crosslisted as HUMN 320 and ENLS 394.

WMST 328. Mating and Marrying in America. 1 Credit.**Offered Alternate Fall or Spring; Lecture hours:3**

This is a course on changing patterns in American courtship (dating), marriage, and family life from the 20th to the 21st century. Prerequisite: permission of the instructor. Crosslisted as SOCI 328.

WMST 332. Women and the Penal System. 1 Credit.**Offered Spring Semester Only; Lecture hours:3**

This course explores the interface between inequality, crime, punishment, and justice, with an emphasis on women in the United States; the course is populated by both Bucknell students and incarcerated students at a nearby women's prison. Prerequisite: permission of the instructor. Crosslisted as SOCI 332.

WMST 333. Black Feminism. 1 Credit.**Offered Occasionally; Lecture hours:3**

This course explores the context, development, and outcomes of black feminists in the United States during the second half of the 20th century.

WMST 334. Women in Antiquity. 1 Credit.**Offered Occasionally; Lecture hours:3**

Seminar-style examination of the lives of women in antiquity both real and imagined, as attested in a variety of ancient media. Crosslisted as CLAS 334. Prerequisite: permission of the instructor.

WMST 341. Transnational Queer Identities. 1 Credit.**Offered Fall Semester Only; Lecture hours:3**

This course examines, critiques, and interrogates notions of what is Queer as constructed in, and through, France and North America. Readings and discussions in English. Crosslisted as UNIV 341.

WMST 370. Special Topics in Women's and Gender Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3; Repeatable**

Advanced course on special topics of interest to faculty members, offered occasionally. Subject varies.

WMST 371. Dance, Culture and Politics. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

An exploration of dance as cultural and political practice. Topics include: colonialism; the politics of tradition; gender, ethnicity, and nationalism; dance and violence. Prerequisites: not open to first-year students or students who have taken ANTH 271 or WMST 271 Dance and Culture. Crosslisted as UNIV 371.

WMST 390. Honors in Women's and Gender Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

Individual, special projects supervised by instructor, culminating in honors thesis. Prerequisite: permission of the instructor.

WMST 3NT. WMST Non-traditional Study. .5-1 Credits.**Offered Fall, Spring, Summer; Lecture hours:Varies,Other:Varies; Repeatable**

Non-traditional study in WMST. Prerequisite: permission of the instructor.

WMST 400. Advanced Seminar in Women's and Gender Studies. 1 Credit.**Offered Either Fall or Spring; Lecture hours:3**

The seminar will focus on the production of an independent research project by each student, with common readings on the practice of feminist scholarship. Students will develop and give formal presentations of their projects. Prerequisites: open to seniors, juniors by permission, WMST 150 and WMST 220 or WMST 230/PHIL 230.

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