

Robotics and Autonomous Systems (Electrical Engineering), MS

ESRASEEMS

You can develop the next generation of intelligent robots. Gain knowledge in robotics, electrical engineering principals, artificial intelligence, autonomy, control systems, machine learning and human-machine interaction, among other fields.

Program description

Degree awarded: MS Robotics and Autonomous Systems (Electrical Engineering)

This advanced degree program emphasizes competency in the rapidly growing fields of robotics and autonomous systems. This concentration is appropriate for students who wish to focus on applications in electrical engineering.

The electrical engineering concentration is one of five concentrations in the multidisciplinary MS program in robotics and autonomous systems, which emphasizes robotics, controls, autonomous systems, artificial intelligence and related fields.

Students in this concentration receive a solid theoretical and practical background in a variety of topics that include theory, design and implementation of control systems; signal processing; real-time and embedded systems; computer vision and machine learning. They are exposed to state-of-the-art and emerging theories and implementations related to sensing, data processing, adaptive control, automated mobility, autonomous systems, human-machine interaction and robotic applications in various domains including public safety, manufacturing, health care, automotive and assistive technologies.

At a glance

- **College/School:** [Ira A. Fulton Schools of Engineering](#)
- **Location:** [Tempe](#)

Accelerated program options

This program allows students to obtain both a bachelor's and master's degree in as little as five years. It is offered as an **accelerated bachelor's plus master's degree** with:

[Electrical Engineering, BSE](#)

[Electrical Engineering \(Electric Power and Energy Systems\), BSE](#)

Acceptance to the graduate program requires a separate application. Students typically receive approval to pursue the accelerated master's during the junior year of their bachelor's degree program. Interested students can learn about eligibility requirements and [how to apply](#).

Degree requirements

30 credit hours and a portfolio, or

30 credit hours and a thesis, or

30 credit hours including the required applied project course (EEE 593)

Required Core (6 credit hours)

EGR 501 Applied Linear Algebra for Engineers (3) or MAE 501 Linear Algebra in Engineering (3)

EGR 545 Robotic Systems I (3) or MAE 547 Modeling and Control of Robots (3) or RAS 545 Robotic Systems I (3)

Concentration (6 credit hours)

Electives or Research (12--18 credit hours)

Culminating Experience (0--6 credit hours)

EEE 593 Applied Project (3) or

EEE 599 Thesis (6) or

portfolio (0)

Additional Curriculum Information

Students should refer to the academic unit for the approved concentration coursework as well as the available elective and research courses. Elective or research coursework must be selected from among the courses listed for the other three concentrations. Additional electives must be graduate courses in science, engineering, mathematics or others approved by the Graduate Program Committee.

Students are required to select one of the approved culminating experiences for the concentration.

A defense is required for the thesis option.

The portfolio includes a poster presentation with content from courses taken in the program. Students must write a portfolio report that includes the highlights of the three projects.

Admission requirements

Applicants must fulfill the requirements of both the Graduate College and the Ira A. Fulton Schools of Engineering.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in engineering, science, mathematics or a related field from a regionally accredited institution.

Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

Applicants are required to submit:

1. graduate admission application and application fee
2. official transcripts
3. letter of intent or written statement
4. professional resume
5. proof of English proficiency

Additional Application Information

An applicant whose native language is not English must provide [proof of English proficiency](#) regardless of their current residency.

Tuition information

When it comes to paying for higher education, everyone's situation is different. Students can learn about [ASU tuition and financial aid](#) options to find out which will work best for them.

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Analyze and apply key sensing, signal processing, and control theories and methods used in this field.
- Differentiate key concepts within electrical engineering, demonstrate their understanding of those concepts on their portfolio or thesis at the end of their program, and demonstrate the ability to critically think and synthesize information.
- Understand and apply skills needed in order to select and secure professional employment in an electrical engineering related field by practicing the skills they have learned in their courses and showing they have the ability to work successfully within the electrical engineering field applying concepts from their academic experience, synthesizing knowledge, self-assessment on the student's part, and teamwork/communication to address societal needs.

Career opportunities

Graduates of the electrical engineering concentration of the Master of Science program in robotics and autonomous systems are prepared for doctoral study and for industrial positions in numerous and varied industries. Some examples are manufacturing, transportation, aerospace, defense and health care.

Contact information

[Electrical Engineering Program](#) | GWC 209

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