COMPUTER ENGINEERING, M.S.E.

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:

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

Students seeking admission should have completed an undergraduate program in computer engineering, electrical engineering, computer science, or a closely related field. To be considered for admission, students must submit an application, $50 application fee, a statement of intent, and transcripts. Letters of recommendation and the Graduate Record Exam (GRE) are optional. Additional coursework may be recommended or required as a condition of admission for applicants that have not completed an undergraduate program in computer engineering, electrical engineering, computer science.

Additional coursework may be recommended or required as a condition of admission for applicants that have not completed an undergraduate program in computer engineering, electrical engineering, computer science. Coursework required as condition of admission may not be waived.

Transfer Credit: Students may transfer six (6) semester hours for courses completed at another regionally accredited college or university. Credits to be transferred must be taken prior to admission. Each transferred course grade must be at least B (3.0), and the course must not have been used to satisfy degree requirements at another college or university.

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) or more semester hours of graduate-level coursework (i.e., 5000-level or 6000-level courses). Additional prerequisite (undergraduate) courses may be required as deemed appropriate by the advisor in consultation with the department. Of the graduate-level coursework, at least eight (8) semester hours are to be in 6000-level courses. Students must achieve a grade of B (3.0) or better in all 5000-level courses. At least twenty-four (24) semester hours must be in EECE courses. At most six (6) semester hours can include both EECE courses offered by this department as well as 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 student 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:

24 EECE semester hours:

Code	Title	Semester Hours
Required Courses		
EECE 5140	Computer Architecture with VHDL	4
EECE 5141	Embedded Systems	4
EECE 5270	Wireless Networks	4
EECE 5000 level or EECE 6000 level course		4
Select one of the following options:		8
Option 1		
EECE 6000 level course		

EECE 6901	Graduate Capstone Project I	
EECE 6902	Graduate Capstone Project II	
Option 2		
EECE 6994	Thesis I	
EECE 6995	Thesis II	
EECE 6996	Thesis III	
EECE 6997	Thesis IV	
Subtotal		**24**
Electives		
Select one of the following options:		6
Option 1		
EECE 5000 level or EECE 6000 level course		
EECE 5999	Independent Studies	
or EECE 6999	Independent Studies	
Option 2		
non-EECE 500/5000 level or non-EECE 600/6000 level course		
EECE 5999	Independent Studies	
or EECE 6999	Independent Studies	
Option 3		
non-EECE 500/5000 level or non-EECE 600/6000 level course		
non-EECE 500/5000 level or non-EECE 600/6000 level course		
Subtotal		**6**
Total Semester Hours		**30**

Master's Thesis Option

Preparation of a Master's Thesis is optional and can fulfill 8 semester hours of EECE course requirements. The student selecting the thesis option must obtain a thesis advisor before Departmental consent will be considered, and the thesis must conform to the Frank R. Seaver College of Science and Engineering requirements. The thesis and associated work <u>is</u> 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.

Combined B.S./M.S.E. Degrees in Computer Engineering

This program is designed for LMU students to receive a combined B.S. and M.S.E. degree by continuing their studies in LMU's Masters programs, immediately following their B.S.E. degree. The program allows students to complete the M.S.E. degree in one year.

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. The deadline for application is the end of Fall semester of senior year. Students may begin this program any term immediately following completion of their undergraduate degree

requirements. The candidate for the combined B.S./M.S.E. degree must adhere 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 after earning the B.S. degree.

- In addition, for an admitted student, an extra Seaver College 500/5000-level course (3-4 semester hours) may be taken in their senior year that counts towards 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.

- 5000-level courses taken as an undergraduate may not be repeated for graduate credit. If a 5000-level course is cross listed with a 6000 level course, graduate student must enroll in the 6000-level course.

- The remaining coursework required must be consistent with the graduation requirements for the M.S.E. in Computer Engineering program.