# ACCELERATED COMPUTER ENGINEERING, M.S.E.

## Program Details

Department: Electrical and Computer Engineering
Modality: In-Person
Concentrations: Not Applicable
Semester Hours: 30
Total Years: 1

This program is designed for LMU students to receive an M.S.E. degree by continuing their studies immediately following their B.S.E. degree. The program allows students to complete the M.S.E. degree in one year.

The candidates for the accelerated M.S.E. degree must adhere to the following policies:

- One Frank R. Seaver College of Science and Engineering 500/5000-level course (3-4 semester hours) taken as an undergraduate may count toward the M.S.E. degree. This course can be double counted for the B.S. degree and the M.S.E. degree. The student is required to complete 26-27 additional semester hours beyond earning the B.S. degree.
- In addition, an extra Seaver College 500/5000-level course (3-4 semester hours) may be taken in their senior year that counts towards only the M.S.E. degree and not the B.S. degree. This potentially reduces the total number of additional semester hours after earning the B.S. degree to 22-24.
- The remaining coursework required must be consistent with the graduation requirements for the M.S.E. in Computer Engineering program.

The graduate program in Computer Engineering is designed to provide theoretical knowledge as well as practical applications in the areas such as computer architecture, embedded systems, computer networks, artificial intelligence, cybersecurity, and selected areas in Electrical Engineering. In this program, working engineers are given an opportunity to continue their education on a part-time basis, while full- time students have the opportunity to conduct research under the guidance of a faculty advisor. Upon graduation from the program, students will be conferred the degree Master of Science in Engineering (M.S.E.) in Computer Engineering.

## Program Educational Objectives

The Computer Engineering graduate program has established the following program educational objectives. Graduates of the program will:

1. Possess in-depth expertise for a successful engineering career and/or a successful undertaking of further graduate level studies;
2. Meet the challenges of the future through continuing professional growth; and
3. Exhibit concern for social and environmental impact of engineering decisions.

## Student Outcomes

The Computer Engineering graduate program has established the following student outcomes. Graduates will develop:

a. an ability to apply advanced knowledge of mathematics, science, and engineering to identify, formulate and solve complex engineering problems in a specialized area, such as computer architecture, embedded systems, computer networks, artificial intelligence, cybersecurity, and systems design.

b. an ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet constraints and specifications, which include societal, environmental, and ethical factors as appropriate to the design

c. an ability to develop and conduct appropriate experimentation and testing procedures using advanced analytical/numerical techniques and/or modern engineering tools, and to analyze and draw conclusions from data

d. an ability to conduct graduate level research with adequate research skills including information literacy and self- learning

e. an ability to communicate effectively with a range of audiences through various media

f. an ability to plan and manage engineering projects, including goal establishment, task scheduling, and risk and uncertainty management

## Admission Requirements for Accelerated M.S.E. Program in Computer Engineering

Only LMU students in their senior year of Computer Engineering, Electrical Engineering, or Computer Science with a GPA of 3.0 or greater are eligible to apply. Students will continue with the graduate-level portion of this program immediately following completion of their undergraduate degree requirements.

Applicants must submit the following:

- A completed Online Application (https://graduatestudies.lmu.edu/apply/) (the application fee will be waived)
- Unofficial LMU transcripts
- A personal statement (1-2 pages) that explains how the Computer Engineering Master's program fits into your career development.

**Note:** Students are required to apply for admission consideration before starting their final undergraduate semester at LMU. The final undergraduate semester at LMU will also be the entry term that will be selected on the graduate application. Interested applicants must meet and follow application deadlines.

## Admission Policies

**Deferment Policy:** Students admitted into this graduate program may defer their admission offer for up to one year from the initial admission entry term. A formal request should be made by the student by contacting SeaverGraduateAdmission@lmu.edu. Requests to defer past the one-year mark from the initial admission entry term are reviewed upon request, and the decision is left to the discretion of the Admission Committee.

**Appeal Process:** The appeal process should be sought after once an admission decision has been provided, and the applicant would like to be reconsidered. To explore the appeal process, the applicant should be prepared to present new evidence of admissibility via new/additional/updated documentation aside from what was presented during the initial admission submission. Such documentation can be in the form of final

grades, providing proof of updated relevant course completion and grade/s, etc.

In addition to the documents provided, the student will be required to submit a short essay stating why they are interested in having their application be reconsidered and explain how the new/updated documentation provided shows improvement for admission reconsideration. The admissions team will review the submission of all new documentation and provide the applicant with an updated decision. To request more information about this process, interested candidates in this option may contact SeaverGraduateAdmission@lmu.edu.

# Graduation Requirements

A degree candidate is required to complete, with a cumulative grade point average of at least B (3.0), a program of study comprising a minimum of thirty (30) semester hours of graduate-level coursework (i.e., 5000-level or 6000-level courses). A minimum of 3.0 term and cumulative grade point average must be achieved to maintain a good academic standing. Failure to maintain a good academic standing will lead to academic probation or disqualification. Of the graduate-level course work, at least twenty-four (24) semester hours must be in EECE courses, of which, at least eight (8) semester hours must be on 6000-level. At most six (6) semester hours can be appropriate courses from other disciplines in the Frank R. Seaver College of Science and Engineering or the College of Business Administration.

The program of study must include the following courses: EECE 5140 Computer Architecture with VHDL, EECE 5141 Embedded Systems, EECE 5270 Wireless Networks, and Graduate Capstone Project or Master's Thesis. One or more of the 5000-level required courses may be waived if the student demonstrates satisfactory completion of a similar course. Waived courses will be replaced by EECE electives at the 5000 or 6000 level. 500/5000-level courses taken as an undergraduate may not be repeated for graduate credit. If a 500/5000-level course is cross listed with a 600/6000 level course, graduate students must enroll in the 600/6000-level course.

# Curriculum

During the first semester of attendance, the student should prepare a program of study with a faculty advisor. The 30 semester hours of required coursework is allocated as follows:

| Code | Title | Semester Hours |
|---|---|---|
| **Required Courses** | | |
| EECE 5140 | Computer Architecture with VHDL | 4 |
| EECE 5141 | Embedded Systems | 4 |
| EECE 5270 | Wireless Networks | 4 |
| **Select one of the following required options:** | | |
| Capstone Option | | |
| EECE 6901 | Graduate Capstone Project I | 2 |
| EECE 6902 | Graduate Capstone Project II | 2 |
| Thesis Option | | |
| EECE 6994 | Thesis I | 2 |
| EECE 6995 | Thesis II | 2 |
| EECE 6996 | Thesis III | 2 |
| EECE 6997 | Thesis IV | 2 |
| **Electives** | | |
| A selection of EECE or non-EECE courses on the 500/5000- or 600/6000-level to reach a total of 30 semester hours [1] | | 14 or 10 |
| **Total Semester Hours** | | **30** |

[1] There must be appropriate elective courses to yield at least eight (8) 6000-level EECE hours, including the capstone or thesis courses. At most six (6) hours can be from non-EECE graduate courses offered by SCSE or CBA.

## Master's Thesis Option

Preparation of a Master's Thesis is optional and can fulfill 8 semester hours of EECE course requirements. Students interested in this option should consult with their academic advisor and secure a thesis advisor prior to their final year of the program. The thesis must conform to the requirements shared by the department. The thesis and associated work is intended to advance the state of knowledge in the thesis subject not "rehash" previous work by others or a serve as a "literature search." To the extent possible, there should be some experimental work involved. The thesis ideally will form the basis for a paper or article, produced by a student, which would be submitted and hopefully published in a peer-reviewed journal or presented at a professional organization's conference. A thesis is completed after being successfully defended to the thesis committee. With direction from the Program Director, a thesis committee will be formed. The thesis committee consists of the student's thesis advisor, a full-time faculty member from the student's department, and a third member from other than the student's department.