Computer Science M.S.

Computer Science M.S. Addendum

The plan in Computer Science leads to the master of science (M.S.) degree. This plan is designed to prepare students to hold key technical positions in the development of computer-based solutions to complex systems problems.

Students should consult with their faculty adviser to determine if they have sufficient background to satisfy a specific course prerequisite. Foundation and prerequisite courses should be completed before enrolling in any graduate course.

Students expecting credit for foundation courses completed at international institutions must submit course descriptions to the waiver committee in their first semester of enrollment. This will allow proper evaluation and appropriate credit.

Students may select from the thesis option or the extended course work option. The thesis option requires 33 credit hours of graduate work. The extended course work option requires 36 credit hours.

Requirements

Computer Science Basic Preparation

Students seeking admission into the degree plan in Computer Science must have a bachelor’s degree in computer science or a closely related area and extensive background in computer science. It is expected that the minimum Graduate Record Examination (GRE) score required for acceptance into the plan be reasonably balanced among the different components of the GRE exam. The GRE score (verbal + quantitative) should be a minimum of 290 points, with a minimum quantitative score of 150. Students with bachelor’s and master’s degrees in related fields of study will be required to complete appropriate background courses. The admissions committee, during evaluation of the student’s application, will designate courses to be completed before beginning graduate studies. Preparatory requirements include proficiency in at least two modular computer programming languages, including C or C++ plus the completion of the following undergraduate courses, their equivalents or successful completion of equivalence exams upon approval from the admissions committee.

<table>
<thead>
<tr>
<th>Computer Science Basic Preparation</th>
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| CENG 3351  | Computer Architecture  
Credit Hours: 3 |
| CSCI 3331  | Computer Organization and Assembly Language  
Credit Hours: 3 |
| CSCI 2315  | Data Structures  
Credit Hours: 3 |
| CSCI 4333  | Design of Database Systems  
Credit Hours: 3 |
| CSCI 4354  | Operating Systems  
Credit Hours: 3 |
| MATH 2414  | Calculus II |

Additional Information

Students should also have 3 hours of credit for an Object Oriented programming language and 3 hours of credit for 1 of the following: C, C++, C#, or Java.

Additionally, at least two of the following must be completed:

<table>
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<th>Additional Information</th>
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| CSCI 3321  | Numerical Methods  
Credit Hours: 3 |
| MATH 2305  | Discrete Mathematics |
MATH 2318  Linear Algebra  Credit Hours: 3
MATH 2320  Differential Equations  Credit Hours: 3
PHYS 2326  University Physics II  Credit Hours: 3
STAT 3334  Probability and Statistics for Scientists and Engineers  Credit Hours: 3
SWEN 4342  Software Engineering  Credit Hours: 3

Additional Information
None of the above courses may apply towards the graduate degree.

Core Requirements (15 Hours)

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The following courses or their approved substitutions are required for both the thesis and the extended course work options:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CSCI 5134</td>
<td>Concurrent Programming and Software Modeling</td>
<td>3</td>
</tr>
<tr>
<td>CSCI 5531</td>
<td>Advanced Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCI 5533</td>
<td>Distributed Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCI 5432</td>
<td>Design and Analysis of Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CSCI 6530</td>
<td>Research Methods in Computer Science</td>
<td>3</td>
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Thesis Option (18 hours)

Computer Science Thesis Option (21 hours)
Complete the following courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>CSCI 6939</td>
<td>Master's Thesis Research</td>
</tr>
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</table>

Additional Information
- A student must take an additional 12 hours of electives, pending faculty adviser approval.
- Students may take either 6 hours of 4000 level CSCI/CINF electives or may take 3 hours 4000 level CSCI/CINF and 3 hours SENG/CENG/SWEN.
- Note: CSCI 6838 must be taken during the last 12 hours, after completion of CSCI 5531 and CSCI 5333. All electives must be approved before enrolling.

Extended Course Work Option (24 hours)

Computer Science Extended Course Work Option (24 hours)
Complete the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>CSCI 5134</td>
<td>Concurrent Programming and Software Modeling</td>
</tr>
<tr>
<td>CSCI 6838</td>
<td>Research Project and Seminar</td>
</tr>
</tbody>
</table>

Additional Information

Computer Science Specializations

Students interested in a specialization should take the courses listed below:

Note: Data Science Specialization requires STAT 4345 or any Calculus based Statistics course as a prerequisite. (STAT 4345 may be allowed as an elective in this specialization if not taken previously)

Data Science Specialization

<table>
<thead>
<tr>
<th>STAT 5531 or STAT 5532</th>
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Additional Information
Choose 3 (for thesis) or 4(for extended course work) from the following: CINF 5432, CINF 5931, CSCI 5532, CSCI 5833, CINF/CSCI 5000–6000 approved course related to Data Science.

Cyber Security Specialization

<table>
<thead>
<tr>
<th>CSCI 5132</th>
<th>Internet Protocols</th>
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<tr>
<td>CSCI 5233</td>
<td>Computer Security and Cryptography</td>
</tr>
<tr>
<td>CSCI 5235</td>
<td>Network Security</td>
</tr>
</tbody>
</table>

Additional Information
Choose 1 (for thesis) or 2 (for extended course work) from the following: CSCI 5234, CSCI 5737, CSCI/CINF 5000–6000 approved courses.