

# MS IN ENGINEERING: ELECTRICAL ENGINEERING

**Home Department:** Electrical and Computer Engineering

**Available:** On Campus Only

**Program Advisor/Contact:**

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## Program Overview

The Master of Science in Engineering is a professional master's program that builds on an undergraduate engineering program by offering additional depth and greater mastery in a number of technical areas.

## Program Objectives

All graduates of the Master of Science in Engineering program will:

- Deepen their knowledge and increase their mastery of technical areas that match their personal career goals.
- Be better prepared to advance in positions of technical and/or managerial leadership.
- Develop their ability to sustain a life-long career in engineering through continuing self-directed learning and professional development activities.

The MSE in Electrical Engineering program is an on-campus program designed for individuals who wish to deepen their understanding of electrical engineering principles and applications and to develop their skills in independent research. Students study topics such as dynamic systems modeling, digital signal processing, and digital control, vector control of AC electric machines, energy storage systems, modeling and control of e-mobility systems, and robot dynamics and control. The program requires a minimum of 40 credit hours of graduate work. There are two options available: 1) Thesis option (consists of coursework, research, and a thesis), and 2) Non-thesis option (consists of only coursework).

## Graduate Assistantship

Financial support, in the form of a tuition waiver or stipend, is available on a competitive basis. Students who receive a stipend are required to serve as a Research Assistant (RA), Teaching Assistant (TA), or a Staff Assistant (SA) for up to 20 hours per week (depending on the level of financial support offered). For more information on graduate funding, please contact the Graduate School at gsr@kettering.edu.

## Program Curriculum Requirements

Completion of 40 credits as follows:

Code	Title	Credit Hours
ECE-610	Modeling of Dynamic Systems	4
Thesis option: Select three of the following:		12
Non-thesis option: Select five of the following:		20
CE-612	Digital Systems Design	

CE-624	VLSI Design	
ECE-630	Digital Signal Processing Techniques for Automotive Engineering	
or EE-634	Digital Signal Processing	
ECE-642	Machine Drives for Electric Vehicles	
or EE-646	Vector Control of AC Electric Machines	
ECE-648	Electromagnetic Compatibility	
EE-610	eMobility System Analysis & Control	
EE-621	Energy Storage Systems with EV Applications	
EE-626	Power Electronics for Vehicle Electrification	
or EE-624	Power Electronics & Applications	
EE-633	Digital Control Systems	
EE-643	Fundamentals of Power Systems	
EE-682	Robot Dynamics and Control	
EE-691	Graduate Special Topics in EE	
EE-699	Graduate Level Independent Study in Electrical Engineering	
Thesis option: Any two graduate-level elective courses		8
EE-695	Graduate Research in Electrical Engineering	8
EE-695	Graduate Research in Electrical Engineering	8
Completion and successful defense of a master's thesis		
Non-thesis option: Any four graduate-level elective courses		16

Undergraduate-level coursework might also be required for some students as a prerequisite for either graduate-level coursework or research, depending on the student's background and the nature of the coursework or research. If required, undergraduate-level credit cannot be used to satisfy the graduate-level credit requirements given above.

The program operates on a calendar similar to a conventional quarter system: Fall, Winter, and Spring terms are "regular" academic terms during which students normally enroll full-time, and the Summer term is optional. The nominal plan of study calls for a total of six terms of study over 21 months.

First Year	Fall	8 credits coursework
First Year	Winter	8 credits coursework
First Year	Spring	8 credits coursework
	Summer	
Second Year	Fall	8 credits coursework
Second Year	Winter	8 credits coursework
Second Year	Spring	Thesis defense and submission

Many variations of this plan are possible. In particular, students may begin the program in any term, not just Fall, and may elect to register for coursework or research during Summer. Students may not, however, register for more than eight credits in a term.