

ELECTRICAL ENGINEERING, MS

The Master of Science in Electrical Engineering (MSEE) degree may be obtained through either of two plans.

1. Plan I (thesis research)
2. Plan II (non-thesis option)

See the Admission Criteria section of this catalog for more information.

Admissions

A. Regular Admission Requirements

For regular to the graduate program in the ECE Department, a prospective graduate student should have:

- Bachelor's degree in Electrical or Computer Engineering or related field from an ABET-accredited program. Applications who are graduates of a non EAC/ABET-accredited program will be considered.
- Grade point average of at least 3.0 on a 4.0 scale, 3.0 for the last 60 semester hours in a degree program, or 3.0 for a completed graduate program.
- Combined verbal and quantitative GRE requirement of 300 or greater.

There is no minimum score on the writing section of the GRE for admission to the MSEE Program.

GRE Verbal and Analytical Writing scores must be consistent with an international applicant's English language score.

Non-native speakers are required to submit unofficial TOEFL, IELTS, DET, or PTE scores (official scores are submitted on admission) unless they meet at least one of the following criteria:

- At the time of initial enrollment, they will hold a degree from a U.S. institution or an institution in one of the English-speaking countries or regions in the link below;
- At the time of initial enrollment, they will have been enrolled in coursework for at least two years at a U.S. institution or an institution in one of the English-speaking countries or regions in the link below;
- They are a citizen or legal resident of one of the English-speaking countries or regions in the link at: <https://graduate.ua.edu/prospective-students/international-admissions/>

The minimum score(s) to be considered for regular admission:

TOEFL: 79, IELTS: 6.5, DET: 110, PTE: 59.

Admission with Permission to Continue may be granted to applicants who do not meet these requirements, for example those who have degrees in related fields or a GPA below 3.0.

Please see the Graduate School website for more details.

B. Accelerated Master's Program (AMP) Admission Requirements

The Accelerated Master's Program (AMP) allows undergraduate students to simultaneously count up to 6 hours of graduate coursework toward both the undergraduate and graduate degrees. **The GRE admissions test and recommendation letter requirements are automatically waived for AMP applicants.**

Please see the Graduate School catalog page for admission requirements for the Accelerated Master's Program.

C. Admission Requirements for Applicants Without an Electrical Engineering or Computer Engineering Bachelor's Degree

Applicants without an electrical engineering or computer engineering bachelor's degree may be admitted with Permission to Continue. Such students will be required to complete successfully three 400-level electrical engineering courses, each in a different sequence area. Successful completion requires a "B" or better in the course. Slash-listed (400/500) courses taken to satisfy this policy cannot be counted toward the graduate degree. Equivalent undergraduate or graduate courses in related fields (for example, electromagnetics in physics, computer architecture in computer science, or control in mechanical engineering) may be counted as a course in the corresponding electrical engineering area upon approval by the Electrical and Computer Engineering Graduate Program Director.

D. Required Application Materials

In addition to the online application form, the following information is required as part of your application:

1. A short Statement of Purpose describing possible research/study interests
2. Resume
3. External applicants should submit three letters of recommendation
4. English proficiency test results (TOEFL, IELTS, DET, PTE) if required
5. GRE test scores
6. Transcripts for any institutions where 15 or more credit hours were completed

E. Application Deadlines

There are no formal deadlines for graduate applications. Once an application is complete, the internal review process typically takes 2-3 weeks. However, **international applicants** should consider the time required to obtain any necessary visa documents.

Curricular Requirements

The Master of Science in Electrical Engineering (MSEE) degree may be obtained through either of two plans, which are detailed in this section.

MSEE – Thesis Option (Plan 1)

Code and Title	Hours
Area of Concentration	
A minimum of 12 hours of closely related Electrical and Computer Engineering (ECE) designated courses in the student's area of concentration, as defined by the advisory committee	12
Elective Area of Study	
A minimum of 9 hours of courses in an elective area approved by the advisory committee	9
Mathematics or Science	
A minimum of 3 hours of Mathematics (MATH, ST, or GES) or Science (Physics, Chemistry, or Biology) courses at the 500 level or above	3
Graduate Research Seminar	
One hour of seminar (ECE 695 Graduate Research Seminar). This can be part of the Area of Concentration or the Elective Area of Study.	

Total Coursework Hours	24
Thesis Course	
ECE 599 Thesis Research (A minimum of 6 hours of thesis research are required)	6
Minimum Total Hours	30

Additional Requirements:

- A minimum of 3 hours of closely related Electrical and Computer Engineering (ECE) designated courses in the student's Area of Concentration must be at the 600 level.
- No more than 6 hours may be from courses at the 400 level. In order to receive degree credit, 400-level courses require written application and approval by the Graduate School prior to the semester in which any 400-level course is to be taken.
- The Graduate Research Seminar can be considered as part of the student's Area of Concentration or Elective Area of Study with approval from the student's advisory committee.
- A student's curriculum and thesis must be approved by the student's graduate advisory committee. The student must pass a final comprehensive examination, which is typically a presentation and defense of the thesis. In addition, the student must satisfy all University requirements defined in the current edition of The University of Alabama Graduate Catalog.

The MSEE Plan I candidate's committee will consist of three department faculty who have each taught the candidate at least one graduate course. The MSEE Plan I candidate's committee is responsible for administering the thesis defense.

MSEE – Non-Thesis Option (Plan II):

Code and Title	Hours
Area of Concentration	
A minimum of 12 hours of closely related Electrical and Computer Engineering (ECE) designated courses in the student's area of concentration, as defined by the adviser	12
Elective Area of Study	
A minimum of 12 hours of courses in an elective area approved by the adviser	12
Mathematics or Science	
A minimum of 3 hours of Mathematics (MATH, ST, or GES) or Science (Physics, Chemistry, or Biology) courses at the 500 level or above	3
Graduate Research Seminar	
One hour of seminar (ECE 695 Graduate Research Seminar). This can be part of the Area of Concentration or the Elective Area of Study.	
Culminating Experience	
ECE 598 Non-Thesis Research (A minimum of 3 hours of non-thesis research are required)	3
Total Hours	30

Additional requirements:

- A minimum of 3 hours of closely related Electrical and Computer Engineering (ECE) designated courses in the student's Area of Concentration must be at the 600 level.
- No more than six (6) hours may be courses at the 400 level. In order to receive degree credit, 400-level courses require written application and approval by the Graduate School prior to the semester in which any 400-level course is to be taken.

- The Graduate Research Seminar can be considered as part of the student's Area of Concentration or Elective Area of Study with approval from the student's advisory committee.
- A student's curriculum must be approved by the student's graduate adviser, which must be chosen during the first semester of the degree program.
- The graduate advisor must also approve either of the following to satisfy University of Alabama Graduate School culminating experience requirement for an MS Plan II degree:
 1. Submission of a manuscript, authored or co-authored by the candidate, to a refereed journal or conference proceeding;
 2. A written research report submitted to the advisor.

During the first semester in the MSEE Plan II program, the candidate must select an adviser from the department faculty who will be responsible for administering the culminating experience.

For AMP students, 6 credit hours can be double counted towards both the bachelor's and master's degree. Of the double counted hours, a maximum of 3 may be from the student's minor.

Graduate Courses

Graduate courses are those with numbers in the 500-level and 600-level. 500-level courses are intermediate-level courses and are often associated with Master's-level work. 600-level courses are advanced-level courses and are often associated with PhD-level work. However, both MSEE and PhD plans of study can contain both 500- and 600-level courses.

Graduate courses are listed in the Graduate Catalog at: Electrical and Computer Engineering Courses.

Courses taken for graduate credit generally cannot be repeated. This includes audited courses. Required courses can be repeated for credit if the student makes a D or F grade with the recommendation of the Department Head and the Dean of the Graduate School.

Note that 400-level courses are generally not acceptable for graduate degree requirements. However, there are strict exceptions to this rule as described below in the "Grades and Academic Standing" section.

Undergraduate students enrolled in the Accelerated Masters Program may double count a limited number of graduate course hours as undergraduate electives. More information about his program is available on the Graduate School web site.

Graduate Seminar

The ECE department holds a seminar series each regular academic term.

In addition to student presentations, outside speakers distinguished in some area of engineering are invited to make seminar presentations. Graduate students are expected to attend these seminars.

There is a one-hour course that students may take to obtain course credit for this seminar series each semester. MSEE students (both Plan I and Plan II) are required to complete 1 hour of seminar before graduation.

Grades and Academic Standing

Grades in graduate courses are assigned on the A, B, C, D, F system. Plus and minus grades are not used for graduate courses. A weighted grade point average (GPA) is computed using 4 points for A's, 3 for B's, 2 for C's, 1 for D's and 0 for F's. In order to be in good academic standing and to graduate, a student must maintain at least a B average (GPA \geq 3.0). Graduate students with 12 or more credit hours and a GPA $<$ 3.0 will be placed on academic warning and may not hold a graduate assistantship. To remain in the program, students on academic warning must raise their

GPA to 3.0 or better by the end of the semester following being placed on academic warning.

400-Level Courses:

While 400-level courses may be applied toward a master's degree, see Section 4.9 of the Graduate Catalog for some very important considerations that should be noted. For example, approval for such coursework must be obtained before the course is taken and it will only count if a graduate course on the same topic is not available. Students are expected to do additional work as well. Note 400-Level courses may not be accepted for a doctoral degree except when taken as part of the master's degree. It is very rare that a 400-level course will count toward a graduate degree. Consult with your advisor or graduate program director prior to pursuing this option.

Please see the Grades and Academic Standing catalog page.

Transfer Credit

The UA Graduate Catalog provides a comprehensive high-level description of graduate transfer credit policies, and they supersede any departmental policies. Hence, graduate course credit earned prior to enrollment at UA is evaluated according to the UA Graduate Catalog. This document is intended to summarize long-standing and tested policies that have been in place within the ECE department.

Procedure

1. Students desiring to receive transfer credit must complete the *Request for Transfer of Graduate Credit* form, available on the UA Graduate School website, and have an official transcript from the institution where the credit was received on file at UA.
2. The completed form should be submitted to the Graduate School, who will then send it, along with the student's transcript, to the student's advisor (via the departmental staff) for initial evaluation. The faculty advisor will evaluate each course for transfer credit and complete Part III of the request form. They will submit the completed form to the Graduate Program Director.
3. The Graduate Program Director will review the request and communicate with the student's advisor until approval can be granted. The ECE Department and the Graduate School must approve any transfer credit.

General Requirements and Limits

1. Per Graduate School policy, transfer credit will be awarded only for courses in which the student received a grade of B or better, and only for courses taken at an accredited university.
2. Transfer credit will be awarded only for courses that the student's advisor deems appropriate for the chosen specialization of study. General requirements of what courses can be accepted within a specialization, by degree plan, can be found on the departmental website.
3. The maximum number of credit hours that may be transferred may not exceed one-half of the coursework hours required for the degree. This excludes Research and Thesis hours, and thus the number of transfer hours will typically be less than one-half of the total number of hours required for the degree.
4. Only credit hours earned for standard coursework may be transferred. Research hours, laboratory hours, and project hours are all ineligible for transfer.

Assignment of Credit

1. For each course requested to be transferred, when an equivalent or "near-equivalent" course is available at UA, transfer credit for that UA

course number will be awarded, subject to the items in the General Requirements and Limits section above. In general, if transfer credit is deemed to be equivalent to a UA course, and transfer credit for that UA course number is given, the student is no longer eligible to take that course at UA.

2. It is quite common for students to enter UA with graduate credit from other institutions for courses that we do not offer. If these courses meet the conditions under the General Requirements and Limits section above, then credit for ECE 593 or ECE 693 will be awarded, as appropriate for the level of the course being transferred. This assignment process is consistent with UA Graduate School, College of Engineering, and UA Registrar policies.

Please see the Graduate School information on Transfer Credit.

MSEE Plan of Study Requirement

Soon after admission to the MSEE program, you should work with your advisor and committee (if applicable) to complete the MSEE Plan of Study. Consult the graduate course schedule for help with choosing the coursework that will be listed in the Plan of Study. Courses listed in the Plan of Study may be modified during your course of study with the approval of your advisor. **It is the student's responsibility to keep the ECE Department informed of revisions to the Plan of Study, as this document is used for assessment and to audit the student's courses prior to graduation.**

Comprehensive Examination

A final comprehensive examination is required of all MSEE candidates. The content of this exam depends on the candidate's degree program.

Plan I MSEE candidates submit a thesis of their research work to the committee members and defend their thesis work in a formal presentation.

Plan II MSEE candidates can satisfy the comprehensive exam via one of the following:

- Pass a formal defense of a conference or journal paper in which the student is an author. The student must meet with the advisor and report on their portion of the work described in the paper.
- Submit a written research report on a topic defined by the academic advisor.

The specific format of this exam is at the discretion of the advisor. Both options require 3 hours of ECE 598 (non-thesis research).

Note that the examination must be passed and the results filed with the Graduate School on the Master's Examination Form no later than the deadline posted by the Graduate School at: <https://graduate.ua.edu/current-students/student-deadlines/>.

Plan I – Thesis Process Requirements

A. Thesis

The thesis is a formal research document and must be prepared following the Graduate School's thesis and electronic submission guidelines (<http://services.graduate.ua.edu/etd/>). A student's thesis will be reviewed by their thesis advisor and advisory committee. Once they are satisfied with the thesis, the student and thesis advisor will schedule the Comprehensive Exam/Thesis Defense. After successfully defending the thesis, there may be final corrections and revisions required to the thesis before the committee gives their final approval. Such conditions should be considered in scheduling the presentation/defense relative to the Graduate School submission deadlines.

B. Thesis Defense

The final step in the pursuit of the MSEE degree (Plan I) is a formal defense of the completed thesis before the student's graduate advisory committee. The thesis defense consists of two major components.

The first component is a technical presentation that summarizes the major findings of the thesis. This presentation should include a survey of the available literature and a summary of the major technical achievements of the research. The technical presentation is followed by a question-and-answer session, during which audience members may ask the student specific questions about his or her thesis research. This portion of the defense must be open to the public.

The second component of the thesis defense is a closed question & answer session that is restricted to the defending student and the graduate advisory committee. This portion of the defense is not open to the public. The graduate advisory committee will typically ask a series of detailed questions about the student's research. After the committee has concluded asking questions, the student will be asked to leave the room so that the committee may deliberate and render a decision on whether the student has passed or failed the defense. After a decision has been reached, the student will be called back into the room and notified of this decision.

The thesis defense must be announced publicly. The procedure for public announcement is as follows. No less than four weeks before the scheduled defense date, the student must complete a thesis announcement document, which includes the following elements: the student's name, the student's email address, the advisor's name, the thesis title, and abstract of no more than 300 words, and the scheduled date and time of the defense. A template of this announcement form is available from the ECE office staff.

When the thesis announcement document is complete, it should be sent to the ECE office staff for distribution. This will generally be done at the same time that the room reservation for the defense is scheduled. To ensure that this policy is enforced, ECE office staff will not schedule a room for a thesis defense without first receiving the completed thesis announcement document. After receiving this document, the ECE office staff will add the confirmed room location and will then send this document to the department email distribution list. The document will also be posted to the ECE department website and sent to the office of the Dean for further distribution within the College of Engineering.

Graduate Advisory Committee

Every MSEE candidate (Plan I) is responsible for working with their advisor to select a faculty committee to oversee the candidate's progress toward earning the MSEE degree. The MSEE Plan I candidate's committee will consist of at least three members of the faculty. At least two of the members must be from the ECE Department faculty. Up to one member may be from outside the department. The MSEE Plan I committee will work with the advisor to approve the candidate's plan of study, evaluate the candidate's thesis and thesis defense, and help the candidate with any problems that may arise in the course of obtaining the MSEE degree.

The MSEE Plan II candidate does not have to form a committee, but instead select an advisor from the members of the ECE Department faculty. The advisor will be responsible for administering the culminating experience.

Time Limits for Degree Completion

All requirements for the MSEE degree must be completed during the six years prior to the date that the degree is awarded.

Please see the Graduate School catalog page for information on Time Limits.

Student Progress Requirement

Please see Satisfactory Academic Progress Website.

Academic Misconduct Information

Please see the Graduate School catalog page for information on Academic Misconduct.

Withdrawals and Leave of Absence Information

Please see the Graduate School catalog page for information on Withdrawals and Leave of Absence.

Academic Grievances Information

Please see the Grievance Procedure catalog page.

Grades and Academic Standing

Please see the Grades and Academic Standing catalog page.

Graduate School Deadline Information

Please see the Graduate School website.

Application for Graduation Information

Please see the Graduate School catalog page for information on the Application for Graduation.

Unconditionally admitted full-time graduate students may seek and receive financial assistance in the form of a graduate assistantship. Assistantships generally include a monthly stipend as well as all or a part of tuition and health insurance. Graduate assistantships are highly competitive and being admitted into the graduate program does not in any way guarantee an assistantship award.

Graduate Research Assistantships (GRAs) are awarded by individual professors with funded research. Applicants should communicate directly with a faculty member in the applicant's area of interest concerning the availability of GRA positions and a potential match.

The ECE Department offers Graduate Teaching Assistantships (GTAs) for students assisting faculty members with undergraduate courses and laboratories. GTA awards are determined by the ECE Department Administration at the request of individual faculty members who submit GTA applications on behalf of their students. A university-wide requirement for all GTAs is that they should either have English as their native language or have successfully completed an English language proficiency course and passed an English language proficiency exam administered by UA's English Language Institute. The English language proficiency exam and course process typically require at least one semester. There is a limited number of GTA positions each semester.

The GRAs and GTAs must register for a minimum number of credit hours based upon their level of funding as described in the Graduate Catalog. GTAs/GRAs are also expected to perform a minimum number of work hours per week as part of their position. A full-time GTA/GRA is expected to work 20 hours per week; a half-time GTA/GRA is expected to work 10 hours per week. Accepting an assistantship implies an obligation on the

part of the student. Students supported by an assistantship are expected to fulfill their roles as students, meeting all academic requirements, as well as carrying out teaching and/or research assignments. Students who do not maintain good academic standing, as defined in the UA Graduate School, are not eligible for assistantships. Assistantships may also be terminated by faculty advisors for unsatisfactory performance of the assigned research and/or teaching duties. The ECE Department is not obligated to provide funding for students terminated from their positions.

It should be noted that a loss in funding does not equal dismissal from a program, for students in good academic standing and who have not been found to have committed misconduct worthy of dismissal.

Domestic students may be eligible for student loans and other financial aid and should visit the UA Financial Aid Office website to learn more about these options.

Additional support is available in the form of fellowships, available from the University and other funding agencies. Applicants are encouraged to visit the Graduate School website to learn more about these opportunities, application requirements and deadlines. Some professional societies also offer assistance to new graduate students.

Qualified applicants are encouraged to apply for fellowships like the NSF Graduate Research Fellowship, the DoD SMART Fellowship, the Alabama Space Grant Consortium Fellowship, and UA's Graduate Council Fellowship. Note that most of these have early application deadlines and some require interaction with a nominating faculty member.

Additional information can be found on the Financial Assistance page of the Graduate Catalog.