

COMPUTER SCIENCE AND ENGINEERING (MENG)

Master of Engineering in Computer Science and Engineering

Unit: Speed School of Engineering (<http://engineering.louisville.edu>) (SP)
Department: Computer Science and Engineering (<https://engineering.louisville.edu/academics/departments/computer/>)
Academic Plan Code(s): CECSMEN

Program Information

General Information

The Bachelor of Science in Computer Science and Engineering degree will provide a student with the basis to be able to complete the Master of Engineering (MEng) in Computer Science and Engineering degree. The Master of Engineering in Computer Science and Engineering degree program is accredited by the Engineering Accreditation Commission (EAC) of ABET, www.abet.org (<https://www.abet.org/>).

Since the Computer Science and Engineering MEng is accredited as part of a five-year program with one-year of co-op experience, it is only available for students who have matriculated through the Computer Science and Engineering bachelor degree program at Speed School. Therefore, students who earn an undergraduate degree at a school or university other than the University of Louisville pursue the MS degree instead of the MEng degree.

Master of Engineering Program Educational Objectives

The purpose of the five-year Master of Engineering Program is to bring together the faculty, staff, and capital resources to meet the following program educational objectives:

1. Educate and train MEng graduates with the advanced level academic background and practical engineering experience necessary to function as Computer Science and Engineering professionals in a modern, ever-changing world
2. Produce graduates who demonstrate competence by being selected for employment by industrial, academic, or government entities, or pursue further professional/graduate studies
3. Provide our graduates with the foundation for the development of a successful career and with the understanding that life-long learning is necessary to this development
4. Ensure that our graduates understand the broad social, ethical, and professional issues of contemporary engineering practice

Master of Engineering Student Outcomes

In order to achieve these objectives, the Master of Engineering has the following outcomes set for its graduates. Graduates will demonstrate:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
3. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
4. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

5. Communicate effectively with a range of audiences in a variety of professional contexts.
6. Recognize ethical, legal and professional responsibilities in engineering situations and computing practice and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
7. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
8. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
9. Apply computer science theory and software development fundamentals to produce computing-based solutions.
10. Acquire and apply new knowledge as needed, using appropriate learning strategies.
11. Perform advanced level of analysis, knowledge of current topics and competence in performing independent research.

Residency

All graduate students are expected to make steady and satisfactory progress toward the completion of degrees. A candidate for the Master of Engineering degree who does not register for credit hours must maintain active registration by paying a fee each semester for MEng residency until the degree is awarded (i.e., the candidate must maintain continuous registration, including summer terms, in Graduate Studies). Failure to pay the MEng residency fee will be cause to cancel a student's residency. Students who are not enrolled for a period of more than 12 months will be considered to have withdrawn from the program. In order to be restored to residency, the student must submit a new application, have the recommendation of the department chair, receive the approval of the Associate Dean and pay the fee for each of the semesters during which the residency was void.

Academic Performance

The J.B. Speed School of Engineering has established the following performance policies:

1. The minimum grade point average requirement for good standing is 3.00 for all academic work completed while in graduate studies.
2. Any student with a cumulative graduate GPA below 3.00 will be placed on academic warning. Students on academic warning are limited to enrollment for thirteen (13) credit hours in a fall or spring semester and seven (7) credit hours for summer terms.

Students who do not bring their cumulative graduate GPA back at or above a 3.00 in the semester immediately following Academic Warning, will be placed on Academic Probation for the next semester of enrollment. Students on probation are limited to enrollment for thirteen (13) credit hours in a fall or spring semester and seven (7) credit hours for summer terms. Any student who remains in academic probation for two consecutive terms may be considered for dismissal from the program.

3. Students receiving graduate assistantships (teaching, research or service) shall be provided adequate training and shall be required to understand and adhere to University policies related to these areas. The performance of teaching, research and service duties by such students shall be periodically evaluated. Students with teaching assistantships shall be evaluated annually.
4. Students who fail to meet performance goals or who do not meet other requirements as outlined in the admission letter, program

requirements or the university catalog may be subject to academic dismissal from their programs.

5. A maximum of eight (8) credit hours of graduate level courses taken as an undergraduate may be used to satisfy MEng degree requirements; these courses cannot have been used to also satisfy BS degree requirements.

Degree Requirements

The following degree requirements are mandatory of all Master of Engineering candidates:

1. The program of study must be completed with a 3.00 GPA or better for all graduate courses used to satisfy degree requirements. Additionally, the program of study must be completed with a 3.00 GPA or better for all academic work attempted in graduate studies.
2. Master's degree students must take at least 24 credit hours of coursework at the University of Louisville to satisfy the residency requirement for the master's degree. A maximum of six (6) credit hours of graduate credit may be transferred from accredited institutions.
3. Students following the thesis option must follow the Procedures and Standards for Master of Engineering Theses.
4. The total requirements must be completed within six years after admission into graduate studies. The time limit imposed by the rule may be extended in individual cases upon recommendation of the department chair and approval of the associate dean for academic and student affairs.
5. The MEng degree cannot be conferred prior to the BS degree.

Admission Standards

Since the Computer Science and Engineering MEng is accredited as part of a five-year program with one-year of co-op experience, it is only available for students who have matriculated through the Computer Science and bachelor degree program at Speed School.

The application form is available online (<https://engineering.louisville.edu/meng-graduate-application-form/>).

The requirements for admission or readmission to a master of engineering program are:

1. Submission of a completed MEng application for the field of specialization in which the student is earning a bachelor degree from the J.B. Speed School of Engineering. Students can be admitted to the MEng program with fewer than thirteen (13) credit hours of BS degree requirements remaining and no later than two years post conferral of their baccalaureate degree;
2. Recommendation by the faculty and chair of the student's department for admission or readmission to graduate studies;
3. Cumulative baccalaureate grade point average of 2.75. However, those students with cumulative baccalaureate grade-point averages from 2.50 to 2.75 may be admitted upon petition and approval of the chair and faculty of the department.

A student becomes a candidate for the Master of Engineering degree upon admission to graduate studies and initial registration as a graduate student.

Program Requirements

The Master of Engineering in Computer Science and Engineering degree requires the following over and above the Bachelor of Science in Computer Science and Engineering degree:

Code	Title	Hours
Master of Engineering Coursework		
<i>Choose one of the following:</i>		
CSE 611	Computer Architecture	
OR		
CSE/ECE 510	Computer Design	
ECE 511	Computer Design Laboratory	
<i>Choose one of the following:</i>		
CSE 563	Experimental Design in Engineering	3
OR		
CSE 620	Combinatorial Optimization and Modern Heuristics	3
<i>Core Requirements:</i>		
CSE 622	Simulation and Modeling of Discrete Systems	3
CSE 625	Parallel Programming	3
CSE Electives ^{1,2}		9
Technical Elective ^{1,3}		3
<i>Select one of the following:</i>		
<i>Thesis Option:</i>		
CSE 697	Master of Engineering Thesis in Computer Engineering and Computer Science ⁴	
<i>Non-Thesis Option:</i>		
CSE 696	CSE Project	
CSE Elective ^{1,2}		
Minimum Total Hours		30

The Master of Engineering degree must be completed with a 3.00 GPA or better for all graduate courses used to satisfy degree requirements. Additionally, the Master of Engineering degree must be completed with a 3.00 GPA or better for all academic work attempted in Graduate Studies.

A maximum of eight (8) credit hours of graduate level courses taken as an undergraduate may be used to satisfy MEng degree requirements; these courses cannot have been used to also satisfy BS degree requirements.

- 1 Electives must be chosen so that at least one-half of the total credits counted toward the degree, exclusive of thesis, are 600-level.
- 2 CSE Electives must be approved by the department.
- 3 Technical Electives can be CSE or non-CSE courses. Technical Electives must be approved by the department.
- 4 For the thesis option, a student is required to select both an approved MEng thesis topic and the director and members of the thesis committee during the first term of Graduate Studies. The thesis director must give approval for enrollment in CSE 697.