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.