Department of Electrical and Computer Engineering

The University of Texas
San Antonio

DOCTORAL PROGRAM

ACADEMIC POLICIES AND PROCEDURES

August 2012
(Date of approval: Aug. 24, 2011)
I. Ph.D. Program Areas of Study

The Department of Electrical and Computer Engineering (ECE) of the University of Texas at San Antonio provides opportunities for advanced study and research leading to the Doctor of Philosophy degrees in Electrical Engineering. The degree program is organized with emphasized areas of study in (1) Communications (2) Computer and Digital Systems (3) Systems and Controls (4) Signal and Image Processing and (5) Electronic Materials and Devices. The Ph.D. degree is awarded to candidates who have displayed an in-depth understanding of the subject matter and demonstrated the ability to make a significant contribution to knowledge in their field of specialty.

II. Program Administration

The Doctor of Philosophy degree in Electrical Engineering resides within the Department of Electrical and Computer Engineering at The University of Texas at San Antonio. It is administered by the Electrical and Computer Engineering Graduate Program Committee. The Committee Director, elected biannually by all graduate faculty in the department, is responsible for curriculum enhancement, program development and promotion, student recruitment, admission and advising, and on-going program review. The Committee Director will be the chair of the Graduate Sub-Committee which is composed of the chairs or representatives of area concentrations. The sub-committee will be responsible for making program related recommendations to the departmental Graduate Program Committee for approval.

A Graduate Advisor of Record (GAR) is appointed by the Department Chair. The Graduate Advisor of Record will handle routine administrative duties, maintain records, admissions of MS candidates, and represent the Department in most matters relating to both M.S. and Ph.D. graduate students. Questions about degree requirements and academic policies are directed to the Graduate Advisor of Record. The GAR will be a de facto member of the Graduate Sub-Committee.

III. Admission Requirements

The minimum requirements for admission to the Doctor of Philosophy in Electrical Engineering degree program are as follows:

a. Normally, a student must hold a Master's degree before being granted admission to the program. Some exceptionally talented students may enter the Doctor of Philosophy program directly upon receiving a bachelor's degree in Electrical Engineering or a related field, with a special approval of the Electrical and Computer Engineering Graduate Program Committee.

b. Applicants without a Master's degree must have a GPA of 3.3 or better in the last 60 credit hours of undergraduate course work in Electrical Engineering or a related field.

c. Applicants with a Master's degree must have a GPA of 3.3 or better in their Master's degree program. Applicants with a Master's degree in Electrical and Computer
Engineering or in a related field may apply a maximum of 30 hours of previously earned graduate credit towards their doctoral degree. Each student's transcript will be evaluated by the Graduate Program Committee. Students with a Master’s degree in Electrical Engineering or a related field can transfer the entire degree credit up to 30 hours; otherwise, credit will be designated on a course-by-course basis to satisfy the formal course work requirements of the degree. A maximum of six hours credit may be awarded for a Master’s thesis.

d. A satisfactory score, as specified by the Graduate Studies Committee for Electrical and Computer Engineering, is required on the GRE General Aptitude Test. Students whose native language is not English must achieve a minimum score of 550 (CBT 213, iBT 79) on the Test of English as a Foreign Language (TOEFL) or its equivalent.

e. Letters of recommendation, preferably three, attesting to the applicant's readiness for doctoral study.

An application should also include a resume and a statement of research experience, interests, and goals. To receive full consideration for financial assistance, a student who wishes to begin in the Fall Semester (Spring Semester) needs to ensure all materials be received by the Graduate Program Committee by February 15 (October 1). Students who do not compete for departmental financial assistance can submit the application materials by April 1. A complete application includes the application form, official transcripts, letters of recommendation, GRE Exam scores, a resume, a statement of research experience, interests, and goals, and the TOEFL score for those applicants whose native language is not English. Admission is competitive. Satisfying these requirements does not guarantee admission.

**Fellowships**

All full-time students who apply are automatically considered for a competitive doctoral student fellowship. A fellowship award (FA) comes with a stipend ranging between $23,000 to $25,000 for twelve months, which includes tuition (at in-state resident rate) and fees. An additional $1,500 is provided to offset the cost of health insurance premiums. Fellowship support to a doctoral student contains training requirement in form of instructional (teaching or lab) assistant.

The Fellowship Award is contingent on making satisfactory progress towards Ph.D. degree. A student must be in good standing in the doctoral program, enrolled in 9 credit hours in the Fall Semester, 9 credit hours in the Spring Semester, and 3 credit hours in the summer semester. To obtain an exception to these requirements, a student must submit a written petition to the Graduate Advisor of Record with any appropriate supporting documentation. The petition will be considered by the Graduate Program Committee. Exceptions will be granted only under extraordinary circumstances.

**Other Financial Assistance**

There are two main types of graduate assistantships, Teaching Assistantships (TAs) and Research Assistantships (RAs). Typical appointments are “half-time” and require no more than 20 hours of service per week. The financial support for RAs is usually provided by external grants made to individual faculty members, while that for TAs is provided by the department. Doctoral students
are entitled to apply Research Assistantship (RA) or Teaching Assistantship (TA) while enrolled in the PhD EE program.
Each student will be allowed one primary source of funding as RA or TA, at no more than 20 hours of service per week. Such restrictions do not apply for competitive and meritorious fellowship awarded at the College and the Institutional levels or from a source outside the UTSA, up to a certain limit.

IV. Degree Requirements and Program of Study

Soon after starting doctoral studies, a Ph.D. student should begin to consider research directions for a dissertation, to select a Supervising Professor (Advisor), and to become involved in research. The first step is to submit a Program of Study either to the Supervising Professor or to the Graduate Program Committee Chair for approval. The Program of Study documents the student’s intended field of study. The student can, and in many cases will, revise the Program of Study as the research directions and interest become clearer. The revised, if any, Program of Study must be submitted before the candidacy and the dissertation proposal examinations and before defending the dissertation. The Program of Study form is available from the department office.

The degree requires 90 semester credit hours beyond the bachelor’s degree or 60 semester credit hours beyond the master’s degree, passing of candidacy and dissertation proposal examinations, passing of a final oral examination, and acceptance of the Ph.D. dissertation. A two-semester residency research period is required. The course requirements include 54 technical course credits, 18 research credits identified as EE 7951-3 (Doctoral Research), and 18 dissertation credits identified as EE 7991-6 (Doctoral Dissertation). At least three courses must be taken from the five core courses. No more than 6 credits of independent study should be included. One credit hour of EE 6971 (Special Problems) is required and up to three credit hours of EE 6971 or EE 6991 (Research Seminar) can be included. Up to 21 credits may be taken from other graduate courses including at least two courses from outside Electrical Engineering with approval of the Electrical Engineering Graduate Program Committee. A current list of ECE Graduate Courses by Area is available in the department office.

Advancement to Candidacy

All students seeking a doctoral degree at UTSA must be admitted to candidacy. Students should consult the University's Doctoral Degree Regulations for other requirements. Only registered graduate students with a GPA of at least 3.0 are eligible to take the candidacy exam. Any provisional admission conditions including required ESL courses must be met before taking candidacy exam. The PhD EE candidacy examination contains two components (I) Knowledge Competencies through fulfillment of graduate coursework in both primary and secondary concentration areas and (II) Communication and Research Competencies through submission of a written research proposal followed by an oral presentation to the Candidacy Examination
Committee. Successful completion of a candidacy examination is required for formal admission into the Electrical Engineering Doctoral program.

(I) Knowledge Competencies:
In order to establish knowledge competencies, the student must have a Program of Study on file and must submit his or her request in writing to the Graduate Advisor of Record after completion of required coursework. The student must take and pass the Concentration-Specific written Qualifying exam to demonstrate readiness to pursue Ph.D. in the chosen field. The written exam is offered each winter and summer prior to the start of the spring and fall semesters. Other courses taken at UTSA that satisfy knowledge competencies are three courses including one core course of the student’s primary area and two core courses representing the student’s secondary areas, with an average GPA no less than 3.3. No courses with GPA less than 3.0 can be counted to satisfy the knowledge competency.

Substitution of an EE core course in the student’s Program of Study must be petitioned by the student with justification from advising faculty. No more than one core course can be substituted and any such request must be approved by Graduate Program Committee. An advanced graduate course (non-lab-intensive) with a specified core course as prerequisite may be used, upon the approval of the Graduate Advisor of Record, to satisfy the given core course requirement, if the student took the core (or equivalent) course for credit in a different degree program or at an institution elsewhere.

A full time student must establish knowledge competency no later than the conclusion of the third semester (excluding summer). The Graduate Advisor of Record will certify and record when the student has established the Knowledge Competency defined by the PhD candidacy requirement.

(II) Communication and Research Competencies:
The purpose of the Exam on Communication and Research Competency is to evaluate the student’s capability to communicate technical materials, in both written and oral forms, in a clear, concise, and well-organized manner.

The Exam on Communication and Research Competency is scheduled in each Fall and Spring Semester. The exam should be taken within one semester after fulfillment of Knowledge Competencies and within four semesters (excluding summer) after the admission to the graduate program for a full time student. A PhD supervising professor from the ECE department should be identified prior to scheduling the exam.

The student will submit a research proposal (8 to 15 pages of text including references and figures that are compliant of NSF proposal format) and give a 20 to 30 min oral presentation to the public and the three members of the Candidacy Examination Committee. Members of the committee will
administer a closed session asking questions about the proposal in order to identify student’s ability to carry out graduate research. The choice of the examination topic will be made by the Faculty Concentration Area Committee to reflect the general interest area(s) of the individual candidate. The student’s research advisor may contribute to a pool of research topics suitable for the purpose of the examination; however, the technical proposal must be prepared and written by the candidate alone. The topic will be assigned to the student four weeks ahead of the exam. The written proposal must be submitted to the GAR one week before the date of the scheduled exam.

The Candidacy Examination Committee is a three member sub-committee of the ECE Graduate Committee established to evaluate each candidate. Members of the student’s Candidacy committee will be assembled by the Graduate Advisor of Record from a list of recommended names from each concentration area on the basis of relevant expertise in the student’s primary and secondary areas to be made of advisor and two other members. The student’s faculty advisor is a member of this committee but may not chair the committee. The candidacy committee, while taken into consideration of each member’s review on the technical quality of the proposal, decides whether the student has passed, failed, or passed provisionally the communication and research competency exam, along with any remedial coursework recommendations. A majority decision is required for passing the exam.

Students who fail their first attempt at the communication and research competency candidacy exam may make a second attempt within one semester or within the fourth long semesters since the student’s admission to the PhD program, whichever is earlier. No more than two attempts to pass the candidacy exam are permitted.

When both the Knowledge Competency and Communication and Research Competency requirements are successfully satisfied the Chair of the Graduate Program Committee will notify the student his or her formal admission as a candidate to the Electrical Engineering Doctoral program. If a student passes the candidacy exam provisionally with course work recommendations including ESL courses, the student will not be advanced to Dissertation Proposal examination until all provisional conditions are met.

**Establishment of Supervisor(s) and Doctoral Dissertation Committee**

A student is encouraged to meet with various faculty members in the student’s area of research interests. A supervising professor should be identified as soon as possible and before student takes the Communication and Research Competencies exam. The Supervising Professor must be a member of the Electrical and Computer Engineering Graduate Faculty of The University of Texas at San Antonio while other graduate faculty with supervising roles may serve as Co-Advisor(s). After finding a faculty member who consents to be the Supervising Professor, the student should submit a request for appointment of his/her Supervising Professor to the Graduate Program Committee.
After the student is admitted to candidacy of the program, a PhD Dissertation Committee (described later in this section) should be assembled and a dissertation proposal should be written under the supervision of the Supervising Professor.

**Dissertation Committee**

After Admission to Candidacy and in consultation with the Supervising Professor, the student should form the Dissertation Committee. The committee must consist of a minimum of four graduate faculty members, including the Supervising (Advising) Professor, who consults with other members of the committee as the work proceeds. Of the three remaining members, two must be Electrical and Computer Engineering graduate faculty members and one graduate faculty member from outside the Electrical and Computer Engineering Department or UTSA, whose suitability will be subject to approval of Graduate School. Part-time faculty may be members of the Dissertation Committee, but may not serve as a Supervising Professor. The name list of the Dissertation Committee should be submitted to the Chair of the Graduate Program Committee for approval at least two weeks before holding the Dissertation Proposal examination. Upon recommendation of the Chair of the Graduate Program Committee, the Dean of the Graduate Studies appoints the Dissertation Committee.

**Dissertation Proposal Examination**

The purpose of the dissertation proposal exam is to ensure that the student has developed a comprehensive and integrated knowledge in a given field and has a well defined focus for his or her PhD dissertation. Students should take the dissertation proposal exam after they have passed the candidacy exam (and have satisfied any provisional conditions if any), but no later than the seventh regular semesters after enrolling in the program. The student must be registered and in good academic standing to hold the dissertation proposal examination. The approved Dissertation Committee, chaired by the student’s Supervising Professor, conducts the dissertation proposal exam.

The dissertation proposal exam consists of a written review of the student’s thesis research and future research plans, and their defense in an oral presentation.

The written dissertation proposal should be no less than 25 pages in length, including figures and references, and complies with the UTSA’s doctoral dissertation format. It must be submitted to the student's Dissertation Committee at least one week before the oral presentation. The dissertation proposal should

- explain the basic idea of the dissertation topic,
- present an overview of the background and related work in the field,
• describe why that topic is original, challenging, and important,
• state what kind of results are expected, and present preliminary results, if any, and
• make a plausible argument that these results are obtainable within a reasonable amount of time.

The exam consists of a public presentation of the dissertation proposal, followed by a closed oral exam administered by committee members. The committee shall examine the student’s knowledge in the subject area, make recommendations for modifying the research plan, alert the student to related work, and identify potential complications. The committee may recommend additional research and/or coursework as it sees necessary. Major deviation from the proposed research requires the approval of the Dissertation Committee.

The committee will discuss and vote on the student's performance in the dissertation proposal examination. Unanimous approval of the Committee is required for the student to pass the exam. Students who fail their first attempt at the dissertation proposal exam are allowed to make a second attempt within one year of the failed attempt or within the ninth regular semesters since the student’s admission to the PhD program, whichever is earlier. No more than two attempts to pass the dissertation proposal exam are permitted.

**Master’s Degree Option**
A non-Fellowship doctoral student without MS degree in Electrical Engineering may petition to the Electrical and Computer Engineering Graduate Program Committee for approval to transfer to the MS program in Electrical Engineering. A doctoral student without MS degree in Electrical Engineering may apply for a complementary MS EE degree after successfully passed the dissertation proposal examination.

**Final Oral Dissertation Defense**

Once the student and the Supervising Professor are convinced that the research work is satisfactorily completed, the next steps are writing the dissertation and passing the final oral defense. The final oral defense is administered and evaluated by the student's Dissertation Committee and covers the dissertation and the general field of the dissertation. The student is also cautioned to check the UTSA Graduate Catalog for additional final oral defense requirements. In particular, the Office of Graduate Studies requires a minimum of two weeks advance notice prior to the final oral defense. The final oral defense consists of a public presentation of the dissertation, followed by a closed oral exam administered by the committee members. The Dissertation Committee must unanimously approve the dissertation. It is highly recommended that the student’s research results would be presented to viable national or international conferences as well as submission to national or international archival journals prior to the defense.
Recommended Sequence of Events

The following sequence summarizes some of the landmarks of progress that should be followed as closely as possible.

Year One:
1. Meet with the Graduate Advisor of Record and attend Ph.D. Program Orientation
2. Prepare and submit a preliminary Program of Study to the Graduate Advisor of Record, which may contain any graduate level courses to be transferred, and send this to Graduate Program Committee for preliminary approval
3. Complete requirements for conditional admission, if applicable
4. Take required Graduate Seminar course(s)
5. Select Dissertation Supervising Professor
6. Complete required core courses in primary and two secondary areas

Year Two:
7. Request certification of meeting knowledge competencies
8. Select Dissertation Supervising Professor if not already done so
9. Take and pass Communication and Research Competency Candidacy Examination
10. Be recommended for Advancement to Candidacy by the Graduate Program Committee
11. Form Dissertation Committee and have it approved
12. Conduct research and developing scientific and technical focus of the research topic

Year Three:
13. Complete all course requirement
14. Conduct research and satisfy two-semester residency research requirement
15. Prepare dissertation proposal and submit to Dissertation Committee
16. Take and pass the Dissertation Proposal Examination
17. Refine the plan and the focus of the dissertation, prepare the outline of the dissertation
18. Conduct research, present research work at conferences, and prepare scientific publications

Year Four/Year Five:
19. Attend training on dissertation writing, follow a timeline for writing chapters
20. Set a target date for defense and put it on committee member’s calendar
21. Plan a month for the advisor to go through dissertation draft; two weeks for committee members
22. Take and pass Final Oral Dissertation Defense
23. Comply with committee recommendations for final modifications
24. Make an appointment with Dept Chair when the final thesis is ready for university approval.

This sequence of events may be accelerated depending on individual situation such as the academic preparation of the student, the nature and the quality of the work, and the effort level of the student, etc.
All students are expected to make reasonable progress towards the degree. Once a student has been admitted to candidacy for the Ph.D., the Dissertation Committee will convene annually to review progress made by the student. If the student has not completed the dissertation within three years of admission to candidacy, then the Graduate Program Committee decides if any action is needed.

V. General Academic Policies

Rules concerning registration, late registration, adding classes, dropping classes, and auditing classes are all found in the Graduate Catalog or in the schedule of classes. Academic standing, cancellation of enrollment, withdrawal procedures, reinstatement in the University and student classification are also addressed in the Graduate Catalog.

VI. Appendices

The guidelines and detailed timeline for the Advancement to Candidacy for the Ph.D. Degree is available at the department office.
APPENDIX I

PROCEDURES FOR THE CANDIDACY EXAMINATION

I. Chronology of Events

All students seeking a doctoral degree at UTSA must be admitted to candidacy. One of the requirements for admission to candidacy is passing a doctoral qualifying examination. Students should consult the University's Doctoral Degree Regulations for the other requirements. The ECE qualifying examination contains two components: (I) Knowledge Competencies and (II) Communication and Research Competencies.

The chronology of events is:

1. The student submits the letter of intent to take the qualifying exam to the Graduate Advisor of Record (GAR) by the announced deadline. GAR reviews the student’s graduate record and makes a decision to recommend or not to recommend that the student is prepared to take the Knowledge Competencies (QI) exam.
2. The student takes the QI exam. The QI exam is a Concentration-Specific written exam designed to evaluate the student’s readiness to pursue Ph.D. in the chosen field. The QI exam is offered each winter and summer prior to the start of a regular semester.
3. Upon completion of the QI exam, the Graduate Program Committee makes a decision by majority vote to recommend, or not to recommend, the student to pass the QI exam. If the student fails the first attempt at the QI exam, he/she is allowed to make a second attempt on the next written exam. No more than two attempts to pass Knowledge Competencies exam are permitted.
4. Within one semester after fulfillment of Knowledge Competencies, the student takes the Communication and Research Competencies (QII) exam. The QII exam is an oral exam based on a research proposal written by the student.
5. A QII exam committee is formed (only one committee for each concentration). The committee includes the student’s Supervising Professor and two additional faculty members recommended by the GAR. The GAR also chooses a topic of the proposal from 2-3 suggested topics by the committee.
6. After the completion of the QII exam, the committee makes a recommendation for the student to pass/fail the exam. Signatures of the committee members and the Supervising Professor are required on the Approval/Disapproval statement. The PhD Program Director will provide a written notification to the student. In case the student fails the QII examination, he/she will be allowed to take the examination one additional time.
7. Upon passing the QII qualifying examination, student and Supervising Professor need to fill out the application for candidacy. The chairperson will notify the student of his/her admission of candidacy.

II. Process for Qualifying Exam (II) Communication and Research Competencies
<table>
<thead>
<tr>
<th>Process</th>
<th>Responsibilities</th>
<th>Who is Responsible</th>
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<tbody>
<tr>
<td>Form QII Exam Committee</td>
<td>Each concentration provides two candidates to Committee Pool</td>
<td>Concentration Chair</td>
</tr>
<tr>
<td></td>
<td>1. Choose Chair of the Exam Committee (randomly from student’s concentration)</td>
<td>GAR</td>
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<tr>
<td></td>
<td>2. Choose student’s advisor as the 2nd member</td>
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<td></td>
<td>3. Randomly choose the 3rd member from one of the two secondary concentrations</td>
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<td></td>
<td>PhD Program Director approves the committee</td>
<td>Prog. Director</td>
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<tr>
<td>Select Exam Topic</td>
<td>Committee provides 2-3 exam topics</td>
<td>QII Committee</td>
</tr>
<tr>
<td></td>
<td>Director/GAR chooses one topic and inform the student</td>
<td>Prog. Dir./GAR</td>
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<tr>
<td>Student Research</td>
<td>The student will have one month to conduct research and write the report. Submit the report by due date to admin/GAR.</td>
<td>Student</td>
</tr>
<tr>
<td></td>
<td>Give the report to the committee members and set a date for an oral exam</td>
<td>Student; admin assists scheduling</td>
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<tr>
<td>QII Oral Exam</td>
<td>Open presentation followed by closed Q&amp;A</td>
<td>QII Cmte Chair</td>
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<tr>
<td>Final Approval</td>
<td>Paperwork for final approval</td>
<td>GAR</td>
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<tr>
<td></td>
<td>Provide a written notification to the student</td>
<td>Prog. Director</td>
</tr>
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</table>