

# Electrical and Computer Engineering

Department	Electrical and Computer Engineering
Degrees Offered	Master of Science in Electrical and Computer Engineering and PhD in Computer Engineering
Website	<a href="https://www.uab.edu/engineering/ece/">https://www.uab.edu/engineering/ece/</a>
Director	Leon Jololian, PhD
Phone	(205) 934-8440
E-mail	<a href="mailto:leon@uab.edu">leon@uab.edu</a>

The Department of Electrical and Computer Engineering offers two advanced degrees: a Master of Science in Electrical and Computer Engineering (MSECE) and a PhD in Computer Engineering. The MSECE program equips students for professional careers in industry or further academic pursuits, such as doctoral programs or professional schools. The PhD in Computer Engineering is designed to prepare students for research and professional roles in both industry and academia. The PhD program is a collaborative effort between the University of Alabama at Birmingham (UAB) and the University of Alabama in Huntsville (UAH), with both institutions contributing to the curriculum and research opportunities.

## Financial Support

Fellowships and/or assistantships may be available for well-qualified students admitted into the graduate program. To be considered for financial aid for the coming academic year, the completed application materials must usually be received at UAB by April 1.

There are fellowships and scholarships available through the [Graduate School](#).

**Deadline for Entry by Term:** Fall: August 1; Spring: December 1; Summer: May 1

**Deadline for All Application Materials to be Submitted to the Graduate School:** Seven days before the start of the term

## Master of Science in Electrical and Computer Engineering

The Master of Science in Electrical and Computer Engineering (MSECE) prepares students for a professional career in industry or entry into a doctoral program or professional school. The MSECE program builds upon the broad foundation provided by a Bachelor of Science in Electrical and Computer Engineering by supplying depth in specific electrical and computer engineering areas through advanced coursework and a thesis or project experience.

## Admission Requirements

Requirements for admission to the Electrical and Computer Engineering Master's degree program include the following:

1. A bachelor's degree in an accredited electrical engineering, computer engineering, electrical and computer engineering or a bachelor's

degree acceptable to the graduate faculty in the Department of Electrical and Computer Engineering. Students not having a bachelor's degree in electrical engineering, computer engineering, electrical and computer engineering may be required to complete prerequisite courses based on their prior coursework and their plan of study, which will be defined at the time of admission.

2. A 3.0 or higher on a 4.0 scale;
3. Three letters of recommendation concerning the applicant's previous academic and professional work;
4. International applicants must submit English proficiency scores in accordance with UAB Graduate School requirement. [Click here for details](#)
5. Original transcripts from all colleges and universities attended since high school must be sent directly to the UAB Graduate School (detailed instructions are included during the online application process)

**UAB offers Accelerated Bachelor's / Master's and Early Acceptance. To learn more about these programs, including requirements and how to apply, visit the [Graduate School's ALO page](#).**

## Fast Track Master of Science in Electrical and Computer Engineering

UAB Electrical and Computer Engineering undergraduate students with significant research experience may begin work toward their MSECE degree while still undergraduates. To be considered for this program, students must have junior-level standing (more than 60 hours completed), have completed at least 3 of the required junior-level ECE courses, and have a UAB GPA of at least 3.5. Applicants are expected to have already selected a research mentor for their graduate studies, which will typically be a continuation of their undergraduate research. Application to the program is through the normal UAB Graduate School application portal. One of the letters of recommendation must be from the research mentor. Once enrolled in the program, before completing their undergraduate degree, students may take graduate courses that will be applied to the MSECE degree. Note that coursework may not be applied toward both the undergraduate and graduate degrees. Students may pursue either the Plan I or Plan II MSECE option.

## Accelerated Bachelor's / Master's

Electrical and Computer Engineering offers an accelerated Bachelor's / Master's (ABM) option for high-achieving undergraduate students pursuing a BS degree in Electrical and Computer Engineering at UAB. The following courses are approved for shared credit for students pursuing an ABM in ECE. A successful graduate of ABM will earn both a bachelor's degree and a master's degree in ECE from the University of Alabama at Birmingham in an accelerated timeframe compared to the independent completion of the two degrees.

Graduate courses allowed for credit sharing are: EE 512, EE 518, EE 523, EE 526, EE 527, EE 531, EE 532, EE 533, EE 534, EE 537, EE 538, EE 544, EE 547, EE 548, EE 552, EE 558, EE 561, EE 571, EE 572, EE 573, EE 585, EE 634, EE 654, EE 655, EE 656, EE 658.

## Plan I (Thesis Option)

The Plan I Master's degree requires completion of at least 33 credit hours of graduate work.

- 18 credit hours of graduate-level courses appropriate to the student's area of technical specialization

- 6 credit hours of courses having a mathematical emphasis
- 9 credit hours of EE 699 Thesis Research

Students must be admitted to candidacy prior to enrolling in EE 699. A student is eligible for admission to candidacy after (1) a written thesis proposal has been orally presented to the committee and approved and (2) completion of [Responsible Conduct of Research \(RCR\)](#)

training. Admission to candidacy must take place at least one semester before the student may graduate.

## Plan II (Non-Thesis Option)

The Plan II Master's degree requires completion of at least 33 semester hours of graduate work.

- 24 credit hours of graduate-level courses appropriate to the student's area of technical and professional specialization;
- 6 credit hours of courses having a mathematical emphasis;
- 3 credit hours of EE 697 Graduate Project

## Additional Academic Policies

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined credit hours of Special Topics and/or Independent Study courses will be applied to the degree without appeal to and approval from the Program Director.

The School of Engineering offers similar courses at the 400/500 and 600/700 levels. While the higher numbered course has more advanced content, there is a significant overlap in topics. Therefore, students are not allowed to take a 500-level or 700-level course for credit if they have previously taken the related 400-level or 600-level course, respectively.

## Admission Requirements

Requirements for admission to the PhD program include the following:

1. A bachelor's degree in an accredited electrical or computer engineering program or a bachelor's degree in a related program acceptable to the graduate faculty in Electrical and Computer Engineering; students not having a bachelor's degree in electrical or computer engineering may be required to complete prerequisite courses, which will be defined at the time of admission;
2. An overall GPA of at least 3.0 on a 4.0 point scale, or at least 3.0 for the last 60 semester hours completed;
3. Three letters of recommendation concerning the applicant's previous academic and professional work;
4. International applicants must submit English proficiency scores in accordance with UAB Graduate School requirement. [Click here for details](#);
5. Original transcripts from all colleges and universities attended since high school must be sent directly to the UAB Graduate School ([more information](#)).

## Financial Support

Fellowships and/or assistantships may be available for well-qualified students admitted into the PhD program. In order to be considered for financial aid for the coming academic year, the completed application materials must usually be received at UAB by April 1.

There are fellowships and scholarships available through the [Graduate School](#).

## Additional Information

Deadline for Entry Term(s):	Fall: August 1; Spring: December 1; Summer: May 1
Deadline for All Application Materials to be in the Graduate School Office:	Seven days before the start of the term

The PhD degree prepares students for professional and research careers in industry and academia. The PhD in Computer Engineering is awarded by UAB and is offered through a program shared with the University of Alabama in Huntsville (UAH), allowing both UAB and UAH to contribute to the program.

## Committee and Candidacy Requirements

In addition to completing coursework requirements (see below), doctoral students must form a Graduate Dissertation Committee consisting of at least five faculty members, including the primary research mentor. At least two committee members must have a primary appointment at UAB in the Department of Electrical and Computer Engineering and one must have a primary appointment at UAH in the Electrical and Computer Engineering Department.

A comprehensive examination is required of all doctoral candidates. This exam is given after:

- All coursework is completed,
- Successful completion of GRD 717 Principles of Scientific Integrity,
- The student's Graduate Committee, which consists of faculty representatives from both campuses, deems the student to have adequate preparation in the major and minor fields of study.

The examination is conducted by the Graduate Committee and administered on the resident campus. The examination consists of a written part and an oral part. The student presents a dissertation proposal during the oral portion of the examination. The comprehensive examination may only be taken twice.

After successfully passing the exam and defense, the graduate student will then enter into doctoral candidacy. Doctoral candidates must complete a minimum of 24 hours of dissertation research and then develop a dissertation for review by the dissertation committee. The candidate must also present an oral public defense of their dissertation. This must take place at least two semesters before the student may graduate. If the defense is successful, the student then has 10 working days to revise the dissertation and submit its approved form to the Graduate School by the published deadline.

## Additional Academic Policies

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined credit hours of Special Topics and/or Independent Study courses will be applied to the Computer Engineering PhD without appeal to and approval from the Program Director.

The School of Engineering offers similar courses at the 400/500 and 600/700 levels. While the higher numbered course has more advanced content, there is a significant overlap in topics. Therefore, students are

not allowed to take a 500-level or 700-level course for credit if they have previously taken the related 400-level or 600-level course, respectively.

### **Post Bachelor Requirements**

Students entering the PhD program with a bachelor degree are required to complete at least 48 credit hours of coursework followed by 24 credit hours of dissertation research.

- 18 credit hours of approved coursework in computer engineering
- 12 credit hours of approved coursework in electrical or computer engineering
- 9 credit hours of approved coursework in mathematics, theoretical or formal methods as related to computer engineering
- 6 credit hours of approved coursework in fields that support the dissertation research
- 3 credit hours of GRD 717 Principles of Scientific Integrity
- 24 credit hours of EE 799 Dissertation Research

### **Post Master Coursework Requirements**

Students entering the PhD program with a master degree are required to complete at least 27 credit hours of coursework followed by 24 credit hours of dissertation research.

- 9 credit hours of approved coursework in computer engineering
- 6 credit hours of approved coursework in electrical or computer engineering
- 6 credit hours of approved coursework in mathematics, theoretical or formal methods as related to computer engineering
- 3 credit hours of approved coursework in fields that support the dissertation research
- 3 credit hours of GRD 717 Principles of Scientific Integrity
- 24 credit hours of EE 799 Dissertation Research