Computer Science

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Faculty from mathematics with joint teaching appointments in computer science: Conjura, Iannone

Click here for Computer Science courses.

The computer science curriculum is designed to prepare students for employment as computer science specialists, as well as to provide a strong background for advanced study. The BS in Computer Science is accredited by the Computing Accreditation Commission of ABET. All students take courses in problem solving and programming fundamentals, software engineering, data structures, operating systems, compilers, computer organization, and algorithm analysis. Upper-level options provide exposure to a range of subdisciplines including, but not limited to, artificial intelligence, databases, graphics, information retrieval, networks, games design, development and implementation, bioinformatics, and programming languages. Special topics courses offered each semester provide the opportunity to study and work with the latest trends in technology. Students participate in research and/or in industry experiences, which culminate in professional presentations. Students balance their studies with course work in mathematics and science, as well as in arts, humanities, history, and the social sciences. A total of at least 32 course units is required for graduation.

The Department of Computer Science supports and encourages its students to consider a study abroad semester as part of their curriculum. For more information about studying outside of the United States without delaying your graduation, academic advisors should be consulted, and further details are available from the college's Office of International and Off-Campus Programs.

Requirements for the major:

I. Required Courses (eight or seven* course units)

CSC 220/CS I: Computational Problem Solving*	1 course unit
CSC 230/CS II: Data Structures and Algorithms*	1 course unit

**CSC 250/Accelerated CS I and II (one course unit) may fulfill the CSC 220 and 230 requirement — by permission*
Also see additional constraints in Computer Science Options below

Additional Required Courses (six course units)

CSC 260/CS III: Programming in the Large	1 course unit
CSC 310/Discrete Structures of Computer Science	1 course unit
CSC 325/Computer Architecture	1 course unit
CSC 345/Operating Systems	1 course unit
CSC 410/Advanced Analysis of Algorithms	1 course unit
CSC 434/Compilers and Interpreters	
or	1 course unit
CSC 460/Theory of Computation	

II. Computer Science Options (four or five* course units)
Select three courses from the following "Option Part A" list and one course from "Option Part B". Students who take CSC 250 to satisfy CSC 220 and 230 requirement must select four courses from the "Option Part A" list. Students may take additional options courses for free elective credit with one exception: placement out of WRI 102 or foreign language must be replaced by liberal learning courses, not CSC courses.

PART A: Choose three or four* courses from the following: 3 (or 4*) course units
CSC 307/Data Mining and Predictive Modeling

CSC 315/Database Systems
CSC 320/Information Retrieval
CSC 350/ Computer Graphics
CSC 360/Computer Networking
CSC 365/Games I: Design and Arhitecture
CSC 380/Artificial Intelligence
CSC 390/Programming Languages
CSC 450/Computer and Network Security
CSC 465/Games II: Implementation and Project Management
CSC 470/Topics in Computer Science
CSC 471/Genomics and Bioinfomatics

PART B: Choose one course from the following:
(Practicum Courses) 1 course unit

CSC 399/Internship in Computer Science
CSC 498/Mentored Research I in Computer Science
CSC 499/Mentored Research II in Computer Science

Up to three practicum courses may be chosen, selected with advisement and departmental approval. The extra practicum course(s) may apply toward the Part A options, with departmental approval. CSC 391/Independent Study in Computer Science also requires departmental approval.

III. Required Mathematics Courses 3 course units

MAT 127/Calculus A
MAT 128/Calculus B or MAT 205/Linear Algebra
STA 215/Statistical Inference

IV. Computer Science Natural Sciences and Mathematics Options 4 course units

Three major-level laboratory sciences (two of which are in sequence) and one additional math or science course (with advisement). Consult the department for details.

V. Foreign Language Requirements 2 or 3 course units

Two courses in a sequence in any of the modern languages are required if students opt for a language not previously studied in high school or another institution.

Alternatively, students continuing a foreign language previously taken in high school or at another institution must in general take three courses of that language in a sequence. However, this requirement may be reduced by taking a placement test in that language. Based on the student's performance on that test, 0, 1, 2 or 3 courses may be required.

Any course reduction in foreign language requirements results in an equivalent number of free elective courses, which must be selected from the areas of art, humanities, social science or history. Consult the department for details.

Note: Arabic 151 and 152: Chinese 151 and 152; Japanese 151 and 152; Persian 151 and 152; and Russian 151 and 152 are intensive courses and carry two course units of credit each. Students should take this into account when planning a normal four-course semester.

Program Entrance, Retention, and Exit Standards

Every major program at the College has set standards for allowing students to remain in that program, to transfer within the College from one program to another, and to graduate from a program. The following are the standards for the computer science program. Minimum grades are noted in parentheses:

- Retention in the program is based on the following performance standards in these "critical content courses": CSC 220*/Computer Science I: Computational Problem Solving (C); CSC 230*/Computer Science II: Data Structures (C); CSC 260/Computer

Science III: Programming in the Large (C); CSC 310/Discrete Structures of Computer Science (C).

- Transfer into the program from another program within the College is based upon the following performance standards in these "foundation courses": MAT 127/Calculus A (C); CSC 220/Computer Science I: Computational Problem Solving (C).
- Graduation requires a GPA of 2.0 in computer science courses, GPA of 2.0 overall, and a grade of C or better in the following courses: CSC 220*/Computer Science I: Computational Problem Solving; CSC 230*/Computer Science II: Data Structures; CSC 260/Computer Science III: Programming in the Large; CSC 310/Discrete Structures of Computer Science.

**or CSC 250 if used as a replacement.*

Computer Science Minor 5 course units

I. Required Courses (four course units)

CSC 220/CS I: Computational Problem Solving	1 course unit
CSC 230*/CS II: Data Structures and Algorithms	1 course unit
CSC 260/CS III: Programming in the Large	
or	1 course unit
CSC 325/Computer Architecture	
CSC 310/Discrete Structures of Computer Science	
or	1 course unit
MAT 205/Linear Algebra	

II. Options for Computer Science Minor (one or two* course units)

One (or two*) additional course(s) chosen from the following:

CSC 315, CSC 320, CSC 325, CSC 345, CSC 350, CSC 360, CSC 365, CSC 380, CSC 390, CSC 410, CSC 434, CSC 450, CSC 465 or CSC 470.

Minimum grade point average for retention and completion for the minor is the same as for the major.

*CSC 250/Accelerated CS I and II (one course unit) may fulfill the CSC 220 and 230 requirement — by permission

Department Academic Regulations

A minimum of 5.25 course units (equals 21 credits) in the major must be earned in the department. A minimum of 3.75 course units of the final 5.25 (equals 15 of the final 21 credits) in the major must be earned in the department.

CSC 101, CSC 102, CSC 105, CSC 215, and HON 280 do not count toward the required or options courses in the computer science major or minor and may only be taken by computer science majors only if they fulfill requirements/required options for other majors.

Students who take CSC 250 accelerate requirements through their junior year.

Suggested Course Sequence

First-Year (CSCA)

Fall

CSC	099/Orientation to Computer Science	0 course unit
CSC	220/CS I: Computational Problem Solving	1 course unit
MAT	127/Calculus A	1 course unit
FSP	First Seminar*	1 course unit

Liberal Learning (Foreign Language suggested)**	1 course unit

**Selected to fulfill a Liberal Learning requirement for Arts and Humanities or Social Sciences and History.*

***Note: Arabic 151 and 152: Chinese 151 and 152; Japanese 151 and 152; Persian 151 and 152; and Russian 151 and 152 are intensive courses and carry two course units of credit each. Students should take this into account when planning a normal four-course semester.*

Spring

CSC 230/CS II: Data Structures	1 course unit
MAT 128/Calculus B	
or	
MAT 205/Linear Algebra	1 course unit
WRI 102/Academic Writing (if not exempted)	1 course unit
Liberal Learning (Foreign Language suggested)*	1 course unit

**Note: Arabic 151 and 152: Chinese 151 and 152; Japanese 151 and 152; Persian 151 and 152; and Russian 151 and 152 are intensive courses and carry two course units of credit each. Students should take this into account when planning a normal four-course semester.*

Total	**8 (plus orientation) course units**

Second-Year

CSC 260/CS III: Programming in the Large	1 course unit
CSC 310/Discrete Structures	1 course unit
CSC 325/Computer Architecture	1 course unit
CSC Option Course (Part A list)	1 course unit
STA 215/Statistical Inference	1 course unit
Liberal Learning	3 course units
Total	**8 course units**

Third-Year

CSC 345/Operating Systems	1 course unit
CSC 434/Compilers and Interpreters	
or	1 course unit
CSC 460/Theory of Computation	
CSC Option Course (Part A list)	1 course unit
CSC Practicum Course (Option Part B list)	1 course unit
Natural Sciences	2 course units
(in sequence; for science majors; with lab)	
Liberal Learning	2 course units
Total	**8 course units**

Fourth-Year

CSC 410/Advanced Data Structures and Algorithms	1 course unit
CSC Option Course (Part A list)	1 course unit
Natural Sciences	1 course unit
(for science majors; with lab)	
Math or Science Option	1 course unit
Liberal Learning	1 course unit
Free Elective	3 course units
Total	**8 course units**