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1. INTRODUCTION

This handbook delineates the rules under which graduate programs in the Electrical Engineering (EE) Department operate. All graduate students are expected to become familiar with the policies and procedures of the Department as set forth in this handbook and to abide by them. The students should note that the general rules of the Graduate School are also applicable and that each student is responsible for reading and observing the rules, procedures, and deadlines as set forth in the USC Graduate Studies Bulletin.

This handbook is divided into the following sections—Applying for Graduate Study, the Department, Graduate Degrees in EE, Academic Regulations, Financial Aid, Miscellaneous Policies.
2. APPLYING FOR GRADUATE STUDY

2.1 APPLICATION SUBMISSION

All application materials should be submitted to the following address:

University of South Carolina  
Graduate Admissions Office  
901 Sumter Street  
Byrnes Suite 304  
Columbia, SC  29208  

The online application is available at: [http://gradschool.sc.edu/prospective/apply.asp?page=apply](http://gradschool.sc.edu/prospective/apply.asp?page=apply)

Electronic forms can be obtained at: [http://gradschool.sc.edu/forms/](http://gradschool.sc.edu/forms/)

2.2 APPLICATION REQUIREMENTS

Applicants to the graduate programs are required to submit the following items for consideration. No application will be reviewed by the departmental admissions committee until all of the following items are present in the file:

- **Transcripts** of all previous college-level study.
- **Letters of recommendation** from at least two persons who are qualified to judge academic potential.
- **GRE** scores are required by ALL applicants. The scores must be submitted to the Graduate School. Students who have obtained a BS degree from the University of South Carolina and are applying for the ME program are exempt from the GRE requirement.
- **Application fee** of $50.00.

In addition to the above listed items, certain other materials may be required as detailed below.

- **TOEFL** test scores are required of all students whose native language is not English. An exception is made for students that have an undergraduate degree from a university in an English-speaking country.

Applicants to the Ph.D. program should submit a one-paragraph statement describing their area of interest so that their application file can be forwarded to the appropriate faculty member(s) for evaluation.

2.3 APPLICATION DEADLINES

All of the necessary application materials should be received by the dates given below. Applicants in the U.S. may be considered after these dates.

- Fall Semester: March 1
- Spring Semester: July 15
3. THE DEPARTMENT

3.1 ORGANIZATION

The Chair of the Department oversees all operations of the department. The Director of Graduate Studies chairs the Graduate Committee that is responsible for supervision of the departmental graduate degree programs. The Graduate Committee reviews applications for graduate study, makes recommendations regarding admission and financial aid, oversees the progress of graduate students, and recommends degree requirements to the faculty of the department.

Detailed information about each faculty member, including research interests and contact information, can be obtained via the Electrical Engineering Department website: https://sc.edu/study/colleges_schools/engineering_and_computing/departments/electrical_engineering/our_people/index.php
4. GRADUATE DEGREES IN ELECTRICAL ENGINEERING

4.1 PHILOSOPHY OF GRADUATE STUDY

The graduate programs of the Department serve to assist the student in his/her quest for advanced knowledge in specific fields of interest. This goal is achieved through close interaction between the faculty and the student during a challenging course of study comprising classroom, individual study, and research segments. In order to successfully meet the stringent requirements of the graduate program, a student must be adequately prepared. Specific requirements for admission to the various programs are given in the following sections, but, as a general rule, the student is expected to be well-versed in the basic sciences, mathematics, language skills, and electrical engineering principles. Normally, an undergraduate degree in Electrical Engineering is required, although exceptional students with other backgrounds will be considered for admission.

4.2 MASTER OF SCIENCE DEGREE PROGRAM (M.S.)

4.2.1 Admission Requirements

Students may be accepted into the Master of Science degree program with a regular admission or a conditional admission.

M.S. Students are strongly encouraged to distinguish their area of specialization while applying to the Graduate Program. As an internal policy, the Electrical Engineering Department only accepts MS students if a Faculty member agrees to supervise the candidate prior to their admission into the program.

**Regular Admission**

Admission to the graduate programs is competitive. Students meeting the following minimum requirements are eligible for regular admission to the M.S. program, but meeting these requirements should not be construed as being sufficient for acceptance.

- A B.S. degree in Electrical Engineering with an average of B (3.0 / 4.0) or better on all work completed.
- Satisfactory GRE scores (at least 153 verbal, 155 quantitative, 3.0 analytical writing) are required
- At least two (2) satisfactory letters of recommendation.
- For students whose native language is not English, a TOEFL examination score equal to or greater than 80 on the New IBT test, 570 on the paper-based test, or 230 on the computer-based test. Students are exempt from taking the TOEFL exam if they received their undergraduate degree from a university in an English-speaking country.
Conditional Admission
Conditional admission is granted only in exceptional circumstances to applicants who show promise for success in the M.S. program, despite not meeting all of the regular admission requirements. Conditionally admitted students must satisfy all of the conditions of their admission prior to being admitted to degree candidacy.

4.2.2 Supervision
Each student, with the assistance of their advisor, must ensure the formation of the thesis committee. The thesis committee must approve a student’s plan of study, and a student is not admitted to degree candidacy until the plan of study is submitted. It is important that all students discuss a plan of study with their thesis advisor at the earliest opportunity.

4.2.3 Degree Requirements
The Master of Science degree program comprises, at a minimum, 24 hours of graduate coursework and 6 hours of thesis preparation. The program of study, which defines each student’s particular degree plan, must be approved by his or her thesis advisor and by the Graduate Director. Specific degree requirements are set forth below.

COURSES

A minimum of 30 hours of graduate coursework are required to obtain a Master of Science degree. Up to six (6) hours of ELCT 799 – Thesis Preparation are counted towards the 30-hour requirement. At least twelve (12) hours must be completed in a selection of ELCT courses at the 700 level or above and may include six (6) credits of ELCT 897 – Directed Individual Study. Nine (9) credits of the remaining hours have to be taken at the ELCT 500 level or above and the remaining three (3) credits can be taken from any other field deemed appropriate by the student’s thesis advisor at the 500 level or above. All courses applicable to the degree should be specified in the program of study as noted below.

Courses are usually recommended by the student’s thesis advisor or committee according to the area of specialization selected by the student. Areas of specialization include: Power and Energy Systems, Communications and Electromagnetics, Electronic Materials and Devices, and Decision and Control.

Elective Courses. A student may specify elective courses according to his/her interests, with proper respect for the departmental requirements detailed above and with the approval of his/her thesis advisor.

Program of Study. Each student is required to define a program of study prior to completion of his or her first year of enrollment in the program. The program of study represents a plan of action, which, when successfully implemented, will bring the student to his/her desired degree objective. This program of study serves to protect the student in case of change of faculty and facilities planning on the part of the student and the Department. Changes on the program of study can be made, but the student should not
deviate from the program of study currently on file. Alterations must be approved by the student’s thesis advisor and by the Graduate Director.

**Transfer Credit.** No more than 12 hours of graduate credit may be transferred from other institutions for credit toward a degree. Grades of B or better are required on all transfer credits. Transfer credits must be approved by the Graduate Director and by the Dean of the Graduate School. Approval for transfer does not guarantee acceptance of the courses in the student’s degree program. The degree program must be approved separately by the student’s thesis advisor. Credits transferred from other institutions are subject to the six-year limit on age, and no mechanism exists for revalidating over-age transfer credits.

**Revalidation of Courses.** All courses applicable to the degree must be completed within a period commencing six years prior to the date of graduation. It may be possible to revalidate over-age courses in some instances. All petitions for revalidation should be directed to the graduate committee via the graduate director. Specific forms for this purpose are available from the Graduate School.

**MS THESIS**

A research thesis is a required part of the M.S. degree program. The thesis shall be based on research work of current relevance to the ELCT field and of such a nature that the results are publishable in a major journal or presentable at a major conference in the field of specialization.

**Thesis Committee.** In consultation with his/her thesis advisor, the student should select a committee to oversee his/her thesis research. This committee should consist of no fewer than two members of the faculty (including the thesis advisor). Members of committee must be specified on the Master’s Thesis Committee and Thesis Topic form.

**Enrollment in Thesis Preparation.** Students undertaking thesis work must be enrolled officially for thesis credit during every semester in which they use university facilities or confer with faculty about their thesis. A student’s enrollment in **ELCT 799** should reflect the level of effort of both the student and his/her advisor.

**Thesis Defense.** All candidates for the Master of Science degree will make a public presentation of their thesis work. The allowable duration of the thesis presentation and the questioning of procedures will be specified by the presentation and assessment chair. Following the presentation, the chair of the assessment committee will moderate a 15-minute discussion period in which the audience may participate. At the conclusion of the discussion period, the audience will be excused so that the final, oral examination may be conducted. If, at the time of the assessment, the committee finds that any changes to the thesis are required, then the chair of the assessment committee is responsible for ensuring that the proper changes are made before final electronic submission to the Graduate School. A notice that the thesis presentation and comprehensive assessment have been scheduled must be placed on the graduate student bulletin board as well as sent via e-mail at least one week prior to the scheduled date of the final assessment. The notice should follow the form given in the Appendix/Forms.
Completion of Thesis. The thesis research and the text of the thesis are to be completed under the direction of the thesis committee. Generally, a student should submit a draft of his/her thesis to his/her advisor for comments before submitting a more polished version to the committee. The student should exercise appropriate judgment to ensure the timely completion of the thesis well before the end of the semester in which he/she intends to graduate. The format for the title page of the thesis is given in the Appendix and must be followed closely. The Graduate School requires all theses to be submitted electronically. Detailed information regarding electronic submission is available on their website: http://gradschool.sc.edu/students/thesisdiss.asp?page=acad&sub=etd
Comprehensive Assessment

Each candidate for the Master of Science degree must pass a comprehensive assessment. The format of the assessment will be determined based on an agreement of your Thesis committee.

- A Thesis committee needs to be formed no later than 3 months prior to the proposed defense date. It is strongly suggested that the committee be formed immediately after the student submits his/her form for graduation at the beginning of the semester.

- The Thesis committee will administer the comprehensive assessment as part of the Thesis defense.

- Questions will not be directly related to any course materials, but will be more research oriented aimed at assessing the student’s ability to apply knowledge of science and mathematics to solving electrical engineering problems.

- The committee will fill out an evaluation form which will contain the scores for the assessment, and will indicate whether the student has passed or needs to retake the assessment. Students can only take the comprehensive assessment twice.

- A photocopy of all written responses will be stored in the department as a part of the academic records.

- As per current Graduate School regulations, students must pass the comprehensive assessment 60 days prior to their graduation.

4.3 MASTER OF ENGINEERING DEGREE PROGRAM (M.E.)

The Master of Engineering (M.E.) degree is a non-thesis graduate degree for practicing engineers.

4.3.1 Admission Requirements

Students may be accepted into the Master of Engineering degree program with a regular admission or a conditional admission.

Regular Admission

Admission is competitive. Students meeting the following minimum requirements are eligible for regular admission, but meeting these requirements should not be construed as a guarantee of acceptance.

- A B.S. degree in Electrical Engineering with an average of B (3.0/4.0) or better on all work completed.

- Satisfactory GRE scores (at least 153 verbal, 155 quantitative, 3.0 analytical writing) are required. Students who have obtained a BS degree from the University of South Carolina and are applying for the ME program are exempt from the GRE requirement.

- At least two (2) satisfactory letters of recommendation.
• For students whose native language is not English, a score of 80 or 570 (230 computer-based score) or better on the TOEFL examination depending on the test format. Students are exempt from taking the TOEFL exam if they received their undergraduate degree from a university in an English-speaking country.

Conditional Admission
Certain applicants may show promise for success in the M.E. program, despite not meeting all of the requirements for regular admission. These students may be admitted conditionally. Under a conditional admission, a student may be allowed to take only a limited amount of graduate course work before satisfying the conditions of his/her admission.

4.3.2 Supervision
The M.E. student’s initial contact person will be the Graduate Director. After the initial meeting, the Graduate Director will recommend an advisor for the student, in keeping with the student’s interests and faculty commitments.

4.3.3 Degree Requirements
The Master of Engineering degree program comprises 30 hours of graduate coursework; a thesis is not required. The program of study, which defines each student’s particular degree plan, must be approved by the Graduate Director. Specific degree requirements are set forth below.

COURSES
A minimum of 30 hours of graduate coursework is required to obtain the Master of Engineering degree. At least fifteen (15) hours must be completed in a selection of ELCT courses at the 700 level or above and may include up to six (6) credits of ELCT 897 – Directed Individual Study. Up to six (6) credits at the 500 level or above can be taken from any other field deemed appropriate by the student’s advisor. The remaining hours must be taken from ELCT courses at the 500 level or above.

Transfer Credit. No more than 12 hours of graduate credit may be transferred from other institutions for credit towards a degree. Grades of B or better are required on all transfer credits. Transfer credits must be approved by the Graduate Director and by the Dean of the Graduate School. Approval for transfer does not guarantee acceptance of the courses in the student’s degree program. The degree program must be approved separately by the student’s advisor. Credits transferred from other institutions are subject to the six-year limit on age, and no mechanism exists for revalidating over-age transfer credits.

Program of Study. Students are required to define a program of study during their first semester in the Master of Engineering program. The program of study fully defines which courses will be applicable towards the degree. The program may be changed during the course of study whenever conditions warrant, but the students shall not deviate from the program of study currently on file. Alterations to the program of study must be approved.
by the student’s advisor, the Graduate Director, and by the Dean of the Graduate School. The program of study serves to protect the student in case of change of faculty and facilitates planning on the part of the student and the department.

**Revalidation of Courses.** All courses applicable to the degree must be completed within a period commencing six years prior to the date of graduation. It may be possible to revalidate over-age courses in some instances. All petitions for revalidation should be directed to the graduate committee via the Graduate Director.

### Comprehensive Assessment

Each candidate for the Master of Engineering degree must complete a comprehensive assessment. The format of the assessment will be determined by the two (2) assessment committee members chosen for the student.

- The Graduate Director, by reviewing each eligible student’s Program of Study, will choose two (2) faculty members to comprise the Comprehensive Exam committee of the student. *The committee should be formed immediately after the student submits his/her form for graduation at the beginning of the semester.*

- The committee will administer the comprehensive assessment as soon as possible after its formation.

- Questions will be based on courses included in the student’s program of study. The questions will oriented to assess the student’s ability to apply knowledge gained in coursework in an integrative fashion toward the solution of engineering problems.

- Students will have a minimum of two (2) weeks to prepare for an oral assessment or a written response as decided by their committee.

- The committee members will evaluate the answers and give results back within 2 weeks after the student has submitted his/her response.

- The committee will fill out an evaluation form which will contain the scores for the assessment, and will indicate whether the student has passed or need to retake the assessment. *Students can only take the comprehensive assessment twice.*

- A photocopy of all written responses will be stored in the department as a part of the academic records.

- **As per current Graduate School regulations, students must pass the comprehensive assessment 60 days prior to their graduation.**

### 4.4. DOCTOR OF PHILOSOPHY DEGREE PROGRAM

4.4.1 Admission Requirements
Students are generally accepted into the Ph.D. program only with a regular admission. Conditional admission is granted only in the rarest of cases.

Ph.D. Students are strongly encouraged to distinguish their area of specialization while applying to the Graduate Program. As an internal policy, we accept Ph.D. students only if a Faculty member has agreed to supervise the candidate.

**Regular Admission**

Admission to the Doctor of Philosophy degree program is competitive. Students meeting the following minimum requirements are eligible for a regular admission, but meeting these requirements should not be construed as a guarantee of acceptance. It is not necessary for a student to have completed an M.S. degree prior to enrolling in the Ph.D. program, but only exceptionally well-qualified students are urged to apply directly to the Ph.D. program immediately after completing the B.S. degree.

- A B.S. or M.S. degree in Electrical Engineering with an average of B (3.0) or better on all work completed.
- Satisfactory GRE scores (at least 153 verbal, 155 quantitative, 3.0 analytical writing) are required for the student whose undergraduate degree is not from an ABET-accredited program. In rare circumstances, the GRE can be waived by approval of the Department Chair for the students who are highly recommended and have demonstrated strong research and academic backgrounds.
- At least two (2) strong letters of recommendation.
- For students whose native language is not English, a score of 80 or 570 or better on the TOEFL examination depending on the test format. Students are exempt from taking the TOEFL exam if they received their undergraduate degree from a university in an English-speaking country.

**Conditional Admission**

Certain applicants may show promise for success in the Ph.D. program, despite not meeting all of the requirements for regular admission. These students may be admitted conditionally.

**4.4.2 Supervision**

The doctoral students’ work is guided by a committee of the faculty. It is compulsory to identify an area of specialization and a faculty advisor to be admitted in the PhD program. The advisor will assist the student with nominations for the remainder of his or her committee. The committee shall consist of no fewer than four persons, at least one of whom shall represent a cognate field. A majority of the committee shall be from the EE Department. Next, the student will fill out a Doctoral Committee Appointment Request for Appointment of Ph.D. Comprehensive Assessment and Dissertation Committee, which will be forwarded to the Dean of the Graduate School.

The doctoral student’s advisor is responsible for approving the student’s program of study and for supervising his/her research efforts. In addition, the committee evaluates the dissertation proposal and administers the comprehensive assessment.
4.4.3 Degree Requirements

The Doctor of Philosophy degree program comprises a dissertation and nominally 60 hours of coursework beyond the B.S. degree. The program of study, which defines each student’s particular degree plan, must be approved by his/her advisor, the Graduate Director, and the Dean of the Graduate School. Specific degree requirements are set forth below.

COURSES

Approximately 60 hours of graduate work are required in the Doctor of Philosophy degree program. Up to twelve (12) hours of ELCT 899 - Dissertation Preparation are counted towards the 60 credit hour requirement. At least twenty four (24) hours must be completed in a selection of ELCT courses at the 700 level or above and may include six (6) credits of ELCT 897 – Directed Individual Study. Eighteen (18) credit hours have to be taken at the ELCT 500 level or above and the remaining six (6) credits can be taken from any other field deemed appropriate by the student’s thesis advisor at the 500 level or above. Generally all coursework undertaken in an M.S. or M.E. program may be counted towards the requirement, leaving a minimum of 30 hours to be fulfilled; an additional 18 hours of coursework and 12 hours dissertation preparation (ELCT 899) are required for the students with a M.S. or M.E. degree. Nine (9) of the eighteen (18) hours must be completed in a selection of ELCT courses at the 700 level or above and may include six (6) credits of ELCT 897 – Directed Individual Study. Graduation requires a graduate GPA of at least 3.0. Furthermore, accumulation of 12 or more credit hours with grades below B will result in expulsion.

Courses. Courses are usually recommended by the student’s academic advisor or committee according to the area of specialization selected by the student. Areas of specialization include: Power and Energy Systems, Communications and Electromagnetics, Electronic Materials and Devices, and Decision and Control.

Elective Courses. Courses can be taken from ELCT and other fields as deemed appropriate by the student’s advisory committee.

Foreign Language. For students whose native language is not English, a score of 80 or 570 (230 computer-based score) or better on the TOEFL examination depending on the test format. Students are exempt from taking the TOEFL exam if they received their undergraduate degree from a university in an English-speaking country.

Transfer Credit. No more than 12 hours of graduate credit may be transferred from other institutions for credit towards the degree of Doctor of Philosophy. Grades of B or better are required on all transfer credits. Transfer credits must be approved by the graduate director and by the graduate dean. Approval for transfer does not guarantee acceptance of the courses in the student’s degree program. The degree program must be approved separately by the student’s advisory committee. Credits transferred from other institutions are subject to the eight-year limit on age, and no mechanism exists for revalidating over-age transfer credits. Students receiving 30 hours of credit from an accredited MS or ME program toward the required 60 hours are not eligible for additional transfer credits.
Program of Study. Each student is required to submit a *Doctoral Program of Study* form, listing the coursework which will be applied to the degree. The program may be changed during the course of study whenever conditions warrant, but the student shall not deviate from the program of study currently on file. Courses not formally approved by the committee by inclusion on this form may not be acceptable toward the student’s degree. Alterations to the program of study must be approved by the student’s advisor, the Graduate Director, and the Dean of the Graduate School. The program of study represents a plan of action, which when successfully implemented, will bring the student to his/her desired degree objective. This program of study serves to protect the student in case of change of faculty and facilitates planning on the part of the student and the department. The candidate must satisfactorily complete all courses and studies required for the degree.

The *Program of Study* form should be submitted within 1.5 years of their enrollment in the program. Approval of alterations to the original plan of study should be requested on the form, *Request for Adjustment in Graduate Program*.

Revalidation of Courses. All courses applicable to the degree, exclusive of any master’s degree work, must be completed within a period commencing ten (10) years prior to the date of graduation. Not more than the first year of post-baccalaureate work may be revalidated by satisfactory performance on the admission to candidacy examination.

Residency
The doctoral residency requirement may be satisfied only after the admission to a doctoral degree program and must be fulfilled by enrollment in at least 18 graduate credit hours (does include 797, 897, and 899 but not audited courses) within a span of three consecutive semesters (excluding summers). Enrollment in a summer term is not required to maintain continuity, but credits earned during summer terms will count towards residency.

Admission to Candidacy
Admission to Ph.D. candidacy has two requirements. First, the student must pass a qualifying examination and have the appropriate Graduate School Qualifying Exam Verification form on file. The student must complete and submit a Graduate School Program of Study form to be approved by the Dean of the Graduate School. Doctoral students must have been admitted to doctoral candidacy for at least one (1) full academic year prior to graduation, or the graduation application will be rejected.

Qualifying Examination
All Ph.D. students must pass a qualifying exam, usually conducted by the Graduate committee (or other EE Faculty members in support of the Graduate Committee), within one and a half (1.5) years of entering the Ph.D. program. This exam tests the prospective Ph.D. candidate’s knowledge of the fundamental aspects of electrical engineering.

**General Exam Guidelines:**
• The Ph.D. qualifying examination will be written, and of 3 hour duration. The questions will be developed and graded by members of the EE faculty.

• Students will choose three out of the following four topic areas prior to the exam:
  (1) Circuit & Electronics
  (2) Signals & Systems and Controls
  (3) Semiconductor Devices
  (4) Electromagnetics.

• Each student will be asked two questions from each topic.

• The questions will be randomly chosen out of a pool of questions.

• All questions will be within the breadth of Electrical Engineering knowledge and concepts taught in an undergraduate program. During the exam more in-depth (or specialized) concepts can be asked in the major area of research of the students.

• The exam will be given at the end of every major semester (Fall and Spring).

**Dissertation Proposal**

This proposal must be presented in both written and oral fashions to the student’s committee, and is expected to be more comprehensive than the proposal for an M.S. thesis. Each proposal should include a cover page attached to the proposal, and a copy of the approved proposal will be kept in the student’s file along with a signature page.
Comprehensive Assessment
The degree candidate must pass a comprehensive assessment in the fields of study relevant to his/her dissertation topic, the assessment having both written and oral portions. The committee for the assessment shall consist of all the members of the student’s committee approved by the Graduate School. The examination is to be administered after the candidate has completed all of the courses required in his program except for those in which he/she may be currently enrolled. The assessment must be taken not less than 60 days prior to the date at which the student expects to receive his/her degree. Any significant alteration to the dissertation subject necessarily requires that the student repeat the comprehensive assessment.

A student pursuing the doctoral degree is expected to have a working knowledge of one area in great depth, and of other related areas in somewhat lesser depth. The student should be thoroughly familiar with the literature in his/her chosen field. The comprehensive assessment will determine whether the student is intimately familiar with the state of current understanding within his/her primary field of study and with other areas which may be relevant to his/her studies.

**Written.** The written portion of the assessment typically requires the student to demonstrate a high degree of technical proficiency in his field of expertise. This degree of technical proficiency can be demonstrated answering a set of questions prepared by the committee or by preparing a Research Proposal in response to a real call selected by the advisory committee. The timing of the assessment is defined by the advisory committee.

**Oral.** The oral portion of the assessment is judged on two points – technical ability and personal presence. The doctoral candidate must possess not only highly refined technical skills, but also a capability for presenting his knowledge to others in a clear and concise manner. The committee determines the duration of the oral portion.

**Administration, evaluation, and reporting.** A member of the committee, appointed by the Graduate Director or Department Chair, is responsible for chairing the assessment and reporting the outcome of the assessment to the student, the Graduate Director and the Dean of the Graduate School. The outcome of the assessment will be decided by majority vote of the committee from among the following three possibilities: pass, fail, deferred. In the event of a deferred decision, the specific deficiencies should be recorded in the formal report of the assessment, along with the requirements for making up those deficiencies. After the deficiencies have been made up, the assessment committee must convene again to complete the assessment procedure. At this time, the only possible outcomes are either pass or fail.

Dissertation
The most important component of the Ph.D. program is the dissertation, an original work that advances the frontiers of knowledge in some particular field and demonstrates the candidate’s capacity for independent study. A vital component of the dissertation is the Disclosure of Claims, in which the candidate’s contributions are clearly and concisely set forth. The bulk of the dissertation should summarize the state of the art prior to the candidate’s contributions, should detail the advances made by the degree candidate, and should indicate the future prospects for additional advances. The dissertation must stand the scrutiny of those familiar with the field and be judged to represent a significant contribution. Such judgment is indicated by selection of the dissertation research for publication in a major journal.
**Enrollment in Dissertation Preparation.** “During the preparation of the dissertation, any student who wishes to use university facilities or to confer with the faculty on dissertation work must be officially enrolled for dissertation credit. Registration for a minimum of 12 credits in dissertation preparation is required of all doctoral candidates.” [Grad. Bulletin] A student’s enrollment in ELCT 899 should reflect the level of involvement of both the student and the dissertation advisor.

**Completion of the Dissertation.** The student should plan to complete the dissertation early in the semester during which graduation is expected. Only in truly exceptional circumstances will completion in absentia be approved. The format of the dissertation must be acceptable to the graduate school. A sample title page is shown in the Appendix. The Graduate School requires all dissertations to be submitted electronically. Detailed information regarding electronic submission is available on their website: http://gradschool.sc.edu/students/thesisdiss.asp?page=acad&sub=etd.

**Dissertation Defense.** The dissertation must be approved by every member of the student’s advisory committee before the public defense can be scheduled. The defense should be scheduled not less than two weeks after the candidate presents the dissertation document to his or her committee. A notice bearing an abstract of the dissertation and the time and location of the defense must be posted on the graduate bulletin board in the Swearingen Engineering Building at least one week prior to the date of the defense.

The chair is responsible for attending to all details associated with the defense, including chairing the public defense and filing a written report of the outcome. The report shall state whether or not the dissertation was judged acceptable, and if not acceptable, the nature of any changes that might be required to make the dissertation acceptable. This report must be filed with the Graduate Director within two days of the defense. If any changes to the dissertation are required, the chair is responsible for ensuring that they are duly made. When all requirements have been satisfied, the examination chair will so notify the Graduate Director, and the Dean of the Graduate School by means of the Dissertation Signature and Approval Form. Following such notification, the student must submit their dissertation electronically to the ETD Administrator site.

### 4.5. Non-Degree Program

Some individuals may be allowed to enroll in graduate courses offered by the Department while not seeking a graduate degree from this institution. Students from other universities, visiting scholars, and practicing engineers wishing to enhance their knowledge in specific areas fall into this category. Two forms of non-degree enrollment are possible. The first, *non-degree admission*, allows the student to earn credit for the course, perhaps for transfer to another school, but not to work towards a degree. The second, *audit admission*, does not allow course credit of any type. Students admitted for *non-degree* study are strictly limited to no more than 12 hours of graduate coursework. Individuals admitted to *audit* courses are not entitled to have homework or tests graded, they can register in courses with the consent of the instructor, and their registration priority is subordinate to students seeking course credit.
Non-degree students are now the purview of the Graduate School. Individuals wishing to enroll in graduate courses of the department without seeking a degree are subject to the same general requirements as those seeking degrees. A paramount consideration is the academic background of the student. Any student, whether seeking degree credit or not, must be adequately prepared to comprehend the material presented in the graduate classes. Therefore, students seeking non-degree admission must furnish evidence of technical competency, generally by providing transcripts of their undergraduate studies.

4.6. **ACCELERATED BACHELOR’S/MASTER’S PROGRAM**

The Bachelor’s/Master’s Degrees Accelerated Program in Electrical Engineering allows undergraduate students to complete both the B.S. degree and M.S. or M.E. degrees in as few as five years.

To be eligible to apply for the EE’s accelerated program, a student must have a minimum GPA of 3.40 and have completed at least 90 credit hours toward their baccalaureate degree. In addition, the student must have a sufficient foundation in Electrical Engineering course work to enable them to take graduate-level courses.

Students applying to this program must submit to The Graduate School a completed “Accelerated Bachelor’s/Graduate Study Plan Authorization” (G-ABGSP) with endorsements of the undergraduate advisor and the program graduate director. The dean of The Graduate School has final authority for approving accelerated education plans. This form must be submitted for each semester in which one or more of these courses are taken in order for the Registrar’s Office to properly enroll the student.

Participation in the accelerated program does not require or assure acceptance into the Graduate School. Students wishing to continue towards a master’s degree in Electrical Engineering at USC must apply formally to the Graduate School by submitting the appropriate application and all required supporting documents. Students in the accelerated program will be eligible for graduate assistantships upon admission to The Graduate School if they apply for a Master of Science degree.

Only graduate-level courses (numbered 500 and above) satisfying both B.S. and Master’s degree requirements may be used for dual credit. No more than twelve (12) credit hours may be applied towards both the Bachelor’s and Master’s degree.

**Eligibility:**
- GPA 3.4
- Senior Standing (90hrs.)

**Application Procedure:**
- Fill out an Accelerated Bachelor’s/Graduate Study Plan Authorization form and obtain all required signatures and submit it to the Graduate School.
- *This form has to be approved by the Dean of the Graduate School and must be on file with the Registrar’s office before classes for the relevant term begin.*

**Additional Information**
Courses 500-level and above (indicated with “IN UG GPA”) on transcript may be used by student toward their graduate degree program.

- GPA credit for courses is calculated in student’s undergraduate GPA.
- Up to 12 credit hours can be considered to satisfy both B.S and M.S.
5. ACADEMIC REGULATIONS

The academic regulations of the department are generally in conformity with those of the Graduate School. The student is referred to the Graduate Bulletin and the Code of Student Academic Responsibility. [http://bulletin.sc.edu/index.php](http://bulletin.sc.edu/index.php)

5.1 ACADEMIC INTEGRITY

Graduate students are expected to adhere to the highest standards of integrity in all their endeavors. Such high standards are fundamental to the notion of self-enrichment through intellectual exploration and form the basis for success in one’s professional career. The academic community places great trust in the student; violation of that trust is considered a very serious offense indeed. The student is cautioned against committing any infraction including, but not limited to, cheating, plagiarism, falsification of data, misrepresentation of fact, or bribery. The student should refer to the University’s [Code of Student Academic Responsibility](http://bulletin.sc.edu/index.php).

Any proven act of misconduct is subject to penalties ranging from assignment of a reduced or failing grade to expulsion from the graduate program. No student will be supported by the department after being found guilty of any infraction of the standards of academic integrity.

5.2 ADVISEMENT

Graduate students are expected to consult with an appropriate member of the faculty prior to enrolling in courses. The student’s principle academic advisor will be his/her thesis or dissertation advisor. Students in the non-thesis Master of Engineering program will have an academic advisor only. Each student is responsible for arranging the advising relationship with some member of the faculty. Upon request, the graduate director will suggest one or more potential advisors appropriate to the student’s interests. Prior to obtaining an advisor, students should consult with the Graduate Director before enrolling in courses.

Note particularly that the student, not his/her advisor, is responsible for ensuring that all deadlines and requirements associated with the degree program are met. The requirements are clearly published in this Graduate Handbook of the Department. The student is cautioned to read and understand the degree requirements presented in both publications.

5.3 COMPLETION IN ABSENTIA

Students specifically are discouraged from completing theses or dissertations in absentia. However, if extenuating circumstances warrant, completion in absentia may be permitted. A student must file a request with the Graduate Director well in advance of the planned departure date and must have the written permission of his advisory committee.
5.4 Waiver of a Degree Requirement

A waiver of a specific departmental degree requirement may be issued by the graduate committee under certain circumstances. Students seeking such a waiver should file their petition for waiver with the Graduate Director. The petition should state the exact nature of the circumstances that give rise to the necessity for the waiver, and should justify the student’s actions with respect to the circumstances. No waiver of general Graduate School policies or requirements can be granted.

5.5 Appeals

Appeals by graduate students shall be governed by the policy stated in the Graduate Bulletin. The “internal process” referred to in that policy shall be deemed to be an appeal in writing submitted through the graduate director to the graduate committee. Decisions of the graduate committee are final within the Department.

5.6 Satisfactory Progress

All students must demonstrate satisfactory progress towards their degree objective. Satisfactory progress can still be maintained if a student takes one semester off. The graduate school does however require updating or reapplying for any student gone for one semester. Students not making satisfactory progress will be suspended from the program and must apply for readmission. Enrollment in the summer terms, though not mandatory, is highly recommended.

For a full-time M.S., M.E., or Ph.D. student, the satisfactory progress standards are precisely defined as follows:

5.6.1 Satisfactory Progress for M.S. Students

- M.S. students are required to define a program of study during their first year in the M.S. program. The program of study fully defines which courses will be applicable towards the degree.
- M.S. students are required to complete their coursework within the first three semesters.
- M.S. students are required to complete their degree work within five semesters. By the end of study, they are expected to have published at least one conference paper.
5.6.2 Satisfactory Progress for M.E. Students

- M.E. students are required to define a program of study during their first year in the M.E. program. The program of study fully defines which courses will be applicable toward the degree.

- M.E. students are required to complete their degree work within four semesters.

5.6.3 Satisfactory Progress for Ph.D. Students

- Ph.D. students are required to pass the Qualifying Examination by the end of the third semester.

- Ph.D. students are required to define a program of study during their first year in the program. The program of study fully defines which courses will be applicable toward the degree.

- Ph.D. students will be admitted to doctoral candidacy by satisfying two requirements: passing the Qualifying exam, and submitting an approved Program of Study.

- Ph.D. students are required to take the Comprehensive Assessment within the first three years.

- Ph.D. students are required to complete their coursework within the first three years, and their degree work within three to five years.

- By graduation, they are expected to publish at least two journal papers in preferred journals.
6. FINANCIAL AID

Financial aid for graduate students is available from a number of sources. Aid can be obtained in the form of scholarships, fellowships, loans, teaching assistantships, and research assistantships. The Department of Electrical Engineering primarily awards assistantships; however, it provides input into the awarding of various fellowships and scholarships administered by the Graduate School. Most fellowships are awarded by the Graduate School, but some are awarded by individual agencies. Student loans can be arranged through the Graduate School.

6.1 FELLOWSHIPS

Fellowships and scholarships are generally awarded on the basis of criteria established by the agency sponsoring the fellowship. In general, no duties are required of fellowship or scholarship recipients. These awards exist for the purpose of inducing individuals fitting certain criteria to extend their education through graduate programs. Various industries and governmental agencies award fellowships. The Graduate School keeps a listing of available fellowships, applications, and application deadline dates.

6.2 ASSISTANTSHIPS

Many research and teaching assistantships are awarded by the Electrical Engineering Department.

M. E. students do not normally receive financial support.

6.2.1 Types of Assistantships

Teaching

Teaching assistantships (TAs) are awarded to those graduate students who can fulfill certain teaching-related needs of the Department and have a good understanding of the subjects. Quarter-time assistants typically spend 10 hours per week on their duties, half-time assistants about twice that. Assistantship duties are decided before the beginning of each semester; and typically, appointment paperwork for assistantships must be filled out one month or two before classes start. Recipients of teaching assistantships are expected to report to the Department one week prior to the beginning of classes to obtain and prepare for their assignments. Assignments may include grading homework and quizzes, assisting with laboratory instruction, or teaching a course, depending on the student’s qualifications. Also, before classes start, teaching assistants must complete the teaching assistant (TA) training course as offered by the Graduate School (four days for international students and two days for U.S. citizens).

Research

The majority of assistantships awarded in the Department are research assistantships (RAs) and in some rare cases a few teaching assistantships (TAs). Recipients of research assistantships generally work on specific research projects at the discretion of the faculty member providing the assistantship. The research project to which the student is assigned will often be the subject of the student’s thesis or dissertation.
6.2.2 Policies

Award

Teaching assistantships are awarded by the Department Chair after receiving recommendations from the graduate committee. Teaching assistantships are not normally available during the summer months. Assistantship amounts range from $1,400/semester for ¼ time appointments to $5,400/semester for ½ time appointments, depending on a student’s status and qualifications.

Research assistantships generally are awarded directly by members of the faculty who participate in funded research. By their very nature, research assistantships are somewhat transient and continuance of the award from one semester to the next cannot be guaranteed. The amount of any research assistantship is determined by the person making the award.

Students may be awarded both a research and a teaching assistantship; however the total of such awards cannot exceed a one-half time commitment.

Tuition Reduction

Students receiving graduate or research assistantships are eligible for a reduced tuition rate. Receipt of an assistantship in the previous spring semester or subsequent fall semester entitles the student to reduced tuition in the summer term as well.

Satisfactory Progress

Students receiving departmentally awarded assistantships are expected to pursue their degree objective with all due vigor. This specifically excludes holding other employment. Recipients of assistantships will be reviewed each year to determine whether they have made satisfactory progress in the preceding year. Renewal of the assistantship is contingent upon both an exhibition of satisfactory progress and continuing availability of funds. Master’s degree candidates will be supported for no more than two years, and Ph.D. students for no more than five years (three years beyond the M.S.).

Graduate assistants must be enrolled as full-time students, taking no less than 6 hours per semester in the Fall or Spring semesters. All research and teaching assistants are expected to maintain satisfactory grade averages. Receipt of grades below B on six hours of courses will be construed as an indication of unsatisfactory progress and the assistantship will be terminated.

All continuing students receiving departmentally awarded assistantships must pre-register for the classes they will take in the next semester. Failure to pre-register may result in termination of the assistantship.
Payroll, Tax and Other Information

Assistantships are paid on a twice-monthly basis, at the middle and end of the month. Federal regulations require that all employees complete an I-9 form before being placed on the payroll. This form can be obtained from the accountant in the Engineering Dean’s office. A W-4 form also must be completed to establish the level of federal and state tax withholding. The federal IRS now considers income from assistantships to be taxable, but the tuition remission is not taxable.
7. MISCELLANEOUS DEPARTMENTAL POLICIES

7.1 FACILITY ACCESS

Various specialized departmental resources are available to graduate students depending upon their needs. Some of the resources are available to all graduate students on a first-come, first-served basis; others are available only to selected individuals, based on their needs.

All full-time graduate students are eligible for a building entry key. Persons holding building access keys must assume a proper degree of responsibility for the privilege. Generally, this means that a graduate student should not admit any other person to the facility, nor should they lend their key to any other person. Any time a person leaves the building after normal hours, the exit door should be locked. Rules for access to other areas of the building are clarified below.

Research Laboratories

Access to any individual departmental research laboratory generally is controlled by the faculty member(s) conducting research within the laboratory. Keys will be issued only with the laboratory director’s written authorization. Each student possessing keys to any laboratory must adhere to the laboratory director’s expectations with regard to security.

Computer Resources

Access to computer facilities is available in a number of locations. Some computers are departmentally controlled resources and hence available to all students on a first-come, first-served basis; others are devoted to specific research programs and access is controlled by individual laboratory directors.

7.2 BULLETIN BOARD AND MAILBOX

The Graduate Bulletin Board is located in the 3A (faculty office) hallway. Students should check either this board regularly for notices of seminars, thesis presentations, and so on.

All full-time graduate students are assigned a mailbox. The boxes are located in 3A37. Students should check their mailboxes regularly for university mail. The departmentally assigned mailbox may be used to receive mail relating to your research programs, but should not be used for receipt of personal mail. Use the following address:

Dept. of Electrical Engineering  
ATTN: (your name) / Graduate Student  
University of South Carolina  
Swearingen Building, Room 3A80  
301 South Main Street  
Columbia, SC 29208

Mail will not be forwarded from this address after you graduate!
7.3 **OFFICES, SECRETARIES, AND TELEPHONES**

The majority of graduate students are assigned desks in the laboratories of their advisors. New students who have not yet selected an advisor will be assigned a desk in the graduate student office, if available. Students seeking a desk in that room should see the Graduate Director.

The departmental secretaries are not available for typing theses. They may be called on for assistance with photocopying and other work for classes which a teaching assistant is assigned to teach.

In general, graduate office telephones cannot be used for chargeable long distance calls. Some laboratory directors allow long distance calls to be made for research-related purposes on laboratory phones, either by charging all calls made on the phone to a research account, or by issuing an authorization code to selected students which allows those students to charge long distance calls to a research account. These phones should never be used for chargeable long distance calls of a personal nature.

7.4 **SEMINAR ATTENDANCE**

Seminars are sponsored by the Department on a frequent basis. All graduate students are encouraged to attend these seminars. Attendance by teaching and research assistants is required at selected seminars. Notice of upcoming seminars and of required seminars will be provided on the graduate bulletin board. Failure to attend required seminars may result in an evaluation indicating unsatisfactory progress, and hence revocation of the assistantship.

7.5 **CONFERENCE PRESENTATIONS**

Students are encouraged (and often required) to submit the results of their research efforts to technical journals and conferences. Before a student will be allowed to make a public presentation at a conference, the student’s talk first must be approved by concerned members of the faculty. This requirement can be met by satisfactory completion of the thesis or dissertation seminar, or by presentation in a special seminar called by advance notice on the graduate bulletin board.

7.6 **LABORATORY SAFETY AND HOUSEKEEPING**

The Department is quite proud of the fine research and teaching facilities available in the Swearingen Engineering Center and urgently solicits your cooperation in their proper use and maintenance. As appropriate, students may be required to attend sessions on biohazards and/or handling of hazardous waste. These require annual re-education/certification. And, we ask that you always observe the following general guidelines:

(a) **Safety glasses** are absolutely necessary whenever and wherever experimental work is conducted involving chemicals. Safety glasses are available in the Technician Shop, in the University Bookstore, and from your research advisor.
(b) Before leaving any experiment to operate unattended overnight, you must first make sure that it does not constitute a possible fire or flood hazard. You must clearly post visible information on the door listing a phone number to be contacted for emergencies. Specifically, if flammable solvents are involved, they should be left in a closed hood. If this is not possible, check all joints to see that they are well lubricated and vapor tight. If running water is involved, please make sure that all tubing is in good condition, that all connections are tight (preferably wired) and that all connecting troughs and/or sinks are free of any debris (corks, Kimwipes, etc.) which could clog the drain. **Be sure to check with your advisor for approval first.**

(c) All refrigerators in laboratories must be clearly marked “for chemicals only.” No food may be stored in laboratory refrigerators.

(d) No one will be allowed to handle or work with radioactive isotopes or around potentially dangerous sources of radiation, e.g., X-ray, microwave, laser, until s/he has been thoroughly instructed by the faculty member in charge on the proper safety precautions and procedures to be followed.

(e) No one is allowed to work alone with electrical equipment with exposed terminals at a potential greater than 40 volts. When working with equipment or conducting experiments with potentially lethal voltages an additional person trained in administering CPR must be present and all additional lab safety procedures should be followed as instructed by the faculty member in charge.

(f) The faculty member in charge of a laboratory, the Department Chairman, and the Department Safety Committee should be informed immediately of any safety hazards or accidents. Any complaints regarding potential safety hazards and any safety suggestions will be treated seriously and greatly appreciated.

*To summon emergency help, call the University Police at 7-9111. For emergency medical treatment, proceed to Thompson Student Health Center (behind Russell House, 7-3175). If they are closed, proceed to the nearest hospital (Palmetto Baptist Medical Center) for care. Be sure to contact the Department Chairman and Safety Officer concerning the accident.*
# List of Forms for Each Degree Program

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<td>• Program of Study (MPOS)</td>
<td>• Within the 1&lt;sup&gt;st&lt;/sup&gt; year of enrollment</td>
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<td></td>
<td>• ME Comprehensive Assessment Verification form</td>
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<tr>
<td>Master of Science (MS)</td>
<td>• Program of Study (MPOS)</td>
<td>• Within the 1&lt;sup&gt;st&lt;/sup&gt; year of enrollment</td>
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<td></td>
<td>• Thesis Committee and Topic Approval</td>
<td>• Beginning of the semester in which you plan to graduate</td>
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<tr>
<td></td>
<td>• MS Comprehensive Assessment Verification form</td>
<td>• Beginning of the semester in which you plan to graduate</td>
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<tr>
<td></td>
<td>• Thesis Signature and Approval form (G-TSF)</td>
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<td>Doctor of Philosophy</td>
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<td></td>
<td>• Dissertation Defense Announcement (online at the Graduate School website)</td>
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<tr>
<td></td>
<td>• Dissertation Signature and Approval form (G-DSF)</td>
<td>• Within 5 years of enrollment</td>
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More forms can be found at [http://gradschool.sc.edu/forms/](http://gradschool.sc.edu/forms/)