COMPUTER SCIENCE, MS

The MS in Computer Science program is a rigorous graduate program designed to meet the needs of any student wishing to gain advanced understanding of the principles and practices needed to harness the power of computing to help society and the world. The program can be a stepping stone on the way to further studies and the pursuit of advanced research, such as can be obtained by pursuing the PhD. Or the program can provide a pathway to professional advancement through greater technical knowledge and intellectual maturity.

Tracks
The Master of Science in Computer Science (MSCS) degree offers a regular track and a professional track. The regular track is designed to prepare students for PhD research in Computer Science. The professional track is designed to prepare students, possibly with undergraduate majors other than computer science, for success in their industrial careers. Students in the professional track are not eligible for financial aid from Computer Science department.

- MSCS Regular Track
- The Professional Track

Requirements
Admission Requirements
Application Deadlines
If at any time you are unsure about a published date or deadline (http://uwm.edu/graduateschool/program-deadlines), call the Registrar’s Office at (414) 229-3800 or submit a contact form (http://uwm.edu/registrar/contact-us) online.

Credits and Courses
MSCS Regular Track
An applicant must meet Graduate School requirements to be considered for admission. Additionally, the applicants must meet either of the following program requirements:

- Undergraduate major in Computer Science.
- Satisfactory completion of two programming courses (such as COMPSCI 250 and COMPSCI 251); at least 6 additional credits of coursework in CS; and one course in calculus (such as MATH 211 or MATH 231).

Applicants without sufficient Computer Science background are encouraged to apply to the professional track. Applicants not admitted to the regular track may be offered admission to the professional track instead. Applicants may be admitted with specific program-defined course deficiencies provided that the deficiencies amount to no more than two courses. The student is expected to satisfy deficiency requirements within three enrolled semesters. The deficiencies are monitored by the Graduate School and the individual graduate program unit. No course credits earned in making up deficiencies may be counted as program credits required for the degree.

The student must have taken six Computer Science courses (specified below) or their equivalents prior to completion of the M.S. Program. Appropriate courses taken by a student in another program that are considered equivalent to the courses below can be used to satisfy this requirement with the approval of the Department. The six courses are:

- COMPSCI 315 Introduction to Computer Organization and Assembly Language Programming
- COMPSCI 317 Discrete Information Structures
- COMPSCI 351 Data Structures and Algorithms
- COMPSCI 458 Computer Architecture
- COMPSCI 535 Algorithm Design and Analysis
- COMPSCI 537 Introduction to Operating Systems

Total Credits 18

At most six credits of the courses used to satisfy this requirement (excluding COMPSCI 315, COMPSCI 317 and COMPSCI 351) and taken as a graduate student may be used in either option of the program. All students must submit an approved Undergraduate Requirements Assessment (which explains how the requirement will be met) prior to registering for any courses.

The students in the regular track must write a thesis or complete a capstone project.

Thesis Option
The minimum credit requirement is 30, comprising:

- COMPSCI 700 CEAS Graduate Seminar 3
- COMPSCI 704 Analysis of Algorithms 3
- Select 12 additional credits of 700 or higher level courses, including the following:
- Select 6 credits of additional courses that carry graduate credit 6
- COMPSCI 990 Masters Thesis 6

Total Credits 30

1 Excluding COMPSCI 990.

All courses must be approved in the Program of Study. The student must not register for more than 4 credits of COMPSCI 990 in any one semester. The student must write an acceptable thesis under the supervision of a faculty advisor and pass a final comprehensive examination, which will normally focus on the thesis. Once a student begins a thesis under the supervision of an advisor, the graduate program director must approve any change to a new thesis advisor.

Capstone Option
The minimum credit requirement is 31, comprising:

- COMPSCI 700 CEAS Graduate Seminar 1
- COMPSCI 704 Analysis of Algorithms 3
- COMPSCI 995 Master’s Capstone Project 3
- Select 15 additional credits of 700 or higher level courses 15
- Select 9 credits of additional courses that carry graduate credit 9

Total Credits 31

The student must complete a capstone project under the supervision of a faculty advisor and pass COMPSCI 995 with a grade of B or better.

Capstone Requirement
The student must demonstrate the ability to integrate the knowledge of the discipline in one of the following ways:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>COMPSCI 315</td>
<td>Introduction to Computer Organization and Assembly Language Programming</td>
<td>3</td>
</tr>
<tr>
<td>COMPSCI 317</td>
<td>Discrete Information Structures</td>
<td>3</td>
</tr>
<tr>
<td>COMPSCI 351</td>
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<td>3</td>
</tr>
<tr>
<td>COMPSCI 537</td>
<td>Introduction to Operating Systems</td>
<td>3</td>
</tr>
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<td>Total Credits</td>
<td></td>
<td>18</td>
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</tbody>
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<td>3</td>
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<td>Master’s Capstone Project</td>
<td>3</td>
</tr>
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<td>15</td>
<td></td>
</tr>
<tr>
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<td>9</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>31</td>
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</tbody>
</table>

The student must complete a capstone project under the supervision of a faculty advisor and pass COMPSCI 995 with a grade of B or better.
• A capstone project completed under faculty supervision by completing the 3-credit COMPSCI 995 course with a B or better grade. These credits can be applied towards the requirement regarding 700-level CompSci courses.
• An oral exam based on a prior open-source or professional project completed by the student. The student must ensure that faculty can review the actual implementation of the project.

The Professional Track
An applicant must meet Graduate School requirements to be considered for admission. We expect that students admitted to the professional track will have knowledge of computer programming to the extent of COMPSCI 250 and COMPSCI 251. Applicants can demonstrate this knowledge via academic coursework or online courses. Applicants can also explain in their Statement of Purpose if they gained this knowledge via work experience. All admitted students must take a placement test on their knowledge of computer programming. The students may be required to additionally take COMPSCI 250 and COMPSCI 251 based on their performance in this test.

The student must demonstrate knowledge equivalent to the following four Computer Science courses prior to completion of the M.S. Program:

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<td>3</td>
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<td>3</td>
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</tbody>
</table>

Total Credits 12

This requirement can be met in one of the following ways:
• A grade B or better in these courses or equivalent CompSt courses.
• Passing the sufficiency exams offered by the course instructors.
• Prior academic coursework approved by the academic advisor.

The credits earned while taking these courses as a graduate student may be used to meet the credit requirements of the program. All students must submit an approved Undergraduate Requirements Assessment (which explains how the requirement will be met) prior to registering for any courses.

The minimum credit requirement is 31 graduate credits, comprising:

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<tr>
<td>COMPSCI 700</td>
<td>CEAS Graduate Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Select at least 15 credits of 700-level CompSci courses 1</td>
<td>15</td>
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</tr>
<tr>
<td>Select up to 9 graduate credits of courses from a pre-approved list of non-CompSci courses considered useful for professionals in CompSci-related industries</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Select the remaining credits from graduate-level or U/G-level CompSci courses</td>
<td>6</td>
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</table>

Total Credits 31

1 These 15 credits may include COMPSCI 995, which is required for those students who fulfill the Capstone Requirement by completing a capstone project.

Program of Study. Any non-CompSci courses must be approved prior to registration.

Industrial Internship
With faculty advisor’s approval, one credit per semester of COMPSCI 990 or COMPSCI 995 may be satisfied with a supervised industrial internship for a maximum of two credits.

Program Requirements
Major Professor as Advisor
The student is assigned an initial faculty advisor at the time of admission. The student selects a faculty member as a thesis or capstone advisor, respectively, as they follow the regular or professional track, after consultation with that faculty member. Any change in faculty advisor requires the documented permission of the new faculty member and the Department. An initial Program of Study with student, advisor and Department approval should be completed prior to the completion of 9 credits in the program. The final Program of Study must be approved by the thesis or capstone advisor, as appropriate.

Switching between Tracks
A student in the regular track may switch to the professional track at any time. However, such a student will no longer be eligible for research/teaching/project assistantships or any other financial aid from Computer Science department. A student admitted under the professional track may switch to the regular track after completing at least 15 credits of the professional track with at least 3.5 cumulative GPA. Note that not all courses acceptable under the professional track may be acceptable under the regular track.

Financial Aid
Students enrolled in the professional track are not eligible for financial aid from Computer Science department including research assistantships, teaching assistantships, project assistantships, fellowships and/or tuition waivers. However, such students are still eligible for financial aid available elsewhere on the campus.

Time Limit
All students must complete the degree requirements within five years of initial enrollment.