

SOFTWARE ENGINEERING (MS)

The Master of Science in Software Engineering caters to students interested in software engineering, software development, and other contemporary topics of long-term value to the industry. Most early careers in the industry are based on either software development or managerial aspects of software development. This degree places more weight on software development. For those seeking a greater focus on managerial aspects, we offer the M.S. in Information Technology (<https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/computer-science/information-technology-ms/>).

Related Programs

Master's

- Computer Science (MS) (<https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/computer-science/computer-science-ms/>)
- Information Technology (MS) (<https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/computer-science/information-technology-ms/>)

Curriculum

The Master of Science in Software Engineering requires a total of 30 credit hours. To achieve depth and breadth, Software Engineering students must complete the following:

Code	Title	Hours
COMP 413	Intermediate Object-Oriented Development	3
COMP 417	Social and Ethical Issues in Computing	3
Three Courses from Restricted Elective Groups		9
<i>Group 1 (at least one course)</i>		
COMP 424	Client-Side Web Design	
COMP 433	Web Services Programming	
COMP 434	Enterprise Software Development	
COMP 437	Intro Concurrent Programming	
COMP 439	Distributed Systems	
COMP 442	Server-Side Software Development	
COMP 460	Algorithms & Complexity	
COMP 471	Theory of Programming Languages	
COMP 473	Advanced Object Oriented Programming	
COMP 474	Software Engineering	
<i>Group 2</i>		
COMP 410	Operating Systems	
COMP 412	Open Source Computing	
COMP 420	Software Systems Analysis	
COMP 436	Markup Languages	
COMP 441	Human-Computer Interaction	
COMP 453	Database Programming	
COMP 464	High-Performance Computing	
<i>General Elective Courses</i> ¹		15
Total Hours		30

¹ Electives can be any COMP 400 level class (<https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/computer-science/#coursestext>), except the preparation courses (COMP 400A, COMP 400B, COMP 400C, COMP 400D, COMP 400E). Students may take up to a maximum of 6 credit hours of COMP 490 Independent Project and/or COMP 499 Internship.

Prerequisites/Preparation Courses

All of these courses must be taken if you do not have a four-year undergraduate degree in a related field.

Code	Title	Hours
COMP 400A	Object-Oriented Programming	3
COMP 400B	Data Structures I	3
COMP 400C	Data Structures II	3
COMP 400D	Computing Tools and Techniques	1

For students who have taken Computer Science coursework at Loyola: many 400-level courses in the department are cross-listed with 300-level analogues (e.g. COMP 443 Computer Networks and COMP 343 Computer Networks). Students who enter the MS program after taking a Loyola course in this category must choose to take 400-level courses that are not cross-listed with any 300-level courses taken earlier, unless granted specific permission by the Graduate Program Director. Students may not use an introductory course to satisfy a foundation or elective requirement.

Preparatory courses do not count towards the 30 required credit hours of non-preparatory courses.

A student taking any necessary preparation course is considered to be a full-fledged student of the Graduate School. Preparation courses may be taken in the same semester as other graduate courses, provided the prerequisites for the other graduate courses are met. Students are expected, however, to take all necessary preparation courses early in their career.

A student may place out of an introductory course under any of the following conditions:

- The student has appropriate coursework equivalent to the introductory course.
- The student has appropriate and verified professional experience equivalent to the introductory course.
- The student passes a Graduate Competency Assessment (GCA) in the introductory course area.
- This can be waived under the discretion of the GPD.

If a student has had a preparatory course waived, departmental assistance will usually be necessary to allow the student to register for any other course having that preparatory course as a prerequisite.

If a student enters the program with an academic record of success in a course similar to COMP 413 Intermediate Object-Oriented Development, or if the student can demonstrate programming experience with the concepts of COMP 413 Intermediate Object-Oriented Development, then the Graduate Program Director may substitute for the COMP 413 Intermediate Object-Oriented Development requirement a course in Group 1 or 2 that has COMP 413 Intermediate Object-Oriented Development as a prerequisite.

The department may substitute newly created permanent courses as members of either Group 1 or Group 2. Similarly, COMP 488 Computer Science Topics offerings may also be designated as members of either Group 1 or Group 2. Students are responsible for verifying any such substitutions in advance with their Graduate Program Director.

STEM DESIGNATION

With a national shortage of professionals trained in STEM-related fields, employers are actively pursuing STEM degree holders. Distinguish yourself in technology with a STEM-designated degree.

Loyola's master's degree programs in Computer Science have been granted a STEM designation from the U.S. Department of Homeland Security. The program achieved STEM designation because of its emphasis on teaching students how to solve computer science problems with a suite of quantitative and technological tools.

Under this STEM classification, international students can extend their training in the U.S. by working in their field of study. Students can qualify for a 24-month OPT (Optional Practical Training) Extension, bringing the total OPT time granted to 36 months.

Graduate & Professional Standards and Regulations

Students in graduate and professional programs can find their Academic Policies in Graduate and Professional Academic Standards and Regulations (<https://catalog.luc.edu/graduate-professional-academic-standards-regulations/>) under their school. Any additional University Policies supercede school policies.

Learning Outcomes

Students will gain familiarity with software development in a wide range of application contexts, using a range of programming languages and tools.