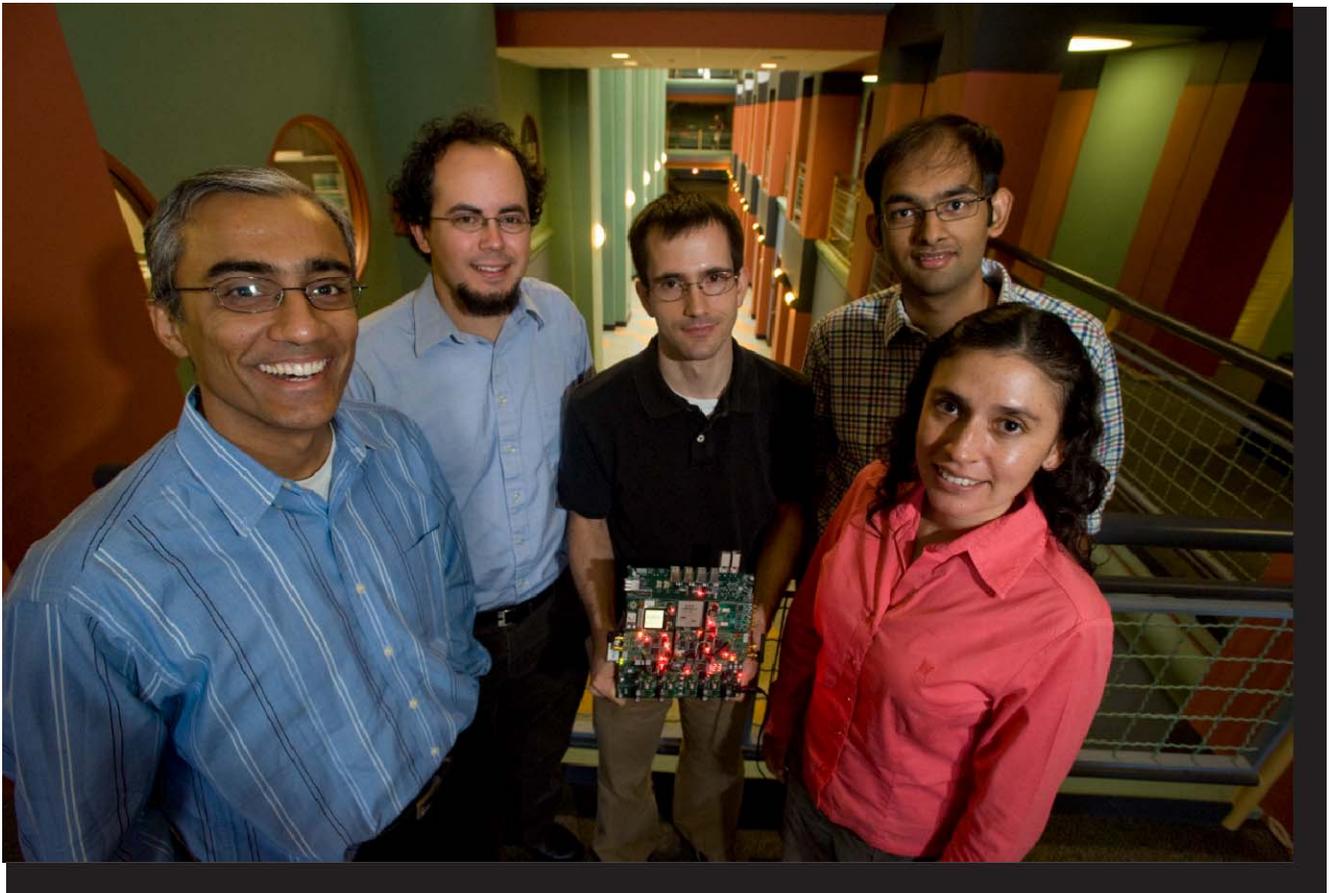




Department of Electrical and Computer Engineering

Graduate Student Handbook



“This handbook provides general guidelines for ECE graduate students. All degree plans and graduate student matters must conform with the Rice University General Announcements and be approved by the ECE Graduate Committee.”

Table of Contents

1. Academics: Overview	1-3
1.1 Graduate Application	
1.2 Degree Programs	
1.2.1 Doctor of Philosophy (Ph.D.)	
1.2.2 Master of Science (M.S.) - offered only within Ph.D. program	
1.2.3 Master of Electrical Engineering (M.E.E.) - non-thesis degree	
1.2.4. Joint M.B.A and M.E.E.	
1.3 ECE Research Groups	
1.4 Academic and Research Advisors	
1.5 Ph.D. Graduate Student Mentors	
1.6 Honor System and Code of Student Conduct	
1.7 Advice on Changing Research Groups or Departments	
2. Coursework	3-4
2.1 Registration, Drops and Adds	
2.2 Grading, Department Duties, Employment, Academic Status	
2.3 Ph.D. Qualifier - ELEC 599 - First Year Graduate Student Projects	
3. Timelines and Procedures, Candidacy, Defense	5-6
3.1 M.S./Ph.D. Timelines and Procedures	
3.2 Petitioning for Candidacy	
3.2.1 M.S. Candidacy	
3.2.2 Ph.D. Candidacy	
3.3 Degree Candidate Status	
3.4 M.E.E. Timelines and Procedures	
4. Financial Support	6
4.1 General Information	
5. Information from the Office of Graduate and Postdoctoral Studies	6-7
5.1 Guidelines for Dismissals, Petitions, Appeals, Grievances, and Problem Resolution	
5.2 Leaves or Withdrawals - Policy	
5.3 Funding and Stipends	
5.4 Time Boundaries	
5.5 Thesis Information	
5.6 Graduate Form Library	
5.7 Guidelines for Good Practices in Graduate Education	
5.8 Grad News	
6. Information from the Registrar	7
7. Information from General Announcements	7
8. Information from Office of International Students and Scholars	7
9. Student Health Insurance and Services	7
10. Graduate Award Opportunities	7

1. Academics: Overview

The Rice University Department of Electrical and Computer Engineering (ECE) offers graduate programs leading to the Doctor of Philosophy (Ph.D.) and to the Master of Electrical Engineering (M.E.E.), a non-thesis professional degree.

The Department does NOT offer a stand-alone thesis Master of Science degree; students admitted to our Ph.D. program with a bachelor's degree are required to earn the M.S. within the program before proceeding to the Ph.D.

Students admitted with an approved previous M.S. degree are required to complete a minimum 18 hours of course credit and 48 hours of research credit. Previous M.S. degrees are approved or denied upon completion of ELEC 599 in the first year. Denied previous M.S. degrees require the student to obtain a Rice ECE M.S. degree before continuing on to the Ph.D. degree.

1.1 Graduate Application

Our new online application for admission is located at <https://ecegradapps.rice.edu/>. The deadlines to apply to our M.E.E. and Ph.D. programs are: Spring 2013 deadline is for M.E.E. students only, and it is October 15, 2012. The deadline for Fall 2013 session is for both the Ph.D. and M.E.E. students and it is January 15, 2013. The application is open after September 1, 2012 for both sessions. (Late applications may be considered, at the discretion of the ECE Graduate Committee.)

The application fee is \$85, payable by credit card. Applicants with financial needs may be eligible for application fee waivers, please see the below list.

University-paid application fee waivers include:

- IRT (Institute for Recruitment of Teachers)
- McNair Scholar Program
- Nankai University Hundred Young Teachers Program
- Project 1000
- VEF (Vietnam Education Foundation)

Note: Students admitted to the Ph.D. program are fully funded with a monthly stipend and tuition waiver. The Ph.D. program is full time only with a minimum of 9 credit hours per semester. Ph.D. students are required to fulfill 6 semesters of grading as part of the degree requirements. All graduate students (M.E.E./M.S./Ph.D.) are required to take and earn an "S" in ELEC 699, as a part of his/her degree requirements for each semester in residence. Departmental attendance sheets will be provided at all seminars (no reports/write-ups).

Students admitted to the M.E.E. program are self-supported, but often with whole or partial support provided by the student's employer in the workforce. The M.E.E. (a total of 30 credit hours of course work) may be pursued part time with a minimum of 3 credit hours per semester.

Successful applicants to the Ph.D. program must have a minimum Grade Point Average (GPA) of 3.0 on a 4.0 scale. Our average admitted students obtain GRE scores in the range of V600 and Q770 and above. Minimum TOEFL scores for international applicants are 600 (paper), 250 (computer), and 90 (IBT).

TOEFL requirements for the Ph.D. and M.E.E. program may be waived for students who have received a degree from a university where English is the official language of communication.

Successful applicants to the M.E.E. program must have a minimum undergraduate GPA of 3.0 on a 4.0 scale. The GRE is not required for admission to the M.E.E. degree, but TOEFL requirements apply, as stated above. For internationals admitted to M.E.E. program, proof of financial support is also required.

1.2 Degree Programs

1.2.1 Doctor of Philosophy (Ph.D.)

The Ph.D. program prepares students for research careers in academia and industry. The first academic year concentrates on foundation coursework followed by focus on a research area. The first year consists of a minimum of 18 hours of coursework, which include 6 hours of ELEC 599, which is a research presentation, developed under the guidance of a faculty advisor and committee that qualifies the student for continuation in the Ph.D. program, and is taken in the second semester of his/her first year.

Students admitted to the Ph.D. program with a bachelor's degree are required to complete 90 hours of credit (typically 42 hours of coursework and 48 hours of research). Courses must be 400 level and above, except for mathematics (300 and above) as stated on the course plan of study. Each student is also required to complete 6 semesters of grading as part of their coursework and the seminar class, ELEC 699.

M.S. degrees are expected to be obtained by the end of the 4th semester (second year). All Rice graduate students must petition for Ph.D. candidacy before the start of the 9th semester (fifth year). Ph.D. degrees are expected to be obtained by the end of the 10th semester (fifth year) and no later than the end of the 16th semester (eighth year).

1.2.2 Master of Science (M.S.)

The M.S. degree is offered only as a precursor to the Ph.D. degree. It requires at least 30 semester hours of credit beyond the bachelor's degree (typically 24 hours of course credit which includes ELEC 599, and 6 hours of ELEC 800 research credit). Twenty-four of the 30 required hours must be completed at Rice; therefore, no more than 6 hours may be transferred from a previous M.S. degree in the case of a denied previous master's degree. **Your previous master's degree will be denied if you switch subfields.**

The M.S. program requires original research work reported in a thesis and a public oral presentation, evaluated by a master's thesis committee consisting of a thesis advisor and at least two other faculty members.

1.2.3 Master of Electrical Engineering (M.E.E.)

The Master of Electrical Engineering is a terminal, non-thesis degree intended primarily for students who wish to strengthen their academic background through a year of additional coursework. The M.E.E. program is a bridge to industry, designed to provide advanced learning and training in the applied aspects of ECE technology beyond the typical undergraduate electrical and computer engineering degree program.

Upon matriculation, the M.E.E. student selects a faculty advisor in their primary area of interest. The advisor will counsel the student in developing a degree plan to include 18 hours of coursework in the major area, 6 hours in a minor area, and 6 hours of electives, for a total of 10 courses/30 semester hours.

Students may be eligible to transfer up to 3 hours of course credit from another university. Rice undergraduates entering the M.E.E. program may transfer course credit not applied to their undergraduate degrees, with the approval of the ECE Graduate Committee and Office of the Registrar.

The M.E.E. may be pursued on a part time or full time basis during fall and spring semesters. A 3.0 GPA must be maintained in major and minor coursework. Students whose GPA falls below 2.33 will be placed on academic probation. For more information see General Announcements - http://www.rice.edu/catalog/2010_2011/PDF/08_GraduateInfo.pdf

1.2.4 Joint M.B.A. and M.E.E. (Master of Business Administration and Master of Electrical and Computer Engineering)

Students wishing to pursue this joint degree should apply through the Jones School of Business <http://business.rice.edu/MBAPrograms.aspx?id=987>

1.3 ECE Research Groups

The ECE Department has four interdisciplinary research groups, as noted below. Graduate applicants are asked to select a #1 and #2 choice of interest from the subcategories of these groups in the online application.

BIOENGINEERING

___Biomedical Systems Modeling

___**Biosensors and Biomedical Circuits**

___Engineering in Critical Care Medicine

___Nonlinear Dynamic Systems Analysis in Biology

COMPUTER ENGINEERING

___**Analog and Mixed-Signal Circuit Design**

___Computer Architecture

___Computer Systems: Architecture, Design, Control

___Adaptive Computing and Embedded Systems

___High Performance Application Specific Systems

___Mobile and Embedded Systems

PHOTONICS AND NANOENGINEERING

___Biophotonics

___Condensed Matter Physics/Materials Science

___Integrated Optics

___Molecular Electronics

___Nanophotonics/Nanospectroscopy

___**RF, Millimeter-wave, Antennas**

___Semiconductor Optics & Devices

___Terahertz Science & Technology

___Ultrafast Optics & Optoelectronics

SYSTEMS

___Dynamical Systems and Computation

___Machine Learning

___Neural Machine Learning/Pattern Recognition

___Signal and Image Processing

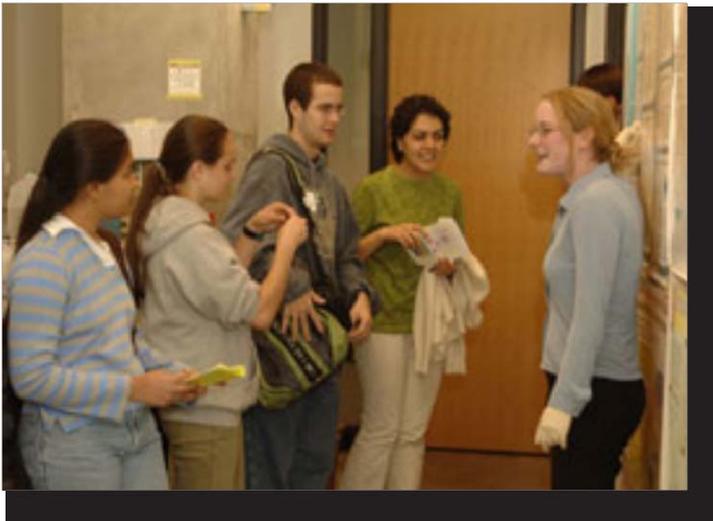
___Wireless Communications

___Wireless Networks

1.4 Academic and Research Advisors

Each incoming Ph.D. and M.E.E. student is initially assigned an academic advisor, usually a member of the ECE Graduate Committee, to help with course selection and other initial academic concerns. Final course selection does not need to be completed until after the start of classes.

During the first year, Ph.D. students will select a research advisor, who will then take over the student's advising. Upon passing ELEC 599 at the end of the first year, the advisor will begin providing stipend support for the graduate student. Usually the research advisor will be derived



(2) If issues are insurmountable, speak with faculty members whose research interests are more in line with student's and who has the funding for support.

(3) When alternate faculty member agrees to replace current advisor, obtain permission from the Chair of ECE Graduate Committee and proceed to ECE Graduate Program Administrator, who will process the documentation required for the exchange.

2. **Coursework** - is based on the student's course plan of study. Refer to section 3.0.

2.1 Registration, Drops and Adds

Students register for courses online through their Esther account. The following deadlines apply for Fall 2012 registration:

August 31, 2012 - last day to complete late registration and add courses without penalty.

October 5, 2012 - last day to drop courses without penalty.

For complete registration deadline list, consult the Fall 2012 Academic Calendar at www.registrar.rice.edu.

2.2 Grading, Department Duties, Employment, Academic Status

Grades—To graduate, students must achieve at least a B- (2.67) GPA in courses counted toward the graduate degree. Some programs and departments have more stringent standards. To compute GPAs, the credits attempted in semester hours for each course and the points for the grade earned (from A+ = 4.33 to F = 0.00) are multiplied, then the products (one for each course) are added together, and the sum is divided by the total credits attempted.

Pass/Fail—All students, except Visiting Post Baccalaureate students, may take course(s) Pass/ Fail outside their department. They must file a course as Pass/Fail no later than the end of the 10th week of classes; however, they may later convert a Pass/Fail to a graded course by filing the appropriate paperwork with the Office of the Registrar. Students should be aware that while a grade of P does not affect their GPA, a grade of F does.

Satisfactory/Unsatisfactory—Some departments may assign a grade of S or U. ELEC 800, Research and Thesis, is such a course. Students should be aware that while a grade of S or U does not affect their Grade Point Average, no credit will be awarded if a grade of U is received. Courses with a grade of S will count towards total credits earned.

from the ELEC 599 research project undertaken in the second semester.

1.5 Ph.D. Graduate Student Mentors

Each incoming Ph.D. student will be assigned two seasoned ECE graduate students, one in his/her primary area of research and one from another area. Mentors will assist first year students in academic matters, including preparation for ELEC 599, social interaction with members of ECE and other interdisciplinary departments. Mentor/mentee social events will be planned over the course of the first year.

1.6 Honor System and Code of Student Conduct

General Announcements 2011-2012 - <http://ga.rice.edu/>

1.7 Research and Scholarly Activities

General Announcements 2011-2012 - http://ga.rice.edu/GR_students/

1.8 Advice on Changing Research Groups or Departments

Rice recognizes research interests may change after a student enters a graduate program. If a student feels their interests and talents could be better served working with a different advisor or in another research group or department, a change can be accommodated.

Although each case is unique, following are guidelines for making an advisor/group/department switch:

(1) Discuss issues with current advisor. Often an adjustment of research topic may resolve the problem.

Incompletes—Instructors report this designation to the Office of the Registrar when a student fails to complete a course because of verified illness or other circumstances beyond the student's control that occur during the semester. For an incomplete received in the fall semester, students must complete the work by the end of the fourth week of the spring semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the fifth week. For an incomplete received in the spring semester, students must complete the work before the start of the fall semester or an earlier date as defined by the instructor, and instructors must submit a revised grade by the end of the first week.

Audit—The grade designation of AUD is used for people auditing a course, and specifically when the auditing student has met the audit requirements of the course. A grade designation of NC is given to students who do not meet the audit requirements. Requests to audit a class or to change from audit to credit or vice versa must be done by the end of the second week of the semester.

Departmental Duties—In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

Employment—Students receiving a stipend may accept employment only with the approval of their home academic department. Students working for more than 20 hours per week are not normally eligible for full-time status.

Continuous Enrollment—Students must maintain continuous program involvement and enrollment unless granted an official leave of absence. See Leaves and Withdrawals (General Announcements) for more information. <http://ga.rice.edu/Home.aspx?id=125>

2.3 Ph.D. Qualifier - ELEC 599 - First Year Graduate Student Projects

ELEC 599 serves two purposes:

- (1) It allows students to begin research early in the Ph.D. program. Projects selected often serve as catalysts for publications and thesis work.
- (2) It serves as the ECE Ph.D. qualifier by demonstrating one's ability to perform independent research. Students must pass with a grade of A to remain in the Ph.D. program. At the end of the fall semester of the first year, students select a research project and an advisor. Early in the spring semester students submit project abstracts and timelines,

followed by the selection of two project committee members in addition to the advisor. Committee members may be assistant, associate, full professors and working adjunct lecturers selected from ECE as well as other ECE-related interdisciplinary departments.

A spring midterm progress evaluation will be conducted with the advisor to ensure the student's project is on track. Any problems will be referred to the ECE Graduate Committee for intervention.

In April students will schedule their oral presentations with their committees. Presentations are limited to 25 minutes with a maximum of 25 slides, and questions by committee are limited to 25 minutes. The written project reports must be submitted to committees and the ECE Graduate Program Administrator by mid-April. Reports are limited to 10 pages and should be formatted in 11 pt. font and according to the LaTeX or MS Word templates given in the IEEE trans- action style http://www.ieee.org/publications_standards/publications/authors/authors_journals.html.

Room reservation, scheduling of committee members and all logistics of the ELEC 599 qualifier are the student's responsibility. Following presentations, project committees will meet to provide written evaluations which are then submitted to the ECE Graduate Committee for final evaluation and grade.

The ELEC 599 grade is based on:

1. overall performance on the project
2. motivation and enthusiasm for graduate work
3. quality of written presentation
4. quality of oral presentation
5. prospects for Ph.D. success

The Graduate Committee meets to determine final ELEC 599 grades, after which individual evaluation letters will be provided to students. At this meeting the Committee will also determine whether or not previous Master's degrees will be accepted, which will also be noted in evaluation letters for those students who entered with master's degrees.

Students who do not pass ELEC 599 will not be permitted to continue in the M.S/Ph.D. program and financial support will end on May 16. However, graduate student status may be retained without financial support, until August 15. Students may petition the ECE Graduate Committee to retake ELEC 599 or apply their accumulated course credit toward the professional master's degree (M.E.E.), requiring a total of 30 hours, the remainder of which will be self supported. Both options require the approval of ECE Graduate Committee and Office of Graduate and Postdoctoral Studies.

Students whose previous master's degrees are denied are

required to obtain a Rice M.S. before proceeding to the Ph.D.

3. Timelines and Procedures, Candidacy, Defense

3.1 M.S./Ph.D. Timelines and Procedures

- First semester - a minimum of 9 hours of core coursework is required.
 - Second semester - ELEC 599 (6 hours) and at least 3 hours of core coursework are required.
 - Third semester and beyond - additional coursework and ELEC 800 (1-15 hours) - totaling at least 30 hours for the M.S. and 90 hours for the Ph.D.
- (Students entering with *approved previous M.S. degrees will be evaluated on a case-by-case basis by the Graduate Committee, but minimal requirements are 18 hours of



course credit in addition to ELEC 800.)

*See footnotes of Ph.D. Course Plan form for more detail. Early in the third semester (by October 15), students must develop a Ph.D. course plan approved by their advisor and co-signed by a member of the ECE Graduate Committee. It is then submitted to the Graduate Program Administrator for student's file. Course plans may be revised, reapproved and resubmitted at any time over the course of the M.S./ Ph.D. program.

Time to degree - Barring a written exemption from the Graduate Committee, the M.S. must be completed within 3 years of entering the M.S./Ph.D. program, the Ph.D from B.S. within 6 years, and the Ph.D. from previous M.S. within 4 years.

3.2 Petitioning for Candidacy

3.2.1 M.S. Candidacy - When a student has completed the requisite hours (30 from within the Ph.D. course plan),



has established a committee, performed research, written a thesis, and is ready to defend; the Petition for Approval of M.S. Candidacy form is submitted to the Graduate Program Administrator along with a current transcript and a copy of his/her course plan by no later than the end of the 4th semester (second year). The form requires the Department Chair's signature and approval by the Office of Graduate and Postdoctoral Studies (GPS). The student then receives an initialed Approval of Candidacy form, which is signed by members of the student's committee upon passing the M.S. defense. This form is copied to the student's file and submitted to the Office of GPS. The student has six months to submit his/her signed thesis to the Office of GPS, at which time the student becomes a Master's Degree Candidate. Additionally, if a student plans to defend and submit a thesis for the next degree conferral, students must file their applications for approval of Ph.D. and M.A./M.S. candidacy in the Office of Graduate and Postdoctoral Studies before November 1 for mid-year conferral and before March 1 for May conferral.

One week prior to defending, the student must submit the following information to the Office of GPS, the [Rice Events Calendar](#), and The ECE Department listservs: defense date, time, location, title and abstract, as well as the names, titles and departments of committee members. <http://graduate.rice.edu/thesis/>

3.2.2 Ph.D. Candidacy - In order to petition for Ph.D. degree candidacy, a student must have (a) completed 45 semester hours of advanced studies as approved by the Department and achieved at least a 3.0(B) in each of these courses, (b) successfully completed ELEC 599, and (c) earned a Master of Science degree from Rice University, or have an equivalent Master of Science degree, as decided by the ECE Graduate Committee and successful completion of ELEC 599. <http://graduate.rice.edu/Content.aspx?id=192>

The Petition for Approval of Ph.D. Candidacy form is then submitted to the ECE Graduate Program Administrator along with a current transcript and a copy of his/her course plan before the start of the 9th semester (fifth year). The Department Chair's signature is required on the petition, which is then submitted along with the transcript and course plan to the Office of Graduate and Postdoctoral Studies (GPS) for approval. The student then receives an initialed Approval of Candidacy form that is signed by the student's committee members upon passing the Ph.D. defense. This form is copied to the student's file and submitted to the Office of GPS. The student has 6 months to submit a signed thesis to the Office of GPS, at which time the student becomes a Doctoral Degree Candidate. Additionally, if a student plans to defend and submit a thesis for the next degree conferral, students must file their applications for approval of Ph.D. and M.A./M.S. candidacy in the Office

of Graduate and Postdoctoral Studies before November 1 for mid-year conferral and before March 1 for May conferral.

Two weeks prior to defending, the student must submit the following information to the Office of GPS, the [Rice Events Calendar](#), and The ECE Department listservs: defense date, time, location, title and abstract, as well as the names, titles and departments of committee members. <http://graduate.rice.edu/thesis/>

3.2.3 Research Proposal - After a student petitions for candidacy, but before defending his/her thesis, the student must present a research proposal. The ECE Graduate Program Administrator will generate a form letter for the student's committee members to approve of the research proposal following the presentation. The student may only defend his/her thesis after successfully presenting the research proposal and upon approval of the committee members.

3.3 Degree Candidate Status - means the student has completed all requirements for the degree and all that remains is degree conferral in January or May.

Very Important Deadlines:

Friday, August 31, 2012 - Last day to complete late registration.

Friday, October 26, 2012 - Last day to file the following in the Office of Graduate and Postdoctoral Studies for December 2012 degree conferral.

- thesis master's candidacy petitions
- certification of non-thesis master's
- Ph.D. candidacy petitions

Noon, Friday, November 30, 2012 - Deadline for submitting theses to Office of Graduate and Postdoctoral Studies for December 2012 degree conferral .

3.4 M.E.E. Timelines and Procedures

M.E.E. students are required to take 10 courses and 30 semester hours of coursework. Since M.E.E. students enroll both full or part time, timelines are what the student sets with approval of the advisor.

A course plan is determined during the first few weeks of classes and submitted to Graduate Program Administrator (no later than Oct. 15). Course plans may be revised, reapproved and resubmitted at any time over the course of the M.E.E. program.

When student nears the end of M.E.E. studies, a Petition for

Certification of Non-Thesis Master's Degree is completed, approved by department chair and submitted to GPS along with current transcript.

4. Financial Support

4.1 General Information

Academic Year - All enrolled full time Ph.D. students are supported with full tuition and a stipend as set by Rice University.

All first year Ph.D. students are supported by Fellowships. Thereafter, students in good standing will be supported as Research Assistants by their M.S./Ph.D. advisors. Compensation is calculated and paid semimonthly from August 16 to December 31 and from January 1 to May 15.

Many Ph.D. students obtain fellowships in addition to that which is provided by Rice. See Graduate Award Opportunities following this section.

Summer Support - Students should discuss their summer plans in advance with their advisors. Students planning a summer internship off-campus, with advisor's approval, must inform the ECE Executive Administrator and Graduate Program Administrator by May 1 in order to suspend stipend payments for the period of time student will be supported by external resources.

Details for international student internships with regard to Optional Practical Training (OPT) and Curricular Practical Training (CPT) area located at: <http://oiss.rice.edu/>

5. Information from the Office of Graduate and Postdoctoral Studies

5.1 Guidelines for Dismissals, Petitions, Appeals, Grievances, and Problem Resolution - <http://graduate.rice.edu/student/dismissal.aspx>

5.2 Leaves or Withdrawals - Policy
<http://graduate.rice.edu/leaves/>
5.2.1 - Leave of Absence
5.2.2 - Short-term Medical and Parental Leave
5.2.3 - Withdrawal
5.2.4 - Readmission

5.3 Funding and Stipends - <http://graduate.rice.edu/funding/>

5.4 Time Boundaries - <http://graduate.rice.edu/timeboundaries/>

7

5.5 Thesis Information - <http://graduate.rice.edu/students/thesis.aspx>

5.6 Graduate Form Library - <http://graduate.rice.edu/student/forms.aspx>

5.6.1 - Candidacy Petitions

5.6.2 - Request for Extension of Time to Candidacy

5.6.3 - Defense Announcement

5.6.4 - Request for Extension of Time to Defend

5.6.5 - Thesis Submission Forms

5.6.6 - Degree Conferral Forms

5.6.7 - Commencement

5.7 Guidelines for Good Practices in Graduate Education - <http://graduate.rice.edu/student/goodpractices.aspx>

5.8 Grad News - <http://graduate.rice.edu/student/gradnews.aspx>

6. Information from the Registrar Fall 2012
Academic Calendar - <http://www.registrar.rice.edu/calendars/fall11/>
Fall 2012 Course Schedule - <http://courses.rice.edu/admweb/swkscat.main>
Forms for Current and Graduate Students - http://www.registrar.rice.edu/online_forms/

7. Information from General Announcements
2012-2013 Rice University General Announcements - http://www.rice.edu/catalog/2010_2011/
Includes PDFs for:
General Information
Graduate Students
Departments & Programs
Courses of Instruction
Administration & Faculty

8. Information from the Office of International Students and Scholars
<http://oiss.rice.edu/>
International Students - <http://oiss.rice.edu/gateway.aspx?id=74&linkid=entifier=id&itemid=74>
Includes the following:
Obtaining I-20 for F-1 visa
Short-term Visiting Research Students
Pre-Arrival Information
Orientation
Maintaining Status
Academic Resources
Employment
Students on OPT
Travel