

# Computer Science MS

The M.S. degree in Computer Science has two different options to choose from, offering a wide range of career opportunities. In addition to the traditional option, we offer an option that allows students to incorporate a certificate, following specific interests, into this M.S. program. All graduates will have a broad computing background and will be exposed to a wide range of technologies. They will also be prepared for teamwork, independent research, and technical reporting and presentations. The program can be taken part-time or full-time and can be completed in the evening with many courses available online or in a hybrid format.

## Admission Requirements

Applicants must meet the general graduate admission requirements of the Graduate School, described in the UMSL Bulletin. Students are considered for admission to the graduate program in Computer Science only after they have formally applied for admission through the Graduate School. Applications are completed on-line. Additional requirements are listed below.

Applicants must demonstrate significant proficiency in computer science by showing competence (demonstrating related academic or professional experience) in the following areas. Courses in parentheses are UMSL recommended undergraduate courses that would satisfy the requirements.

1. Programming skills in C or C++ and Java (CMP SCI 1250 or CMP SCI 2250, and CMP SCI 2261)
2. Proficiency with Object-Oriented concepts and terminology (CMP SCI 2261)
3. Proficiency with dynamic data structures (CMP SCI 2250)
4. Proficiency with computer organization, architecture, or assembly level programming (CMP SCI 2700)
5. Proficiency with design and time/space analysis of algorithms (CMP SCI 3130)
6. Familiarity with Unix/Linux/OSX and with command-line processing, file system and permissions, shell and script programming (CMP SCI 2750)

Students must also have satisfactorily completed mathematics courses equivalent to the following UMSL courses:

1. One semester of calculus (MATH 1800 )
2. A course in discrete mathematics (MATH 3000)
3. An elementary course in probability or statistics (MATH 1320)

An applicant missing some of the above requirements may be admitted on restricted status if there is strong supportive evidence in other areas. Such restricted students would have to take the suggested courses for the missing requirements or otherwise demonstrate proficiency. Special regulations of the Graduate School that apply to students on restricted status are described in the UMSL Bulletin.

## Degree Requirements

Students choose one of the following options.

1. Traditional Computer Science option
2. Certificate option
3. Professional option

Students must complete the following common requirements, and additional specific requirements specific to the chosen option.

Candidates for the M.S. degree in Computer Science must complete 30 credit hours of course work in CMP SCI, subject to the Graduate School regulations. Up to 6 hours can be completed outside CMP SCI in a related field, based on student's interests and with the permission of the Graduate Director. Up to a third of the required credit hours can be transferred into the program.

At least 18 credit hours must be numbered 5000 or above, and at least 3 credit hours must be at the 6000-level (research courses or thesis). All courses numbered below 5000 must be completed with a grade of at least B-.

All students must complete the following core courses

CMP SCI 4250	Programming Languages	3
CMP SCI 5130	Advanced Data Structures and Algorithms	3
CMP SCI 5500	Software Engineering	3
<b>Total Hours</b>		<b>9</b>

Students having prior similar courses may apply for a waiver if the course was passed at the undergraduate level (students will replace the core course with another) or credit if the course was passed at the graduate level. Students may also request a waiver based on a demonstrated similar experience or a combination of courses and experience.

Students may choose to write an M.S. thesis under the direction of a faculty member in the Department of Computer Science (CMP SCI 6900). A student writing an M.S. thesis must defend the thesis in an oral exam administered by a committee of three department members which includes the thesis director.

Additionally, students must attend at least five different seminars or colloquium presentations in the department prior to applying for graduation.

## Traditional Computer Science Option

This option allows students to complete a traditional computer science graduate program. In addition to the common core requirements, students must also complete the following courses as part of the minimum 30 hours:

CMP SCI 4760	Operating Systems	3
CMP SCI 5700	Computer Systems	3

## Certificate Option

This option is for students interested in a very specific area of study as indicated by a certificate. In addition to the common core requirements, students must complete any of the graduate certificates in the department as part of the minimum of 30 credit hours.

For a list of current certificates visit the Computer Science Department page in the University Bulletin or visit the departmental list of current certificates.

## Professional Option

This option is for professionals who already have a bachelor's degree and have worked in a computing/technology field for a minimum of three years beyond graduation. It allows them to return to school for an

advanced degree while utilizing some of their professional experience. Potential applicants should contact the program director for guidance on the assessment process and may get up to 6 credit hours for their relevant competencies. Each case will be reviewed individually.

Applicants must still satisfy all application and graduation requirements.

## **More Information**

For further information about the degree, financial aid, and the regulations of the Graduate School, see our [page on advanced degrees](#).