

MS in Electrical and Computer Engineering

The Master of Science in electrical and computer engineering is designed to provide in-depth specialization in a particular area in electrical or computer engineering. Areas of specialization offered by the program are communication and signal processing, computing systems, control systems and robotics, and power and energy systems. Students choose their area of specialization in consultation with their advisor.

Admission

The program admits students with a bachelor's degree in electrical engineering, computer engineering or a related area. Students from other engineering fields, mathematics or science can be admitted as well with an extra requirement to complete undergraduate level background deficiency courses determined at the time of admission. Such courses will not count towards the MS degree completion requirements.

To be considered for admission to the program the minimum requirements are:

- Student must have earned a GPA of at least 3.000 (or an equivalent score from another country) in the bachelor's degree.
- Students whose bachelor's degree is from an institution outside the U.S. are required to submit official scores of the GRE General Test along with the admission application. However, there is no minimum score requirement.
- Applicants whose native language is not English must provide English proficiency exam scores. One of the following is required: TOEFL score at or above 79 in internet-based exam or IELTS score at or above 6.5.

The following are optional but encouraged, especially if the student's GPA and/or GRE do not truly reflect the student's skills and/or abilities:

- Statement of purpose, and/or
- Two letters of recommendation.

Program Requirements

Each MS in electrical and computer engineering student must choose one of the three graduating options: thesis, project or coursework*only. A total of 30 credit hours of graduate work is required for all options. All courses must be approved by the student's advisor and the graduate coordinator. Students are advised to consult their advisor (if thesis or project option) or graduate coordinator (if coursework only option) before taking any courses, especially if they are below 600 level or offered outside the home department (i.e., for courses that are not ECE or CS prefixed).

Students are strongly advised to choose their area of specialization in consultation with their advisor and/or graduate coordinator before completing their first semester. To ensure that students take relevant courses, students should seek approval from their advisor or graduate coordinator at each semester unless they have filed a plan of study. Courses that are taken without prior approval may affect the plan of study process, if deemed not to satisfy the graduation requirements.

Graduating Options

Thesis Option

Students need to complete an in-depth research project. Students should conduct extensive literature review, identify gaps, propose a research question, and seek a solution to the research question. This

is ideal for students who desire to develop their research skills or plan to pursue a research career. Students will defend their findings to their thesis committee. One out of the three committee members must be outside the home department. Students can take up to 6 credit hours of independent study courses with their advisors.

Course	Title	Hours
ECE 876	MS Thesis	6
Select 24 credit hours of graduate courses		24
Students are required to earn at least one graduate certificate from the department of electrical and computer engineering. A list of eligible graduate certificates are listed under the Approved Graduate Certificates header below.		
Course selections must be made in consultation with, and with the consent of, the thesis advisor.		
At most 6 credit hours of ECE 790 Independent Study		
Total Credit Hours		30

Project Option

Students solve a specific problem or an issue of significance. Typically, students will find and implement a solution to the problem identified. The problem and its solution might be less original compared to the thesis option. Students will identify a problem, define a solution approach, implement it, collect necessary data and analyze. Students will submit a written project report to a committee of three faculty members (with graduate status) and present their findings. Students are encouraged to take 3 credit hours of independent study courses with their advisors leading to taking project credits.

Course	Title	Hours
ECE 878	MS Directed Project	3
Select 27 credit hours of graduate courses		27
Students are required to earn at least one graduate certificate from the department of electrical and computer engineering. A list of eligible graduate certificates are listed under the Approved Graduate Certificates header below.		
Course selections must be made in consultation with, and with the consent of, the project advisor.		
At most 3 credit hours of ECE 790 Independent Study		
Total Credit Hours		30

Coursework Option

Course	Title	Hours
Select 30 credit hours of graduate courses		30
One of the following applied learning component courses		
ECE 875	Computer Systems in Data Analytics	
ECE 826	Digital Communication Systems II	
ECE 893	Optimal Control	
ECE 897	Operation and Control of Power Systems	
Students are required to earn two graduate certificates approved by the department of electrical and computer engineering, with at least one certificate being from the ECE department itself. A list of eligible graduate certificates are listed under the Approved Graduate Certificates header below.		
In addition to courses contributing toward the graduate certificates, all additional courses must be selected from the approved course list provided by the department of ECE.		
Course selections must be made in consultation with, and with the consent of, the graduate program coordinator.		
At most 3 credit hours of ECE 790 Independent Study.		
Total Credit Hours		30

Approved Graduate Certificates

- Certificate in Computational Data Science (<http://catalog.wichita.edu/graduate/engineering/school-computing/certificate-computational-data-science/>)
- Graduate Certificate in Computing Systems (<http://catalog.wichita.edu/graduate/engineering/electrical-computer-engineering/certificate-computing-systems/>)
- Graduate Certificate in Control Systems (<http://catalog.wichita.edu/graduate/engineering/electrical-computer-engineering/certificate-control-systems/>)
- Graduate Certificate in Data-Centric Modern Communications (<http://catalog.wichita.edu/graduate/engineering/electrical-computer-engineering/certificate-data-centric-modern-communications/>)
- Graduate Certificate in Energy Engineering (<http://catalog.wichita.edu/graduate/engineering/electrical-computer-engineering/certificate-energy-engineering/>)
- Graduate Certificate in Power System Operations (<http://catalog.wichita.edu/graduate/engineering/electrical-computer-engineering/certificate-power-system-operations/>)
- Graduate Certificate in Power System Planning (<http://catalog.wichita.edu/graduate/engineering/electrical-computer-engineering/certificate-power-system-planning/>)
- Graduate Certificate in Renewable Energy and Storage (<http://catalog.wichita.edu/graduate/engineering/electrical-computer-engineering/certificate-renewable-energy-storage/>)

Applied Learning

Students in the MS in electrical and computer engineering program are required to complete an applied learning or research experience to graduate from the program. The requirement can be met for the thesis and project options by completing the thesis or project. For the coursework option, applied learning is satisfied by one of the applied learning courses as identified among the requirements in the table (ECE 875, ECE 826, ECE 893 or ECE 897).