



School of Electrical Engineering  
& Computer Science

# Division of Electrical & Computer Engineering

## GRADUATE HANDBOOK

Effective Fall 2019

This handbook gathers into one place most of the academic regulations of the Graduate School and the Division of Electrical and Computer Engineering (ECE) as they affect graduate students working toward either M.S. or Ph.D. degrees in electrical engineering. This handbook is directed toward faculty advisors and students alike.

**Graduate students must assume full responsibility for the knowledge of rules and regulations of the Graduate School and the Division concerning their individual degree programs.** Graduate students are not expected to require step-by-step guidance as is commonly given to undergraduates. The purpose of this handbook is to help-student navigate through the degree program requirements with ease and minimum effort.

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## 1. GENERAL INFORMATION

Some regulations pertaining to graduate study are fixed by the Graduate School; others are left to the discretion of the individual departments or units. Rules and regulations as printed in the LSU General Catalog are official and they must be followed. Students will be governed by the rules in the Graduate Handbook in force at the time their Plans of Study are approved.

### 1.1 Full-time Status

A "full-time" graduate student is one who, in the opinion of the dean of the Graduate School, is fully committed to graduate study and who devotes no appreciable time to any duties not directly related to his/her graduate work. Full-time status does not depend solely on the number of hours for which a student registers, although it is normally expected that a full-time graduate student will take at least nine semester hours of work. Graduate assistants are considered full-time students and are expected to register for a full load of graduate courses each semester until all degree requirements are completed

### 1.2 Course Loads

Maximum registration for a graduate student is 15 hours of coursework in any one semester. The maximum course load for a summer term is nine hours. The maximum load for a graduate assistant employed half-time is 12 hours per semester or six hours per summer term.

### 1.3 Final Semester Course Load

Students must be registered for a minimum of 1-3 semester hours of credit during any semester in which they are taking the master's final examination or doctoral final examination.

### 1.4 Grade Requirements

To receive a graduate degree a student must have at least a 3.0 average on all work taken while registered as a graduate student. A student whose cumulative average in either graduate course work or total course work is below 3.0 will be placed on probation, except that a student whose cumulative average is as low as 2.75 may be dropped from the Graduate School without having a probationary period. A student already on probation whose cumulative average is below 3.0 will be dropped from the Graduate School. A student receiving U grade in research will be placed on probation. A student receiving a second U grade in research may be dropped from Graduate School. For these purposes a summer session is counted the same as a semester.

### 1.5 Assistantships

A number of teaching and research assistantships are available to qualified students. Requests for information should be made directly to the ECE Division Graduate Office. Only students with acceptable academic records may be appointed to graduate assistantships. A student on probation does not qualify for an assistantship.

## **1.6 The Graduate Studies Committee**

The graduate faculty in the Division is responsible for formulating policy regarding those matters of graduate study over which the Division retains control. The Graduate Studies Committee (GSC) is responsible for implementation of this policy. The Committee approves all plans of study and oversees degree requirements. A student has the right to petition the Committee for a reexamination of its rulings on an individual basis. All such petitions must be in writing.

## **1.7 Academic Advising**

Every student has a faculty advisor to assist him/her in all pertinent academic issues, such as the planning of course schedules, and selecting a research area and major professor. During the first semester in residence, students are normally advised by the Division area coordinator appropriate to the student's interest. With the help of the area coordinator, students must select an advisor (from the graduate faculty) before they are permitted to register for the second semester.

## **1.8 Major Professor**

The major professor will act as the chair of the student's examining committees and direct thesis and dissertation research. The major professor must endorse the plan of study submitted by the student to the GSC.

## **1.9 Plan of Study**

In order to facilitate Division planning and to assure that graduate students have a well- defined study program, it is necessary that each graduate student submit a Plan of Study to the GSC. The Plan of Study must be signed by the student's major professor before being submitted to the GSC for approval. The proper forms are available on our website at [www.ece.lsu.edu](http://www.ece.lsu.edu) . The Plan of Study is not a binding contract and may be changed, if necessary, in consultation with the major professor and the GSC.

## **1.10 Minor in Electrical Engineering**

Graduate students from outside the Division desiring a minor in electrical engineering must take at least nine credits of graduate level courses. For a Ph.D. student six or more credits must be of 7000 level; for an M.S. student a minimum of three credits of 7000 level is required. The program must be approved by the GSC.

The Division of Electrical and Computer Engineering does not require a separate examination for students minoring in electrical engineering.

## **1.11 Independent Study Courses in Electrical Engineering**

The Division may grant permission to a student to take EE7091, 7092 (Electrical Engineering Research) if the student holds a Master's degree in Electrical or Computer Engineering or a related area, or if the student has completed 9 semester hours in the graduate program. All individual study courses require a final report from the student submitted to Graduate Office by the course instructors. This report will become part of the student's record.

## 2. REQUIREMENTS FOR THE M.S. DEGREE

While both thesis and non-thesis options are available for the M.S. degree, students are strongly encouraged to elect the thesis option. An M.S. candidate is expected to have a good general knowledge of his/her field of specialization and a reasonable competence in the research skills used in his/her field. In order to graduate, a student must, apart from the requirements mentioned below, achieve a 3.0 or higher GPA on all electrical engineering courses that are applied towards his/her graduate degree.

### 2.1 Time Limitation

Students are encouraged to complete the program in two calendar years or less. However, programs must be completed within five years. Credit for individual courses taken more than five years before the termination of a program, however, may be validated by passing the equivalent of a final examination in each course. The results of such examinations must be certified by the professor under whom the examination was taken, the student's committee, and the Division chair. Any such examination results must be reported to the Graduate School before the request for final examination can be approved.

### 2.2 Transfer and Extension Credit

A total of 12 hours of extension and/or transfer credit may in some cases be used in a master's degree program if approved by the Division chair and the dean of the Graduate School. Credits from only U.S. institutions can be transferred. To petition for transfer credit, the student must have completed his/her first nine hours of graduate residence at LSU. Form for credit transfer can be obtained from: <http://gradlsu.gs.lsu.edu/files/item11984.pdf>

### 2.3 Nonstandard Backgrounds

Candidates for an M.S. degree with non-electrical engineering B.S. degrees may be required to complete remedial work in electrical engineering as specified by his/her major professor. Because M.S. candidates are expected to have an appropriate background in electrical engineering, all students with non-electrical engineering B.S. degrees will be required to take most of their coursework in the Division of Electrical and Computer Engineering (see Section 2.5).

### 2.4 The M.S. Plan of Study

The M.S. Plan of Study must be submitted shortly after the selection of a major professor. No student with 15 or more hours of credit will be allowed to register for further work without an approved plan of study. Courses at the 4000 level which are counted in the B.S. degree program at LSU are not acceptable for graduate credit. The MS Plan of Study must be submitted to the ECE Graduate Office in the second semester in order to continue MS study.

Every student is required to have an M.S. examination committee which is described in Section 2.7.

## 2.5 Study Programs

The Division offers two M.S. degree programs described below. All coursework must be approved by the major professor and the GSC. Changes from one program to another may be made at any time with the approval of the student's major professor and the GSC.

### 2.5.1 Thesis Option

Thesis option requires a minimum of 30 hours of graduate credit as follows:

EE 8000 (thesis)	6 hours
EE 7xxx	12
Suitable electives*+	<u>12</u>
	30 hours

These 30 hours are subject to the following restrictions:

- The maximum credit permitted at the 4000 level is 12 hours.
- A maximum of 12 hours of coursework can be from EE 4x0x, EE 7x00, EE 709x, and other individual study/seminar/ special topics courses.
- EE 709x cannot be used to satisfy the EE 7xxx requirements.
- Courses taken outside the Division need approval of the GSC.

\* May include a maximum of three credits of EE 709x.

+ Students may take a maximum of 12 hours outside the Division.

### 2.5.2 Non-Thesis Option

The non-thesis option requires a minimum of 36 hours of graduate credit as follows:

EE 709x (Project) <sup>1</sup>	3 hours
EE 7xxx	15 hours
Suitable electives <sup>2,3</sup>	<u>18</u>
	36 hours

These 36 hours are subject to the following restrictions:

- The maximum credit permitted at the 4000 level is 12 hours.
- No more than 18 hours of coursework can be from EE 4x0x, EE 7x00, EE 709x, and other independent study/seminar/ special topics courses.
- EE 709x cannot be used to satisfy the EE 7xxx requirements.
- Courses taken outside the Division need approval of the GSC.

<sup>1</sup> EE 709x must be taken in the final year of MS graduation.

<sup>2</sup> May include three credits of EE709x.

<sup>3</sup> Students may take a maximum of 12 hours outside the Division

+ Students may take a maximum of 12 hours outside the Division.

## **2.6 Research Details**

### **2.6.1 Thesis**

The MS thesis is a substantial study bearing on a clearly defined problem of limited scope. It must be acceptable in subject matter and exhibit creditable literary workmanship. Instructions on preparation and submission of thesis can be obtained from the Graduate School website.

Final acceptance of the master's thesis rests with an examination committee described in Section 2.7. The major professor is designated chair of this committee.

Each student must submit a final copy of his/her thesis to the members of his/her committee no later than 10 days prior to the day set for the final examination.

### **2.6.2 Project**

EE 709x taken as a project is a study bearing on a clearly defined problem of limited scope in the final year of MS graduation. It must be acceptable in subject matter and exhibit credible literary workmanship. Instructions on preparation and submission of project reports can be obtained from the ECE Graduate Office.

Final acceptance of the master's project report rests with an examination committee described in Section 2.7. The major professor is designated chair of this committee.

Each student must submit a final copy of his/her report to the members of the committee no later than 10 days prior to the day set for the final examination.

## **2.7 Master's Examination & Examination Committee**

Every student is required to have an M.S. examination committee that includes 3 or more members. The major professor must be from ECE Division. A majority of the committee must also be from ECE. The committee members are nominated by the major professor, approved by the Division chair and the dean of the Graduate School. The major professor is the designated chair of this committee. The student is required to take the oral final examination in the semester the student wants to graduate.

For students pursuing the thesis option the comprehensive final examination consists of an oral defense of the thesis and affiliated coursework. M.S. exam committee serves as the M.S. thesis committee.

For students in the non-thesis option, the final examination consists of a written project report and an oral examination based on the report and affiliated course work. A copy of project report must be submitted to Graduate Office before the final exam report is submitted to the Graduate School.

For both thesis and project options, for student to pass the examination there should be no more than one dissenting vote.

## **2.8 List of Major Steps for the M.S. degree**

The following is a brief summary of the necessary steps for the M.S. degree. The steps are listed in sequence.

1. Initial counseling by an area coordinator.
2. Select a major professor.
3. File a Plan of Study which must be approved by the major professor and the GSC.
4. File\* an Application for Master's Degree Candidacy (found on the graduate school website). This must be submitted to Division Graduate Office one week prior to Graduate School deadline.\*
5. File an Application for Master's Degree (found on the graduate school website). This must be submitted to Division Graduate Office one week prior to Graduate School deadline.\*
6. Submit\* thesis/project report to examining committee.\*
7. Take the final examination.
8. Thesis option students submit approved thesis to the graduate school, and non-thesis students submit approved project report to the graduate office.

\* Submission deadlines are given on the Graduate School Calendar



### 3. **REQUIREMENTS FOR THE PH.D. DEGREE**

The Ph.D. candidate must show that he/she has a broad factual and theoretical background in his/her chosen subject, an authoritative knowledge of his/her special field of research, a thorough grasp of research methods and sound critical judgment. The degree is conferred only for work of distinction in which the candidate displays decided powers of original scholarship and only in recognition of achievement and marked ability. In no case is the degree awarded solely on the basis of study, however intense, extending over any prescribed period of time or in recognition of faithful performance of prescribed work. There are three basic hurdles: qualifier, general examination and final examination.

#### 3.1 **Qualifier**

Every ECE PhD student must pass the qualifier by the end of the second year after he/she joins LSU. The qualifier can be facilitated by one of the following two options:

1. Seminar Presentation: The PhD student will present a seminar to the PhD supervisory (dissertation) committee excluding the dean's representative. The scope of the presentation can be the study of several research papers suggested by the major professor or the report of a project supervised by the major professor. The majority of the committee determines pass/fail. There is no limit of times for the student to take this presentation within the first two years of the PhD study but at most it can be held once every semester.
2. Publication: Publication can be used as a special track. In principle, one first-authored accepted/published peer-reviewed journal paper or two first-authored accepted/published peer-reviewed conference papers with the affiliation of ECE Division, LSU, which address the research work carried out after joining LSU, can be credited as the substitute of the qualifier. The major professor should write a formal petition to the PhD supervisory (dissertation) committee excluding the dean's representative for approval by the majority of the committee.

#### 3.2 **The Ph.D. Plan of Study**

A student, counseled by his/her advisory committee, must formulate a Plan of Study which, after having been approved by the advisory committee, should be submitted to the GSC as soon as possible after passing the qualifier. Counseling to the student and approval of the Plan of Study by the advisory committee should only be given after ascertaining the student's strengths and weaknesses.

#### 3.3 **Advisory Committee**

During the entire period of work toward the doctorate, starting the semester after an applicant passes the qualifier; the student's program is directed by a special advisory committee. The advisory committee consists of the major professor who acts as chairman, Graduate School Dean's representative, and three or more other members. In addition to the major professor, at least one other member should come from ECE.

The members of the advisory committee must hold graduate faculty status and are nominated by the major professor and approved by the GSC, Division chair and the dean of the Graduate School.

### 3.4 **Study Program**

The study program must include a minimum of 42 hours of coursework above the B.S. degree. All coursework must be approved by the GSC. Dissertation research (EE 9000) can be taken only after passing the qualifier.

The student must identify a major area of study within the ECE Division. Possible major areas are listed in Section 3.1.1.

#### **Minimum Credit Requirements:**

Major Area:	EE 7xxx15 hours
Approved Electives*:	<u>27</u> 42 hours

#### **Restrictions:**

- EE 7xxx credits must be obtained at LSU in Major area of the candidate.
- Maximum 9 credits of 4000 level courses are allowed
- Maximum 3 credits of EE 709x are allowed only in the approved electives area
- No course with grade of C or below will be accepted
- At least 21 credits must be in EE4xxx or EE7xxx

\*4000 level courses counted towards LSU B.S. degree are not accepted.

Students joining the Ph.D. program with an M.S. degree may petition the GSC to have part, or all, of the coursework taken for the M.S. degree applied towards the Ph.D. requirements. In general, no more than 15 hours of credits taken outside LSU can be counted towards the Approved Electives requirement. The petition cannot include M.S. thesis work or individual study courses taken outside the ECE Division.

### 3.5 **General Examination**

A student becomes eligible to take the general examination after passing the qualifier and demonstrating to the advisory committee adequate academic and professional aptitudes. The general examination is comprehensive enough to demonstrate expert competence over broad segments of the major field. The examination should be regarded as the culmination of the student's program in coursework. In most cases the remainder of the time spent in obtaining the degree is devoted to concentrated work on the dissertation and preparation for the final examination.

The student initiates the process by preparing a written document outlining his/her proposed research. Once this research prospectus is approved by the student's major professor, the student must submit a request for general examination and doctoral degree audit form to the Graduate School at least three weeks prior to the proposed date of the exam. At this time, the advisory committee must have its required form with five or more members, including the Graduate School dean's representative (see Section 3.3). The advisory committee decides the outcome of the examination, which is pass or fail.

The examination is a defense of the research prospectus. A part of the examination is open to the faculty and students with a part only open to the advisory committee with or without other faculty members as per the discretion of the advisory committee. The examination may include any question deemed appropriate by the committee or faculty.

### **3.6 Filing Application for PhD Degree**

File an Application for PhD Degree (located on the graduate school website). This must be submitted to Division Graduate Office one week prior to Graduate School deadline given on the Graduate School Calendar.

### **3.7 Time Limitation and Continuous Registration**

Students must maintain a minimum of three credit hours each regular semester (excluding summers) from the completion of the General Exam to the end of the semester in which the approved dissertation is submitted to the Graduate School.

No less than 3 months, and no more than four years may elapse between the passing of the general examination and the completion of all requirements for the Ph.D. degree. Except by special permission of the Graduate Council, a student who exceeds the four-year time limit must repeat the general examination; he/she is not, however, required to wait for the lapse of 3 months between the passage of the second general examination and the final oral examination.

### **3.8 Dissertation**

A candidate must prove his/her ability to complete a significant program of original research by preparing an acceptable dissertation. The dissertation must be an original and significant contribution to knowledge and must be presented with considerable literary skill.

### **3.9 Final Examination**

The student must complete a request for the final examination to be submitted to the ECE Division Graduate Office at least 4 weeks before the examination date. The request is forwarded to the Graduate School through the Division chair at least three weeks prior to the proposed date and in no case less than five weeks prior to the final date for submission of approved dissertations. The request for the final examination must specify the major, the dissertation title, the time and place proposed for the examination, and nominations for the examining committee.

The final examination committee will be appointed by the dean of the Graduate School. In most cases it will consist of the student's advisory committee, or a similarly constituted group, to whom one or more additions may be made as representatives of the Graduate Council. The committee must have copies of the dissertation at least two weeks prior to the final examination.

The final examination is an oral test which is concerned primarily with the dissertation and related subject matter. The content may be varied in any way the committee decides and may extend into subject matter related to the major even though well removed from topics suggested by the dissertation.

### **3.10 Certification**

Upon passing the final examination, with not more than one member of the committee dissenting, the candidate will be certified to the Board of Supervisors by the dean of the Graduate School as having fulfilled all requirements for the degree of Doctor of Philosophy.

### **3.11 List of Major Steps for the Ph.D. degree**

The following is a brief summary of the steps for the Ph.D. degree.

1. Pass the qualifier
2. Select a major professor from ECE Division
3. Prepare a Plan of Study, which must be approved by the student's advisory committee and the ECE Graduate Studies Committee (request form from ECE Division Graduate Office)
4. File a request for the general examination and a Doctoral Degree Audit Form (Forms are available on the Graduate School web page)
5. Submit a Research Prospectus to the advisory committee
6. Take and pass the general examination
7. File\*\*application for degree
8. File\*\* a request for final oral examination
9. Submit\* dissertation to examining committee
10. Take and pass the final examination
11. Submit\* examination report and approved dissertation to Graduate School.

+Deadline for submission to Division Graduate Office is one week before the submission deadline to Graduate school

\* Submission deadlines are on the Graduate School Calendar.