

# Electrical and Computer Engineering, M.S.

The Department of Electrical and Computer Engineering stimulates excellence in scholarship and research through close contact with the faculty and programs tailored to fit students' individual needs.

Students select an advisor and, with the advisor, plan an individual program bounded only by the broad guidelines of the Graduate College and the program. The department maintains close interdisciplinary ties with other University of Iowa departments, especially with the Departments of Physics and Astronomy, and Computer Science (College of Liberal Arts and Sciences); the Departments of Industrial and Systems Engineering, and Mechanical Engineering, the Roy J. Carver Department of Biomedical Engineering (College of Engineering); and the Carver College of Medicine. Principal areas of graduate study include medical image analysis, signal and image processing, control systems and systems theory, wireless communications, waves and materials, computer systems, and computational genomics. View principal areas of study under Research and Study Areas in the Electrical and Computer Engineering section of the Catalog.

## Requirements

The Master of Science program in electrical and computer engineering requires 30 s.h. of graduate credit with or without thesis. Either option may precede Ph.D. study. M.S. students must maintain a cumulative g.p.a. of at least 3.00.

Thesis students must complete at least 12 s.h. from an approved list of electrical and computer engineering courses and 6 s.h. in ECE:5999 Research: Electrical and Computer Engineering M.S. Thesis. Nonthesis students must complete at least 18 s.h. from an approved list of electrical and computer engineering courses; they may count no more than 3 s.h. of independent study toward the degree. For a list of approved courses, see the Electrical and Computer Engineering Graduate Manual. Courses required for the B.S.E. in electrical engineering do not count toward the M.S. requirements.

Students who plan to satisfy thesis requirements must successfully complete a final examination, which is conducted by a committee of at least three faculty members. The final examination consists of an oral defense of the thesis.

## Software Engineering Subprogram

A software engineering subprogram is available to both thesis and nonthesis students. Both thesis and nonthesis options require a minimum of 30 s.h. of graduate credit. All rules for additional credit and the M.S. final examination are the same as for the M.S. without the subprogram. Successful completion of the subprogram results in a degree designation that specifies the software engineering subprogram on a student's transcript.

The software engineering subprogram requires the following coursework.

Code	Title	Hours
ECE:5320	High Performance Computer Architecture	3
ECE:5330	Graph Algorithms and Combinatorial Optimization	3
ECE:5800	Fundamentals of Software Engineering	3
ECE:5810	Formal Methods in Software Engineering	3
ECE:5820	Software Engineering Languages and Tools	3
ECE:5830	Software Engineering Project	3

In addition to the courses listed above, thesis students complete another 3 s.h. of approved coursework and 6 s.h. in ECE:5999 Research: Electrical and Computer Engineering M.S. Thesis; nonthesis students complete another 9 s.h. of approved coursework. Students who complete one or more required courses as an undergraduate can substitute courses from the list of approved ECE courses; see the list of approved courses in the Electrical and Computer Engineering Graduate Manual.

## Admission

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College on the Graduate College website.

Applicants must have a g.p.a. of at least 3.00 on all electrical and computer engineering, mathematics, and physics coursework. Those with a g.p.a. between 2.75 and 3.00 in electrical and computer engineering, mathematics, and physics coursework may be admitted on probation, if warranted by other aspects of their academic records.

Students with baccalaureate degrees in related areas (e.g., physics, mathematics, and computer science) may be admitted on conditional status. They may be required to complete additional coursework, without earning graduate credit, before being granted regular status.

Each application is reviewed individually. Extenuating circumstances may permit deviations from the usual standards.

## Financial Support

A number of fellowships, traineeships, assistantships, scholarships, and industrial grants are available to graduate students who qualify. These are awarded on a competitive basis.

## Career Advancement

The engineering profession is a foundation for a variety of careers in industry, medicine, law, government, and consulting. Electrical engineers find employment everywhere smart technology is employed. They consistently rank among the most sought after and highest-paid technology professionals. On average, 93-98 percent of graduates are employed in their field of study or pursuing advanced education within seven months of graduation.

Engineering Career Services develops and promotes experiential education and professional opportunities for students. Professional staff coordinate the college's co-op and internship program, engage in employer outreach,

and provide opportunities for students to network with employers, including an engineering career fair and other career-development programming each semester.

Engineering Career Services also offers individual advising and class presentations on résumé and cover letter preparation, job and internship search strategies, interviewing skills, and job offer evaluation.