Computer Science B.S. and Minor

Contact Information

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Faculty

Professors Corwin, Logar, Penaloza, and Weiss; Associate Professor McGough; Assistant Professor Zong; Instructors Manes and Schrader; Emeritus Professors Carda and Opp.

General Information

The Department of Mathematics and Computer Science offers a bachelor of science degree in computer science and a master of science degree in computer science. The bachelor of science degree in computer science is accredited by the Accreditation Board for Engineering and Technology (ABET).

Students who desire to major in this program should announce their intention to the Department of Mathematics and Computer Science as early as possible and should consult advisors in the department at each registration period before selecting electives to round out the courses of study outlined in the departmental curriculum.

Any student who is pursuing a double major and whose designated advisor is in another department should consult an advisor in the mathematics and computer science department at each registration.

Laboratories

School of Mines has a variety of computing platforms available. Resources include an extensive PC network, a Linux lab, a Tablet PC lab, and Robotics Lab. The Linux lab is fully equipped with quad-core desktops Other computing resources may be accessed via the Internet. The institution encourages its students to use the computer facilities in the creative and efficient solution of scientific and engineering problems.

Computer Science Major

The primary goal of the computer science program is to prepare the graduate to enter a dynamic and rapidly changing field as a competent computer scientist. We expect our graduates to be capable in all phases of software development including design, development, and testing. We expect our graduates to have a firm understanding of hardware technologies. These capabilities require the graduate to possess good communication skills, both oral and written, and the ability to work effectively as a team member. The graduate must be able to read and comprehend the literature of the discipline and be sufficiently well versed in general theory to allow growth within the discipline as it advances. We expect most of our graduates to pursue careers as

software engineers within the computer industry. Some may choose careers as entrepreneurs and others will pursue advanced degrees and careers in research.

The sample Computer Science Checklist in this section lists all required classes for the bachelor's degree in their proper prerequisite sequence. Students should consult course listings for prerequisites and should consult their advisors at each registration.

A computer science major must complete thirty (30) total hours in humanities, social science, or other nontechnical disciplines that serve to broaden the background of the student. Within that requirement, the student must complete a minimum of sixteen (16) credits in humanities and social science with at least six (6) credit hours in humanities and at least six (6) credit hours in social science. Refer to the humanities and social sciences section of this catalog for a list of courses satisfying these requirements. It is also important to refer to the general education core requirements under bachelor of science graduation requirements for further information. Students must complete the general education core requirements within the first sixty-four (64) credits.

Any computer science major desiring a minor in another field should consult his or her advisor in the Department of Mathematics and Computer Science as early in his or her program of study as possible. Academic and Enrollment Services has a form that must be signed by the student and the department chairs of both departments involved.

Minor in Computer Science

A minor in the Department of Mathematics and Computer Science must be approved by the student's major department. Academic and Enrollment Services has forms that should be completed and signed by the department chairs from both departments involved in this minor. The minor in Computer Science requires the completion of 21 credit hours. The core coursework includes: CSC 150, CSC 250, CSC 251, CSC 300, and at least six credit hours from an approved list. The approved list of courses for the minor: CSC 314, CSC 317, CSC 372, CSC 410, CSC 412, CSC 421, CSC 433, CSC 440, CSC 445, CSC 447, CSC 448, CSC 456, CSC 461, CSC 463, CSC 464, CSC 476, and CSC 484.

Computer Science and Mathematics Double Major

Due to the large number of courses common to the computer science major and the mathematics major, many students find it attractive to pursue a double major in these two areas. Students seeking the double major should consult their advisors for details about this option.

Computer Science Curriculum/Checklist

It is the student's responsibility to check with his or her advisor for any program modifications that may occur after the publication of this catalog.

Freshman Year

First Semester

ENGL 101	Composition I	3
CHEM 112	General Chemistry I	3
CHEM 112L	General Chemistry I Lab	1
MATH 123	Calculus I	4
CSC 150	Computer Science I	3
Humanities or Social Sciences Elective(s)[1]		3
TOTAL		**17**

Second Semester

MATH 125	Calculus II	4
CHEM 114	General Chemistry II	3
CSC 250	Computer Science II	4
CSC 251	Finite Structures	4
PE	Physical Education	1
TOTAL		**16**

Sophomore Year

First Semester

MATH 225	Calculus III	4
CSC 314	Assembly Language	4
CENG 244	Intro to Digital Systems	4
PE	Physical Education	1
Humanities or Social Sciences Elective(s)[1]		3
TOTAL		**16**

Second Semester

ENGL 279	Technical Communications I	3
CSC 317	Computer Organization and Architecture	4
CSC 300	Data Structures	4
Humanities or Social Sciences Elective(s)[1]		6
TOTAL		**17**

Junior Year

First Semester

ENGL 289	Technical Comm II	3
MATH 321	Differential Equations	4
PHYS 211	University Physics I	3
CSC 372	Analysis of Algorithms	3
Elective or CSC Elective		3
TOTAL		**16**

Second Semester

MATH 315	Linear Algebra	3
MATH 441	Engineering Statistics	4
CSC 461	Programming Languages	4
PHYS 213	University Physics II	3
PHYS 213L	University Physics II Lab	1
TOTAL		**15**

Senior Year

First Semester

CSC 470	Software Engineering	3
CSC 440	Advanced Digital Systems	4
CSC 484	Database Mgmt Systems	3
Electives or CSC Electives		6
TOTAL		**16**

Second Semester

CSC 456	Operating Systems	3
CSC 465	Senior Design Project	3
HUM 375	Computers in Society[1]	3
Electives or CSC Electives		6
TOTAL		**16**

128 credits required for graduation

Curriculum Notes

- CSC 465 is part of a two-course sequence in senior design. It is expected that the course sequence will be taken in successive semesters.
- An exit exam, such as the Major Field Achievement Test in Computer Science, will be given as part of CSC 465. The overall results of this exam will be used to assess the computer science program.
- CSC 105 may not be counted toward any mathematics, computer science, or engineering degree. Other majors should consult their departments on policy regarding this course.

- MUEN 101, 121, 122 can be used to substitute for one or two of the required two Physical Education credits.

[1]Elective courses must be chosen to satisfy all of the following requirements:

1. Sixteen (16) semester hours in humanities or social science. At least six (6) hours must be in humanities and at least six (6) hours must be in social sciences.
2. Six (6) credit hours of humanities and six (6) credit hours of social science must be completed within the first sixty-four (64) hours. It is important to refer to the general education requirements under bachelor of science graduation requirements for further information.
3. Thirty (30) total hours in humanities, social science, or other nontechnical disciplines that serve to broaden the background of the student. This may include all English classes, two (2) credits of physical education, and those courses used to meet requirement (1) above.
4. A minimum of three (3) computer science elective courses numbered 400 or above must be taken. A three (3)-credit Co-op may be substituted for one computer science elective. Special topics and independent study courses may not be used to satisfy the computer science elective requirement.

Course Offering Schedule

In an attempt to help students plan their future semesters, the following information is presented. This reflects the best available knowledge at the time of the preparation of this document. This is not meant as a guarantee of when classes will be offered. Students concerned about when classes will be offered should contact the department chair for any changes to the following. Courses

not listed below have no defined rotation and will be offered contingent on demand and staff. Most computer science courses are not suitable to offering in an eight-week Summer session. Students should not expect computer science offerings in the summer.

Classes that are typically offered every semester include CSC 105, CSC 150, CSC 250, CSC 251, CSC 314, and CSC 300.

Classes that are typically offered every fall semester include CSC 372, CSC 440, CSC 484, and CSC 470.

Classes that are typically offered every spring semester include CSC 317, CSC 461, CSC 456, CSC 465, MATH 315, and MATH 441.

Classes that are typically offered in the fall semester of even numbered years, for example fall 2008, include CSC 421/521, CSC 445/545, and CSC 772.

Classes that are typically offered in the spring semester of odd numbered years, for example spring 2009, include CSC 410/510, CSC 412/512, CSC 447/547 and MATH 463.

Classes that are typically offered in the fall semester of odd numbered years, for example fall 2009, include CSC 448/548, CSC 464/564, and CSC 784.

Classes that are typically offered in the spring semester of even numbered years, for example spring 2010, include CSC 433/533, CSC 463/563, and CSC 762.

Mines Matters: With 110 students in attendance summer 2007, the School of Mines anticipates 120 for Camp Invention® to attend the 2008 event. Camp Invention® is a hands-on science and creativity day camp that lets students learn will having fun. This day camp is offered to students going into grades 2-6.