PH.D. IN COMPUTER SCIENCE

The Doctor of Philosophy program in Computer Science is overseen by the Computer Science Graduate Committee (CSGC). The basic guidelines for approval of a student’s program are recommendations appearing in the Communications of the Association for Computing Machinery (ACM), the professional society in Computer Science.

Prerequisites for Admission
Completion of the following courses, or their equivalents, is prerequisite to entry into the program:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>CSC 120</td>
<td>Computer Programming I</td>
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<td>CSC 220</td>
<td>Computer Programming II</td>
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<td>CSC 314</td>
<td>Computer Organization and Architecture</td>
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<tr>
<td>CSC 317</td>
<td>Data Structures And Algorithm Analysis</td>
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<tr>
<td>CSC 427</td>
<td>Theory Of Computing</td>
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<tr>
<td>MTH 161</td>
<td>Calculus I</td>
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<tr>
<td>MTH 224</td>
<td>Introduction to Probability and Statistics</td>
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<td>MTH 309</td>
<td>Discrete Mathematics I</td>
<td>3</td>
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<td>Total Credit Hours</td>
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Students may be admitted with deficiencies, normally a maximum of 6 credits. These must be completed in addition to the degree requirements.

Requirements for Graduation
Students must complete the Graduate School requirements (http://bulletin.miami.edu/graduate-academic-programs/graduate-school/academic-policies), and the Departmental requirements described here.

Credits
For graduation students must complete at least 60 credits (as required by the Graduate School), including at least 24 classroom course credits (see below), at least 9 pre-candidacy credits (CSC830), and at least 9 post-candidacy credits (CSC840).

Written Qualifying Exam
The student must pass a three-hour written exam of general knowledge of Computer Science at the end of the first year. Upon failure, the student may petition the CSGC to allow a second attempt at the end of the second year. The exam will be administered once a year in the early weeks of the summer session. It will cover expected knowledge of all first-year graduate students. Included in this material are a fundamental understanding of algorithm analysis and design, advanced skills in programming, basic knowledge of computer architecture, and a general understanding of computer systems.

Classroom Courses
In the first two years, the student must take eight CSGC-approved classroom courses, for a total of 24 credit hours. At least four of these courses (12 credit hours) must be CSC 7XX courses. The eight courses must include two courses from each of the areas of Analysis, Applications, and Systems. The student must work with the Director of Graduate Studies to select a cohesive set of courses as approved by the CSGC. The CSGC will have sole authority in designating the areas to which each course belongs. In the case that a course is designated in more than one area, a student may apply the course to only one area. The designation of current CSGC-approved courses appears at the end of this description.

Selecting an Advisor
By the end of the second semester, the student must find a research supervisor. By the end of the third semester, the student must have made significant progress on a research project under the supervision of a faculty member. The student must write a detailed progress report that will become a public document and shall be kept on file by the Department. The student must present the report to a quorum of the CSGC at a time to be approved by the chairman of the Department. The supervisor and CSGC must approve the project as applicable toward candidacy for a Ph.D.

Annual Presentations
After passing the written comprehensive exam, the student must make a public oral presentation to the Department at least once per year. These presentations include the thesis proposal and the thesis defense. The goals are to develop the student’s oral and presentation skills, to provide a means for the Department to check the research and progress of the student, and to present the opportunity for feedback to improve the student’s research.

Teaching Experience
Each student must teach a lab-based course for a minimum of one semester. Lab-based courses typically require the student to present material in a relaxed lecture format, re-emphasizing material learned in the general lecture as well as introducing new material to the students.

Approved Courses for Doctor of Philosophy

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Analysis</td>
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<td>CSC 506</td>
<td>Logic</td>
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<td>CSC 518</td>
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<tr>
<td>CSC 528</td>
<td>Introduction to Parallel Computing</td>
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<tr>
<td>CSC 540</td>
<td>Algorithm Design and Analysis</td>
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<td>CSC 547</td>
<td>Computational Geometry</td>
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<td>CSC 609</td>
<td>Data Security and Cryptography</td>
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<td>CSC 623</td>
<td>Theory of Relational Databases</td>
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<td>CSC 645</td>
<td>Introduction to Artificial Intelligence</td>
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<td>MTH 505</td>
<td>Theory of Numbers</td>
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<tr>
<td>ECE 534</td>
<td>Communication Networks</td>
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<td>ECE 756</td>
<td>Information Theory</td>
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<tr>
<td>Applications</td>
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<td>CSC 529</td>
<td>Introduction to Computer Graphics</td>
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<td>CSC 545</td>
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<td>CSC 752</td>
<td>Autonomous Robotic Systems</td>
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<td>ECE 677</td>
<td>Data Mining</td>
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<td>ECE 514</td>
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<td>CSC 749</td>
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