

# ELECTRICAL AND COMPUTER ENGINEERING M.S.E.E.

## Program Description

The Master of Science in Electrical and Computer Engineering (M.S.E.E.) degree is designed to provide students with the knowledge, skill, and professional practices needed to develop and design electrical or computer engineering related systems. The program also prepares students who desire to pursue further graduate work leading to a Ph.D. degree.

## Admission Requirements

Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website: <http://www.marshall.edu/graduate/admissions/how-to-apply-for-admission> (<http://www.marshall.edu/graduate/admissions/how-to-apply-for-admission/>). Each applicant must have an undergraduate

At least one letter of recommendation from either an accredited ABET curriculum or an internationally recognized program.

1. If applicants have an undergraduate 2.5 or higher GPA on a 4.0 scale and have already passed the PE exam in the major for which they are applying (official copy of certificate to be sent to the Marshall University Graduate Admissions Office), their applications will be accepted.
2. If applicants have an undergraduate GPA of 3.0 or higher on a 4.0 scale in an engineering major closely related to that for which they are applying, their applications will be evaluated on a case-by-case basis.
3. If applicants have an undergraduate GPA between a 2.5 and 3.0 on a 4.0 scale in an engineering major closely related to that for which they are applying, applicants must take the GRE exam or pass the FE exam, and have their official GRE scores or official FE certificate sent to the Marshall University Graduate Admissions office. The applications will be evaluated on a case-by-case basis. A minimum GRE score of 300 is required for all applicants.

International applicants must provide proof of English proficiency according to applicable university requirements. International applicants must meet all other admission criteria prior to being admitted to the program and registering for the first semester of courses.

A current non-degree or degree-seeking Marshall University student who holds an undergraduate engineering degree, may apply to be considered for admission to the M.S.E. degree program if s/he has at least a minimum cumulative graduate GPA of 3.30 in his or her first 9 credit hours of M.S.E. courses. For international students, the English requirements stated above must still be satisfied.

Eligibility to take the PE exam is based primarily on completion of an ABET-accredited undergraduate engineering degree in most states. Completion of a M.S.E. graduate degree at an institution with an ABET-accredited undergraduate degree does not fulfill that requirement to take the PE exam.

## Program Requirements

The Master of Science in Electrical and Computer Engineering (M.S.E.E.) degree is designed to provide students with the knowledge, skill, and professional practices needed to develop and design electrical and computer engineering related systems. The program also prepares students who desire to pursue further graduate work leading to a Ph.D. degree.

Each degree candidate is required to complete at least 30 graduate credit hours, depending on the option chosen below (thesis, or coursework only), with a cumulative Grade Point Average of 3.0 for the courses included in the student's Plan of Study. At least one-half of the minimum required hours for the degree must be earned in classes numbered 600 or above.

Each degree-seeking student must file an approved Plan of Study, developed with a faculty advisor, before the student registers for the 12th credit hour. The Academic Regulations portion of the Graduate Catalog may be consulted for additional information. The Plan of Study should define a focus area for the individual student that is related to the student's technical and professional development interests.

Examples of focus areas include:

- power; signal processing;
- control and embedded systems;
- communications and integrated systems;
- computer architecture;
- computer vision and machine intelligence; and
- network and security.

At least three of the Elective Courses (9 CR) must be within the student's focus area at the 600 level.

Students may choose to complete either the thesis option or the coursework-only option after consultation with their academic advisor.

## Focus Courses

(9 CR)

All graduate students in the M.S.E.E. program must develop a graduate focus area of study, with prior approval from their advisor and the department head. The focus area should consist of at least 9 CR of graduate study in electrical and computer engineering (EE 600 or higher) and be related to the student's technical and professional development interests. Examples of focus areas include power; signal processing; control and embedded systems; communications and integrated systems; computer architecture; computer vision and machine intelligence; and network and security.

### 4.3.3 Elective Courses

(3 - 12 CR)

Graduate students pursuing the thesis option must complete a minimum of 3 CR of elective courses. Graduate students pursuing the design project option must complete a minimum of 6 CR of elective courses. Graduate students pursuing the Coursework Only Option must complete a minimum of 12 CR of elective courses. The elective courses must be approved by the advisor.

## Comprehensive Assessment

(3-6 CR)

### Thesis Option (6 CR)

Prior to completing 12 semester credit hours of graduate work, students should prepare and present a formal thesis proposal to their faculty advisor. An acceptable proposal (including a statement of work, extensive literature search, and proposed timeline), signed by the student and approved by their faculty advisor and department head, is required prior to registering for thesis credits.

Students must form a graduate thesis committee in coordination with their advisor and present their proposal to their committee for review and approval during the first semester in which they have registered for thesis credit. Students are required to deliver a successful written and oral presentation of their thesis.

### Coursework-Only Option (NC)

The Master of Science in Electrical and Computer Engineering degree may be completed without the preparation of a formal research thesis or report. Instead, a student may be permitted to enroll in a no thesis/no report (coursework only) program which involves additional coursework. The student must complete at least thirty-three graduate credits of approved courses. During the first semester of the M.S.E.E. program, the student should select an advisor. Each student will have an individual Program of Courses approved by the student's assigned advisor and the division's chair by the end of the first semester of the program. For this option only, the student must satisfactorily complete the comprehensive examination prior to graduation.

## Plan of Study

### Core Courses

All graduate students in the M.S.E.E. program are required to complete four required core courses:

Code	Title	Credit Hours
EE 606	Electrical Analysis	3
EE 602	Random Signals & Noise	3
EE 607	Adv Electrical Engr	3
EE 608	Research Methods <sup>1</sup>	3
<b>Total Credit Hours</b>		<b>12</b>

<sup>1</sup> Another 600-level EE course approved by the advisor and department head can be substituted for the coursework-only option.

Students are required to complete a Plan of Study form in consultation with their academic advisors by the end of the first semester in the program.

### Approved Elective Courses

- Any ME (Mechanical Engineering) course approved in advance by the student's advisor
- Any EM (Engineering Management) course approved in advance by the student's advisor
- Any ENGR (Engineering) course approved in advance by the student's advisor
- Any CS (Computer Science) course approved in advance by the student's advisor