Computer Science

Bachelor of Science in Computer Science

The Computer Science Department also offers the Bachelor of Science in Information Systems Security

Undergraduate Minor
Master of Science
Graduate Certificates

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Office Phone: (217) 206-6770
Office Location: UHB 3100

Departmental Goals and Objectives

The Bachelor of Science in Computer Science degree is designed to provide students with a strong foundation in computer science and experience in mastering problem-solving skills relevant to the business, scientific, and public sectors.

Graduates of the Bachelor of Science in Computer Science degree program have been successful in earning advanced degrees and in pursuing careers in research and application-oriented positions in business, industry, government, and education. The diversity of course offerings and rigorous degree requirements ensure that B.S. in Computer Science graduates acquire the knowledge necessary to support their career goals, including the breadth of knowledge required to pursue advanced computing degrees. Students will become proficient in programming, software testing and analysis; learn about the design principles and implementation of programming languages, elementary computer architecture and organization, reduced instruction set computing, and operating systems; and complete a software engineering project that requires them to participate in all phases of the software life cycle. The B.S. in Computer Science is offered in both on-ground and online formats.

Students have access to an outstanding variety of computing systems including a Sun fileserver, additional UNIX-based computers, a parallel processing cluster, microcomputers, and a hands-on network configuration laboratory. UIS has received national recognition as a partner in the NSF Center for Systems Security and Information Assurance (CSSIA) www.cssia.org/.

The UIS Computer Science Department is a Cisco Regional Networking Academy, serving as the instruction center for local academies at high schools, career centers, community colleges, and universities in central Illinois.

The Computer Science Department’s curriculum is certified by the Committee of National Security Systems and the National Security Agency. The Computer Science Department has been designated as a National Center of Academic Excellence in Information Assurance Education. The National Security Agency (NSA) and the Department of Homeland Security (DHS) jointly sponsor the National Centers of Academic Excellence in Information Assurance Education (CAEIAE) Program.

Computer laboratories are open evenings and weekends; some systems are available 24 hours a day. On-campus students have high-speed, wired and wireless internet access.

Assessment

The Computer Science Department assesses all students for communication skills and for knowledge of computer science. Assessment is intended to help students in their academic planning and their development as computer scientists.

The process begins in CSC 305 Entrance Assessment, which must be taken the first semester of enrollment as a Computer Science major. The entrance assessment is an examination of the student’s knowledge of the core areas of computer science. During this course, students begin a portfolio to which selected assignments will be added from each of the core computer science courses. The process concludes with CSC 405 Exit Assessment, which must be taken the final semester before graduation. The exit assessment helps students assess their progress and helps the faculty revise the curriculum.

Internships

Students have the opportunity to gain credit toward the degree through Internships and Prior Learning (IPL). This is an excellent opportunity for students to gain practical in-the-field or on-the-job experience. Placements have included state agencies, insurance companies, the SIU School of Medicine, computer companies, and other businesses throughout central Illinois. Online students can arrange for local placements.

The Bachelor's Degree in Computer Science

Advising

On acceptance, students are assigned a member of the Computer Science faculty to serve as their academic advisor. Before registering for the first time, the student should discuss an appropriate course of study with their academic advisor.

Grading Policy

CSC courses must be taken for a letter grade. A cumulative grade point average of 2.0 is required to graduate.

Transfer Courses

Transfer courses for the Computer Science BS are evaluated on a case-by-case basis and approved by Student Petition.

Degree Requirements

The core curriculum provides a strong foundation in computer science. CSC electives are chosen in consultation with the student's academic advisor, to ensure depth of knowledge in topics of particular interest to the student.

Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC 305</td>
<td>Entrance Assessment</td>
<td>0</td>
</tr>
<tr>
<td>CSC 376</td>
<td>Computer Organization</td>
<td>4</td>
</tr>
<tr>
<td>CSC 385</td>
<td>Data Structures and Algorithms</td>
<td>4</td>
</tr>
<tr>
<td>CSC 387</td>
<td>Foundations of Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>CSC 388</td>
<td>Programming Languages</td>
<td>4</td>
</tr>
<tr>
<td>CSC 389</td>
<td>Introduction to Operating Systems</td>
<td>4</td>
</tr>
<tr>
<td>CSC 405</td>
<td>Exit Assessment</td>
<td>0</td>
</tr>
<tr>
<td>CSC 478</td>
<td>Software Engineering Capstone</td>
<td>4</td>
</tr>
</tbody>
</table>
Elective Courses

CSC Computer Science Software Electives 12

Total Hours 36

1 Core courses must be taken at UIS. Exceptions may be requested.
2 Applicable CSC electives are numbered CSC 350 or higher and must be chosen in consultation with a CSC academic advisor. Courses numbered CSC 410, CSC 442 or CSC courses that include “ECCE” in the title may not be counted as a CSC Elective. Students should consult with advisors in the major for specific guidance regarding completion of general education requirements.

Degree Plan*

*Listed below is a SUGGESTED Degree Plan. For OFFICIAL program information, please refer to the catalog content above and consult your academic advisor.

Year 1

Fall

ENG 1012 Rhetoric and College Writing 3
Freshman Seminar (Humanities or Soc Sci)2 3
CSC 2251 Computer Programming Concepts I 3
MAT 113 Business Calculus 4
or 1151
CSC 3054 Entrance Assessment 0

Hours 13

Spring

ENG 1022 College Writing and Civic Engagement 3
CSC 2751 Computer Programming Concepts II 3
CSC 3021 Discrete Structures 4
Social Science2 3
Comparative Societies (Humanities or Soc Sci)2 3

Hours 16

Year 2

Fall

CSC 3854 Data Structures and Algorithms 4
COM 1122 Oral Communication 3
Social/Behavioral Science course2 3
Science without lab (Life or Physical Sci)2 3
Visual/Performing Arts Humanities Requirement2 3

Hours 16

Spring

CSC 3874 Foundations of Computer Science 4
Science without lab (Life or Physical Sci)2 4
Social/Behavioral Science course2 3
Humanities GE2 3
UNI 3013 ECCE: Speakers Series 1

Hours 15

Year 3

Fall

CSC 442 ECCE: Internet in American Life (ECCE U.S. Communities)4 4

CSC 3764 Computer Organization 4
CSC Elective4 4
MAT 1211 Applied Statistics 3

Hours 15

Spring

CSC Elective4 4
ECCE Global Awareness Elective 4
CSC 3884 Programming Languages 4
Lower or upper division elective OR minor course5 4

Hours 16

Year 4

Fall

CSC 3895 Introduction to Operating Systems 4
ECCE Elective3 1
Upper-division elective OR minor course3 2
CSC Elective4 4
Lower or upper division elective OR minor course5 4

Hours 15

Spring

CSC 4784 Software Engineering Capstone 4
Lower or upper division elective OR minor course (Calc II recommended)5 4
Lower or upper division elective OR minor course5 3
Lower or upper division elective OR minor course5 3
CSC 4054 Exit Assessment 0

Hours 14

Total Hours: 120

1 Math and CSC Courses Required in Addition to the Core CSC - 17 Hours
2 These Courses Fulfill General Education Requirements- 39 Hours
3 Students need to complete ECCE in at least two of the three ECCE categories - U.S. Communities, Global Awareness, Engagement - per major requirements in addition to Speaker Series - 10 Hours. You may repeat UNI 301 for one additional hour of ECCE (requires a petition of approval). You may choose to take IPL 300 for three hours and meet both the ECCE one hour and the two hours of general electives requirement.
4 CSC Major Course work- 36 Hours
5 These courses may be Lower or Upper Division electives or minor courses. You will need to make sure you have at least 48 hours of Upper Division credits.

Online Degree

UIS offers the B.S. in Computer Science, the B.S. in Information Systems Security and the M.S. in Computer Science online. Applicants to the online degree program must have at least 30 semester hours of college-level transfer credit with a cumulative grade point average of at least 2.00 on a 4.00 scale. The online Computer Science degrees have the same requirements as the on-campus degrees, allowing students to actively participate in dynamic, diverse, and interactive online learning. The online format enables them to complete course work using the latest networked information technologies for increased
interaction with educational resources, advisors, and materials. Applicants to either online B.S. degree are accepted each spring and fall semester. The Computer Science Department may, at its own discretion, accept new students in other terms.

**Computer Science Minor**

A minor in Computer Science is designed for students who wish to develop a working knowledge of computing that will allow them to apply effective computing techniques and computational problem-solving skills in a variety of contexts. It is useful for students with virtually any academic major, including accountancy, business administration, clinical laboratory science, economics, health care, management, and others. A working knowledge of computers allows people to apply computer techniques in their careers and to introduce effective, computer-based methods.

**Transfer Courses**

Transfer courses for the Computer Science minor are evaluated on a case-by-case basis and approved by Student Petition.

**Course Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC 225</td>
<td>Computer Programming Concepts I</td>
<td>3</td>
</tr>
<tr>
<td>CSC 275</td>
<td>Computer Programming Concepts II</td>
<td>3</td>
</tr>
<tr>
<td>CSC 302</td>
<td>Discrete Structures</td>
<td>4</td>
</tr>
<tr>
<td>or MAT 302</td>
<td>Discrete Mathematics</td>
<td></td>
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<tr>
<td>or MAT 114</td>
<td>Finite Mathematics and Its Applications</td>
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<tr>
<td></td>
<td><strong>CSC Electives</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

Prior approval by CSC Advisor or Department Head required. Applicable CSC electives are numbered CSC 350 or higher and must be chosen in consultation with a CSC academic advisor. CSC courses must be taken for a letter grade. Courses numbered CSC 410, CSC 442 or CSC courses that include “ECCE” in the title may not be counted toward the minor.