

## Computer Science B.S. and Minor



### Contact Information

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Department of Mathematics  
and Computer Science

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### Faculty

Professors Corwin, Logar, Penaloza, Weiss;  
Associate Professor McGough; Assistant  
Professor Zong; Instructor Schrader; Emeritus  
Professors Carda, Opp, Weger.

### 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 Robotics and Intelligent  
Autonomous Systems (RIAS). The bachelor of  
science degree in computer science is accredited  
by the by the Engineering Accreditation  
Commission of ABET, 111 Market Place, Suite  
1050, Baltimore, MD 21202-4012 – telephone  
(410) 347-7700.

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.

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

The School of Mines has a variety of  
computing platforms available. Resources include  
an extensive PC network, a Linux lab, a Tablet PC  
lab, and a 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 graduates to enter a  
dynamic and rapidly changing field as competent  
computer scientists. Graduates are expected to be  
capable in all phases of software development  
including design, development, and testing.  
Graduates should also 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.  
Graduates 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. Most of the  
graduates will 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 courses 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 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 16 credits in humanities and social science, with at least 6 credit hours in humanities and at least 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 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. The Office of the Registrar and Academic Services has a form that must be signed by the student and the department heads 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. The Office of the Registrar and Academic Services has forms that should be completed and signed by the department heads from both departments involved in this minor. The minor in computer science requires the completion of 21 credit hours.

The core course work includes CSC 150, CSC 250, CSC 251, CSC 300, and at least 6 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**

For the bachelor of science in Computer Science, a student must:

1. Take all of the courses listed in the Computer Science curriculum checklist;
2. Successfully complete a minimum of 3 computer science elective courses numbered 400 or above must be taken. A 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.; and
3. Have a departmental grade point average of at least 2.00 in all CSC courses 300 level or higher. (Courses taken more than once will have only the higher grade counted for computing the departmental grade point average.)

### **Computer Science Curriculum/Checklist**

Students are responsible for checking with their advisors for any program modifications that may occur after the publication of this catalog.

#### **Freshman Year**

<b>First Semester</b>		
ENGL 101	Composition I	3
Science Elective <sup>1</sup>		3

Science Elective Lab <sup>1</sup>	1
MATH 123 Calculus I	4
CSC 150 Computer Science I	3
Humanities or Social Sciences Elective(s) <sup>1</sup>	3
<b>TOTAL</b>	<b>17</b>

### Second Semester

MATH 125 Calculus II	4
Humanities or Social Sciences Elective(s) <sup>1</sup>	3
CSC 250 Computer Science II	4
CSC 251 Finite Structures	4
PE Physical Education	1
<b>TOTAL</b>	<b>16</b>

### Sophomore Year

#### First Semester

CSC 300 Data Structures	4
MATH 225 Calculus III	4
CENG 244 Intro to Digital Systems	4
PE Physical Education	1
Humanities or Social Sciences Elective(s) <sup>1</sup>	3
<b>TOTAL</b>	<b>16</b>

#### Second Semester

ENGL 279 Technical Comm	3
CSC 314 Assembly Language	4
Humanities or Social Sciences Elective(s) <sup>1</sup>	3
Science Elective <sup>1</sup>	3
Science Elective Lab <sup>1</sup>	1
Free Elective	2
<b>TOTAL</b>	<b>16</b>

### 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 <sup>1</sup>	3
<b>TOTAL</b>	<b>16</b>

#### Second Semester

CSC 317 Computer Organization and Architecture	4
MATH 315 Linear Algebra	3
CSC 461 Programming Languages	3
CSC 470 Software Engineering	3
CSC Elective <sup>1</sup>	3
<b>TOTAL</b>	<b>16</b>

### Senior Year

#### First Semester

CSC 465 Senior Design I	2
CSC 484 Database Mgmt Systems	3
CSC 421 Graphical User Interfaces With Object Oriented Programming	3
Humanities or Social Sciences Elective(s) <sup>1</sup>	5
Free Elective	3
<b>TOTAL</b>	<b>16</b>

#### Second Semester

CSC 456 Operating Systems	4
CSC 467 Senior Design II	2
HUM 375 Computers in Society <sup>1</sup>	3
CSC Electives <sup>1</sup>	3
MATH 381 Intro to Probability and Statistics	3
<b>TOTAL</b>	<b>15</b>

### 128 credits required for graduation

### Curriculum Notes

- CSC 465/467 is 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 467. 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.

<sup>1</sup>Elective courses must be chosen to satisfy all of the following requirements.

- Sixteen semester hours in humanities or social science. At least 6 hours must be in humanities and at least 6 hours must be in social sciences.

- Six credit hours of humanities and 6 credit hours of social science must be completed within the first 64 hours. It is important to refer to the general education requirements under bachelor of science graduation requirements for further information.
- Thirty 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, 2 credits of physical education.
- Eleven credits of science. The science requirement for this major consists of PHYS 211 and two more lecture courses from among BIOL 151, BIOL 153, CHEM 112, CHEM 114, GEOL 201, or PHYS 213; plus two labs that accompany the science courses taken, i.e., either BIOL 151L, BIOL 153L, CHEM 112L, CHEM 114L, GEOL 201L, or PHYS 213L. Students must complete science classes from at least two different disciplines.

### **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 head 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 415/515, CSC 421/521, CSC 465, and CSC 484.

Classes that are typically offered every spring semester include CSC 317, CSC 416/516, CSC 447/547, CSC 461, CSC 456, CSC 467, CSC 470, and MATH 315.

