JOHNS HOPKINS
U N I V E R S I T Y

Department of Electrical and Computer Engineering

Graduate Student Advising Manual

2017 - 2018

(Updated: August 21, 2017)

Department of Electrical and Computer Engineering
The Johns Hopkins University

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1. WELCOME!

Welcome to the Department of Electrical and Computer Engineering! This manual can help you plan a program of graduate study leading to the Master of Science in Engineering (M.S.E.) degree, Doctor of Philosophy (Ph.D.) degree, or both. Its pages are devoted to policies, rules, procedures (in italics), and suggestions about our program with the intention of providing useful information about these programs. However, uncertainty is implicit in any endeavor, and this document is not phrased to professional legal standards and remaining questions should be addressed to your advisor, the Director of Graduate Studies, or the department chair.

2. GENERAL INFORMATION

Having noted what this manual is about, it is important to emphasize that the most important aspect of graduate study is seldom mentioned. As a student entering our program, you are and beginning a joint enterprise with other students and the faculty that, at its best, is stimulating, enjoyable, and rewarding for all concerned. Advanced study, innovative fundamental research, and publication of results are the goals. The mechanics documented here are in place to help you achieve these goals.

Note that all students who wish to be admitted to our graduate program leading to either an M.S.E. or Ph.D. must have a bachelor's degree or its equivalent upon entry.

2.1. Required Introductory Courses and Tutorials

There are two introductory courses and tutorials that most or all graduate students must take.

2.1.1. Responsible Conduct of Research Course

Many M.S.E. and all Ph.D. graduate students will be required to take the "Responsible Conduct of Research" course.

- M.S.E. students receiving payment for research or who are conducting research used to help complete degree requirements must first complete the online training course (AS.360.624) before conducting research and/or receiving payment.

- M.S.E. students receiving payment from NIH Training Grants must take the in-person training course (AS.360.625).

- All Ph.D. students must complete the in-person training course (AS.360.625) before the start of their <u>fourth</u> semester of the program. Failure to comply with this requirement could result in a loss of funding.

Information is available at http://engineering.jhu.edu/wse-research/resources-policies-forms/responsible-conduct-of-research. Successful completion of this course must be verified before a student's diploma is issued.

2.1.2. Academic Ethics

As a graduate student, you will be automatically enrolled in the online tutorial 500.603 Academic Ethics, which teaches academic and ethical responsibilities. This approximately 30-minute tutorial must be completed in the first eight weeks of the student's first semester. The Whiting School of Engineering will notify new students when the course is available.

2.2. *Course Registration and Credits*
2.2.1. Credits and Full-Time Status

Since 2016, all Whiting School of Engineering graduate courses have assigned credit hours. Note that:

- The Electrical and Computer Engineering degree requirements do not change for the number or types of courses.
- To maintain full-time status, WSE graduate students must be enrolled in at least 9 credits. Students enrolled in fewer than 9 credits per semester will not meet the full-time enrollment requirement, which may affect residency requirements for all and visa concerns for international students.
- Students can achieve full-time status by registering for any combination of courses and seminars, as approved by one's advisor.
  - Seminars – 1 credit
  - WSE courses, both undergraduate and graduate – 3 or 4 credits
  - 520.801/520.802 PhD Graduate Research – 3-20 credits
  - NOTE:
    - Audited courses do not count toward a full-time credit load.
    - Krieger School of Arts and Sciences' graduate-level courses will not have credits listed in SIS, but will be recognized as 3-4 credits toward one's full-time credit load.
- Visit the Whiting School's Frequently Asked Questions page at http://homewoodgrad.jhu.edu/academics/wse-graduate-credit-hours/ for more information.

2.2.2. Interdivisional Course Registration

Students may need to register in another division, like the Engineering for Professionals program or in any of Hopkins's eight other schools. Registration for courses in these areas must be done in person at the Registrar's office in Garland Hall. Visit https://studentaffairs.jhu.edu/registrar/students/interdivisional-registration/ for information.

3. M.S.E. DEGREE PROGRAM

The Master of Science in Engineering (M.S.E.) degree requirements, along with general information, are described here.

3.1. University and Whiting School Degree Requirements

Visit http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/ for information on school-wide requirements. These include:

- Two semesters of full-time course registration, also called "residency" (this rule does not apply to students in the concurrent B.S./M.S.E. program or those who enter the M.S.E. program after two or fewer semesters following completion of a JHU undergraduate degree).
- Course registration every semester.
- Completion of academic ethics and responsible conduct of research courses.
- MSE essay submission.

3.2. M.S.E. Electrical and Computer Engineering – Degree Requirements

Some students are interested solely in the M.S.E. degree, while others may elect to receive an M.S.E. on the way to the Ph.D. Either way, the requirements are the same and the advisor's approval is required. Students enrolled solely in the M.S.E. program are not guaranteed admission to the Ph.D. program on successful completion of their degree. The departmental requirements for the M.S.E. degree subsume the university-wide requirements.

The requirements for the M.S.E. degree in Electrical and Computer Engineering (ECE) are as follows:

1. Satisfactory completion of eight one-semester graduate courses (xxx.400 - xxx.799) approved by the advisor. At least five of these courses must come from the full-time ECE department (520.xxx) but cannot include Independent Study, Dissertation Research, ECE Seminar or Special Studies; and,

2. Fulfilling <u>one</u> of the following three requirements:

   a. Satisfactory completion of two additional one-semester graduate courses (xxx.400 - xxx.799) approved by the advisor, one of which must come from the full-time ECE department (520.xxx) but cannot include Independent Study, Dissertation Research, ECE Seminar or Special Studies; or

   b. Write an M.S.E. essay (the official title of master's theses at Johns Hopkins) acceptable to a member of the ECE faculty. The M.S.E. essay must be submitted to the library and must follow the guidelines described in http://www.library.jhu.edu/library-services/electronic-theses-dissertations/; or

   c. Completion of a special project acceptable to a member of the ECE faculty and writing the corresponding report. A copy of this report must be submitted to the ECE office and becomes a permanent part of the student's record.

Note that:

3. To fulfill requirements 1 or 2, a course is satisfactorily completed if a grade of C- or higher, or a "P/S" is obtained. No more than one C+, C, or C- grade can be counted toward the degree requirements.

4. Students who receive a grade of D or F in a course, or grades of C+ or lower in two courses will be placed on academic probation. Receiving a grade of C+ or lower in any further course will result in the student's termination from the program.

5. Subject to the approval of the advisor, students may transfer up to two courses from outside JHU provided that they were completed after the undergraduate degree was conferred and have not been applied to a degree elsewhere. These courses cannot count for the 520.xxx requirement.

6. Note that the ECE department does not allow Bachelor's/Master's double counting of courses. Students in the combined B.S.E./M.S.E. program can take courses concurrently for the two degrees, but each course may only count for either the B.S.E. or M.S.E. program.

7. Every graduate course designated Independent Study, Dissertation Research, or Special Studies counted toward the M.S.E. degree must include a written report. A copy of the report will become a part of the student's permanent file.

8. Every student must be registered in the semester that degree requirements are met; this includes students who have no courses remaining in which to enroll but must resolve coursework for which an "Incomplete" grade was assigned and those who must complete other academic requirements, such as a language or computing requirement (these students may apply for Nonresident Status).

3.3. Part-Time Status and Tuition

Master's students of the Department of Electrical and Computer Engineering may become eligible for part-time status.

"ALL-COURSE" MASTER'S STUDENTS
- Master's students must register full-time for all semesters with a minimum of nine credits. If in a student's final semester, a student needs fewer than nine credits to complete the degree requirements, the student can switch to part-time status.

"ESSAY/PROJECT" MASTER'S STUDENTS
- After meeting the minimum two-semester "full-time" residency requirement - where a student pays full-time tuition for a minimum of two semesters - Whiting School master's students who have not yet completed the research to the point where the final and sole activity is essay/project writing must maintain their "residency" status, but can register

as "part-time" students by registering for eight credits or less per semester.

PART-TIME TUITION (2017-2018 academic year)
- Students who enroll as part-time students are charged $5,220 minimum for up to 3 credits; then $1,740 per credit after minimum tuition

PART-TIME RESTRICTIONS
- Students are ineligible to work as a student worker, including as a Course Assistant.

HOW TO OBTAIN PART-TIME STATUS
- Contact Academic Program Administrator Debbie Race to confirm eligibility to switch.
- International students must first obtain approval from the International Office.

RESOURCES
- Whiting School Graduate Credit Hours: http://homewoodgrad.jhu.edu/academics/wse-graduate-credit-hours/

3.4. Non-Residency Status and Tuition

"ALL-COURSE" MASTER'S STUDENTS
- Students taking the "all-course" master's degree are not eligible for non-residency status.

"ESSAY/PROJECT" MASTER'S STUDENTS
- Whiting School graduate students are eligible for non-residency status when all degree requirements except the writing of the master's essay/project are complete. The essay/project research must be finished before the non-resident status can be requested.
- Whiting School graduate students are typically granted only one semester of non-residency with the expectation that the essay/project will be written, read, and approved in that semester. The Whiting School will consider exception requests for an additional semester of non-residency.

NON-RESIDENT TUITION
- Non-resident students pay only 10% of the full-time tuition but have all the privileges of full-time students including access to campus services and faculty advising.

NON-RESIDENT RESTRICTIONS
- Non-resident students cannot enroll in courses; they also lose the Whiting School's financial support for health insurance.
- Non-resident students are automatically enrolled in health insurance, but can waive the insurance, if eligible for waiver by proof of enrollment in another health insurance plan with similar coverage.
- To maintain non-resident status, students will have to register for non-resident status

each semester and provide a letter explaining their progress toward the degree's completion.

HOW TO OBTAIN NON-RESIDENT STATUS
- Contact Debbie Race to confirm eligibility for non-resident status.
- Complete the Non-Resident Status for Whiting School form, which Debbie will send to the Whiting School Academic Affairs office for review and approval.
- If the Non-Resident request is denied, a student may be eligible for part-time status.

RESOURCES
- Graduate Residency and Registration Policies: http://homewoodgrad.jhu.edu/academics/graduate-board/new-grad-board-residency-page/
- Graduate Board Forms, which include the Non-Resident Application and the Non-Resident Annual Report: http://homewoodgrad.jhu.edu/academics/graduate-board/policies-and-forms/
- Whiting School of Engineering Policy on Health Insurance page: http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/ (then select the Health Insurance tab)

3.5. M.S.E. Essay
3.5.1. M.S.E. Essay Reader

The ECE department requires one official reader. This is the person who supervised the student's project. This must be a member of the Department's primary or secondary faculty.

3.5.2. Submission and Printing of Essays

Masters essays may only be submitted electronically. For information, contact David Reynolds, the Library ETC Coordinator at 410-516-7720 or dissertations@jhu.edu.

3.6. Degree Completion
3.6.1. Degree Completion Deadlines

The master's degree completion schedule and deadlines are available at http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/. Be sure to meet the deadlines when completing your degree and related applications to graduate.

3.6.2. Degree Completion Time Limit

The Whiting School of Engineering states that students must earn the master's degree within five consecutive academic years (10 semesters). Only semesters during which a student has a university-approved leave of absence are exempt from the ten semester limit; otherwise, all semesters from the beginning of the student's graduate studies—whether the student is resident or not—count toward the ten semester limit.

3.6.3. Degree Completion Forms

Students who have completed the requirements for the M.S.E. degree should complete both the "Application for Graduation" form, through their SIS record, and the "Certificate of Departmental Approval" form.

4. Ph.D. DEGREE PROGRAM

The Ph.D. requirements apply to all part-time and full-time students in the program. Time limits, however, are stated in the context of full-time graduate study. Time limits for part-time programs must be individually arranged with the student's advisor and the Director of Graduate Studies. The Ph.D. degree certifies that the holder has demonstrated research capability. Accordingly, the Ph.D. requirements are used as checkpoints leading the student through this research experience. Because students tend to spend more than ample time on the path to research, several requirements prescribe time limitations. The requirements stated below include university-wide requirements for the Ph.D.

4.1. Degree Requirements

To fulfill the requirements for the Ph.D. degree in ECE, the student must:

Satisfy the University Ph.D. residency requirement and the Departmental course load requirements.

Residency: Once students begin their graduate course of study toward a degree, they must complete a minimum of two consecutive semesters of registration as a full-time, resident graduate student. To qualify as a resident student, the student must be present on campus and working toward fulfilling the requirements for the degree. Complete information is available on the JHU Graduate Board's website at http://homewoodgrad.jhu.edu/academics/graduate-board/

Coursework: All full-time students must satisfactorily complete at least nine credits per semester (fall/spring) until they have a Research Advisor. Additionally, students must enroll in the ECE Departmental Seminar (520.600) during this time. Until the Departmental Examination is passed, no more than one Independent Study course per faculty member can be counted toward these three courses.

A course is satisfactorily completed if a grade from A+ to C- or a "P" is obtained. Grades of D or F or a second C+ (or lower) result in probation. Receiving a grade of C+ or lower in any further course will result in the student's termination from the program.

4.2. Ph.D. Departmental Qualifying Examination

Pass the Departmental Qualifying Examination before the beginning of the fifth semester of graduate study.

The student must select and complete the examinations posed by <u>three examiners eligible to supervise doctoral dissertations</u> in the Department of Electrical and Computer Engineering (see lists in §13), of which at least <u>two must be tenure-track ECE faculty</u> (listed in §13.1). The respective examiners grade completed examinations, but it is the ECE Department faculty that makes a collective decision on whether the student has adequately fulfilled the Departmental Qualifying Examination requirement. This decision involves the student's cumulative academic performance in the graduate program, as well as performance on the examination. The Departmental Qualifying Examination cannot be taken more than twice. The fall and spring qualifying examinations are given over a period of seven days immediately preceding the start of classes.

A student can take the Departmental Qualifying Examination only if enrolled in the Ph.D. program and not on probation.

Select a Research Advisor before the end of the semester in which the student met the Departmental Qualifying Examination requirement.

A student cannot have a Research Advisor before passing the Departmental Qualifying Examination. Passing a particular examiner's Departmental Qualifying Examination implies that the examiner is willing to become the Research Advisor of the student for at least six months. The Research Advisor sets requirements for the remainder of the program. These may include a teaching requirement, particular coursework, a reading program, or a preliminary research project.

Note: Either the student or the Research Advisor can discontinue the relationship for any reason. When a Student-Research Advisor relationship is discontinued, a new Research Advisor must be selected within two months. Note that once the student chooses a research advisor, the student must obtain a research advisor form from the Academic Program Administrator, have their advisor sign the form and then return it to the Administrator.

4.3. Ph.D. Graduate Board Oral Examination

Take the Graduate Board Oral Examination before the end of the sixth semester.

The purpose of the examination is to test the depth and breadth of the student's knowledge and reasoning abilities. The examination typically is based on the student's course background, but may include the proposed dissertation topic. The examination is conducted by five faculty members: <u>two ECE professors and three from outside the Department</u>. The outside committee members must be from at least two different departments. One departmental alternate and one outside alternate are also required. The members of the GBO examination committee are selected by the Chair or Director of Graduate Studies and approved by the Chair of the Graduate Board. Although consultation with candidates and their faculty advisors regarding possible exam committee members is appropriate, election

of the committee is the Department Chair's responsibility and is not the candidate's responsibility or prerogative.

Students preparing to take the GBO must contact Academic Program Administrator Debbie Race to make arrangements at least five weeks prior to the intended exam date. Five weeks' notice will allow time to confirm availability of the proposed examiners and notify the Graduate Board by their notification deadlines. The Administrator is responsible for finding a room and submitting the form entitled *Oral Examination for Degree of Doctor of Philosophy* to the Graduate Board Office.

The Graduate Board chooses a GBO committee chair from among the three committee members that are not from the ECE Department, and sends an information letter and the GBO report form back to the Administrator who forwards a copy to the chair of the examination committee. The Administrator sends a confirmation email to all the committee members, committee alternates, and the candidate.

The possible outcomes of the GBO examination include: an unconditional pass, a conditional pass (with the requirements to be met written down on the report form), or failure. In the latter case, if the chair of the GBO committee recommends reexamination, he/she must indicate with whom and when. At least one person from the original committee must be on the next committee. The Graduate Board does not allow more than two examinations. After the GBO examination, the chair of the GBO committee submits the original signed GBO report form to the Administrator, where a copy will be placed in the student's file, and updates the ECE graduate student list.

At least one committee member from outside the department must be an Associate Professor or higher (to satisfy the requirement that the committee chair must be an Associate Professor or higher). Note that for GBO examination committee purposes, the research advisor is counted as a member of the ECE Department. The Graduate Board *must approve* any committee member who is either from outside the university or who is from a department, laboratory or institute within Johns Hopkins that does not sponsor a Ph.D. program. The Director of Graduate Studies or Department Chair must provide a letter describing the need for a non-Hopkins committee member, a CV, and the examination form must be submitted to the Graduate Board *four weeks* before the proposed examination. At most one committee member must need approval by the Graduate Board. Note that a committee member that has a joint appointment in a JHU Ph.D. sponsoring department does not need to be approved by the Graduate Board. For more information, consult the following website:
http://homewoodgrad.jhu.edu/academics/graduate-board/graduate-board-oral-exams

4.4. Ph.D. Preliminary Research Proposal

Submit a Preliminary Research Proposal before the start of the seventh semester of graduate study.

The purpose of the preliminary research proposal is to ensure that the student is planning a research project that is both significant and realistic. A preliminary research proposal should contain the following:

a. **Cover Page:** The cover page of the proposal should list a proposed Dissertation Committee consisting of between three and five members, including the Research Advisor. At least two must have tenure-track appointments and three have Ph.D. supervising privileges in the ECE Department (see §13.2).
b. **Project summary:** The proposal must contain a summary of the proposed research, not more than one page in length. This should be a self-contained description of the research to be undertaken.
c. **Project Description:** The description should state the objective of the intended research, explain why the topic selected is of interest, provide a brief overview of what has already been done in the area, indicate how the student plans to conduct the research, and provide a rough time table.
d. **Page limits:** The project description may not exceed fifteen (15) pages. These page limits include references, figures, and tables. Text should not be smaller than 12pt, with 1" margins throughout.

The proposal must be submitted during the first week of the student's seventh semester to the Administrator who will distribute it to the proposed committee members for evaluation. The committee will evaluate the proposal, and submit a written report to the faculty. Based on the recommendation of the committee, the faculty will vote on whether to approve the proposal. If approved, the student will have met the requirements for the Preliminary Research Proposal and a Departmental Seminar will be scheduled (item 5.5, below). If not approved, the student will be given feedback, but will be allowed to submit a second Preliminary Research Proposal. Failure to meet the requirements a second time will result in dismissal of the student from the ECE doctoral program.

While it is envisioned that members of the Dissertation Committee will continue until the Dissertation defense (item 5.6, below), changes can be made at any time before the dissertation is submitted, with approval of the faculty.

4.5. Departmental Seminar

Present a Departmental Seminar within one semester after having the Preliminary Research Proposal approved.

The Departmental Seminar is a public presentation of the student's proposed research. Its purpose is to provide an opportunity for the student to present the research to an audience unfamiliar with the student's work, as opposed to a 20-minute conference talk to experts – similar to what might be experienced at a job interview. Also, it affords the student an opportunity to demonstrate how the proposed research is progressing. Finally, it provides an opportunity for others in the department to become familiar with the student's work. A

majority of the members of the Dissertation Committee are required to be present at the student's Departmental Seminar; other faculty members and all graduate students are encouraged to attend. At the conclusion of the seminar, all ECE faculty members present meet to vote on whether the student has passed the proposal and seminar requirements. The faculty may take into consideration the knowledge displayed by the student of the proposed research and whether the successful completion of the proposed research would satisfy the dissertation requirement. A student may be requested to prepare another research proposal and/or seminar if the faculty decides that the research proposal and seminar requirement were not satisfied, or if the student makes a major change in research topic.

The seminars are held on Tuesday and Thursday afternoons at 3pm. Students should give a title and abstract to the Administrator at least two weeks before it is to be presented.

4.6.   Ph.D. Dissertation Defense

Submit a Dissertation and successfully complete a Public Dissertation Defense.

a.   Dissertation defense preparation steps are available at
     http://engineering.jhu.edu/ece/dissertation-defense-preparation
b.   All international students must visit the International Office at least two months in advance of the defense date to ensure that their visa status and application for their EAD card and Optional Practical Training is in place.
c.   The guidelines for the preparation of dissertations can be obtained from
     http://guides.library.jhu.edu/etd/formatting
d.   **The dissertation must have two Dissertation Readers with the first reader being the Research Advisor.** The Director of Graduate Studies approves the choice of readers nominated by the Research Advisor.

     The Graduate Board specifies that:

     The two principal readers are responsible for submitting a written report recommending acceptance of the dissertation. The report should testify that the work is a significant contribution to knowledge worthy of publication in its present form or with appropriate modifications and that it is worthy of acceptance in partial fulfillment of the University requirements for the Ph.D. It must contain the student's full name and the complete final title of the dissertation. The letter must be on letterhead, signed by both readers, and include the readers' ranks, titles, departments, and schools.

e.   The student submits a copy of his Ph.D. dissertation, the readers' letter, the names of the Dissertation Committee, and an abstract of the dissertation (used for the defense announcement) to the Administrator, who informs the faculty by email that the dissertation and readers' letter are available in the department office (Barton 105), schedules the Dissertation Defense, and is responsible for producing and posting the

announcement of the defense. Note that there will be a minimum of three weeks needed between this submission and the dissertation defense described next.

f. Once the Dissertation Committee has been approved, the Administrator prepares the Doctoral Dissertation Defense Report Form. The Dissertation Committee administers a Public Dissertation Defense no sooner than three weeks after submission of the dissertation, following which the Dissertation Committee votes on the acceptance of the dissertation. The chairman of the Dissertation Committee is responsible for getting the Doctoral Dissertation Defense Form from the Administrator, signing the form, and returning it to the Administrator.

g. Dissertations will be submitted only by electronic media. Hardbound books will not be printed on campus, but information will be provided on where dissertations can be printed and bound. The library will do some brief format checking. They will then approve the submission or email you about necessary changes. For information, see http://www.library.jhu.edu/library-services/electronic-theses-dissertations/.

5. MISCELLANEOUS ACADEMIC INFORMATION

5.1. Departmental Seminars

Part of the Johns Hopkins graduate experience is to become informed about the research done by others, both here at Johns Hopkins and at leading institutions worldwide. The ECE Department hosts Ph.D. student proposal seminars on Tuesdays and Thursdays during the fall and spring semesters.

There are also a number of distinguished seminars in the department and regular seminars in other departments and Centers that may be of interest.

M.S.E. students are encouraged, although not required, to attend at least some of these seminars.

5.2. Course Assistant Positions

To assist in the teaching function of the Department, Course Assistant (CA) opportunities are provided to students to grade homework and papers, conduct laboratories and hold office hours. CAs are remunerated for their efforts. Any position openings are announced at the beginning of each semester.

5.3. Ethics

Graduate students are expected to be aware of academic ethics and of actions that constitute unethical behavior. In brief, students must submit work that represents their own efforts. When ideas and/or results are drawn from other sources, those sources must be cited in the submitted work. Students may not collaborate or discuss solutions of any assignment prior to submission without explicit permission from the instructor. Use of email is to be strictly

professional in nature. Unprofessional or inappropriate email will be considered a violation of University ethical policies.

Violations of academic ethics can have a severe impact on a student's program beyond the penalties described below. Those involved in unethical behavior will lose the confidence of the faculty and may be unable to find any faculty member willing to serve as their Research Advisor.

Faculty members will usually deal directly with students suspected of unethical behavior in their courses and will assign an appropriate penalty. The penalty may be failure in the assignment or examination or failure in the course. Faculty and students may seek the assistance of the Department Chair when agreement on the charges and penalties cannot be reached. In all cases, a summary of the charges and penalties will be placed in the student's permanent file.

Information about academic policies of the Whiting School of Engineering can be found at http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/. Please read them.

5.4. Graduate Student Annual Review Policy

The Johns Hopkins University and Whiting School of Engineering require that once per academic year, all full-time Homewood graduate programs carry out a written review of all doctoral and master's students conducting thesis research. The review includes the opportunity for the student to offer self-evaluation.

5.5. Academic Deadlines

Students preparing to complete a degree program in a given semester should see the Administrator to ensure that all necessary forms and requirements have been completed and submitted *prior* to the academic deadlines for the semester. The deadlines to submit all certification material are usually:

- Fall (late-October)
- Winter (mid- to late-January)
- Spring (early-April for Ph.D., early-May for M.S.E.)
- Summer (late-August)

Students who have not completed their requirements by the first day of classes must register for the current semester. Those who complete their requirements prior to the October deadline will receive a full tuition refund for the fall semester, including any non-resident status fees. Tuition paid from departmental funds or research grants will also be refunded.

Those who have completed their requirements in the summer or fall will receive an interim

certificate from the registrar's office indicating that all requirements have been met, and notation will be made on their transcript. Diplomas are awarded once a year, at the May Commencement. Additional information is available at http://homewoodgrad.jhu.edu/academics/graduate-board/deadlines

6. FINANCIAL AID

The Graduate Admissions and Fellowships Committee in the department make decisions on financial aid. Among other actions, this committee awards departmental fellowships to newly admitted students. Students may be supported with departmental fellowship funds for up to two semesters. The continuation of this support into the second year is contingent on the student's academic performance during the first year. The faculty periodically reviews students, and decisions for continued support are based on performance in course work. After the second semester, students are expected to receive support from grants and contracts of their research advisors. Decisions by the Committee are made during the spring semester of each year. The University, Department, and Research Advisor share in supporting the student during his/her stay. It should be noted that after the student's seventh year, the University may reduce its tuition support. The student should be aware that after the seventh year, special measures need to be taken in order to ensure continued financial support.

The Office of Student Financial Services has other financial aid sources available. Any enrolled or accepted graduate student who is a U.S. citizen, U.S. permanent resident, or eligible non-citizen may apply for federal and state financial aid. Sources of aid, eligibility requirements, applications, and other information are available at https://finaid.jhu.edu/

7. PAYROLL

Paychecks are distributed semi-monthly, on the 15th and the last day of the month. If payday falls on a weekend or holiday, paychecks are distributed the last regular working day preceding the payday. For your convenience, Direct Deposit to your bank account is available; visit https://orchid.hosts.jhmi.edu/stujob/seoform/directDeposit.pdf for direct deposit forms.

Many of our graduate students are paid a salary; a few are paid a stipend. Please make sure you understand whether you receive a *salary* or a *stipend*. The difference may have important tax ramifications, particularly for international students. International students may contact the Office of International Student and Scholar Services at 410-516-1013, or the Tax Office at 443-997-8442 for assistance.

7.1.   Salaries

The department determines the salaries for Research Assistants. Research Assistants are paid from the research funds of their particular advisor.

Salaries are subject to Federal and State tax withholding, which is done automatically through the Payroll Office and will be reflected on the pay stub. U.S. students will want to complete a

W-4 Federal Tax withholding form and a MW-507 Maryland State withholding form and return them to the Student Employment Services office in the basement of Garland Hall. If you do not submit these forms, Payroll will tax you at the higher default rate.

7.2. Stipends

Stipends are paid to those students on Departmental or other Fellowships.

> *NOTE: Stipends usually have no income or other tax withheld.*
> *Students on fellowships are responsible to file and pay taxes.*

Students receiving stipends may have to file quarterly withholding reports with the Internal Revenue Service. For information contact the Tax Office at http://finance.jhu.edu/depts/tax/fellgrad_adm.html, 443-997-8442, or tax@jhu.edu.

8. SECURITY

While the Hopkins Security Department provides ample and appropriate security to the campus, they remind us that we must play our part. Please exercise common sense when entering and leaving your office, classrooms, and labs.

- When you leave your office, if you are the only one there, lock the doors even if you leave only for a minute! Thefts take only a few seconds and valuable equipment and your work can disappear instantly.
- Secure your computers, especially laptops! Take your laptops with you when you leave your office.
- Back up your work onto separate disks or systems in case something happens to computer via virus, equipment problems, or theft. The University provides free anti-virus software that can be downloaded from the website at http://it.jhu.edu.
- Lock your car and don't leave any items inside your car in plain sight. Secure them in your trunk or bring them with you.
- Secure your personal items such as your purse, wallet, books, equipment, and your coat or jacket.
- If you see someone suspicious in your lab or office, don't confront the individual, contact Security at 410-516-7777 right away. Your personal safety is most important.
- If you are uncomfortable walking through campus or to your car at night or otherwise are concerned for your safety, the Security department provides escort services to selected locations. Call 410-516-8700 to arrange for an escort.

9. MISCELLANEOUS INFORMATION
9.1. Academic Information

Further academic information can be found in the JHU catalog. The ECE office has other information that may be of interest to graduate students. This includes faculty vitas and files of previous Departmental Qualifying Examinations.

9.2.   Student Employment

Apart from the graduate student support mechanisms discussed earlier, opportunities for part-time employment opportunities arise within the University, and in the Baltimore/Washington area. Normally, opportunities known to the department are posted and/or communicated informally. A wise student will let his advisor and other faculty members know of his interests. The faculty believes these additional jobs can cut heavily into the time, energies, and concentration available for the Ph.D. program if not appropriately moderated. Therefore, students should discuss their plans with their advisors. In addition, the following regulations have been adopted:

- Full-time graduate students are permitted no more than 20 hours per week of additional employment.
- Full-time graduate students enjoying nominally full support by the University are permitted no more than eight (8) hours per week of additional employment.

The Student Employment Services office offers opportunities for employment for many positions on the campus. They will help you determine your work eligibility. Their office is located in the basement of Garland Hall, and their website is located at https://studentaffairs.jhu.edu/studentemployment/.

9.3.   Library Facilities

The Milton S. Eisenhower Library makes available to the ECE Department a number of carrels (desks with lockers) each year. The assignment of carrels is made in August or September, and graduate students interested in obtaining a carrel should notify the Administrator. The Library also purchases books and journals based on departmental requests. Student requests for books or journals should be communicated to the advisor or directly to the faculty member designated for Library Liaison, Dr. Howard Weinert.

9.4.   Computer Facilities

There are plenty of computing facilities and services available to the Johns Hopkins community. The Information Technology website at http://it.jhu.edu offers an overview of the IT Organization, its projects and services, support for applications and general questions, and news about emerging technologies and strategic imperatives, as well as e-mail, web, and file sharing services.

9.5.   Information Technology

The Information Technology Department at Johns Hopkins provides email services through the Johns Hopkins Enterprise Mail (JHEM) server. A JHEM account can be activated once you have a J-Card. To activate your JHEM account, go to https://my.jh.edu/portal/web/jhupub and follow the instructions for first time logins.

9.6. Academic Computer Lab – Krieger Hall

The Krieger Computing Lab located in Krieger Hall is maintained by HITS. No account is required, just a student ID, for use of the 130 workstations which have basic office and imaging applications.

10. STUDENT DISABILITY SERVICES

The Office of Student Disability Services (SDS) assists full-time undergraduate and graduate students in the Krieger School of Arts and Sciences and the Whiting School of Engineering with disability concerns, in compliance with the provisions of the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973. SDS assists the University community in understanding the effects of disabilities and in eliminating the physical, technical, attitudinal and programmatic barriers that limit the range of opportunities for students with disabilities, as well as provides individuals with reasonable accommodations. The SDS maintains and protects the confidentiality of individual records as required by law. For additional information and to access the services of the SDS office, please see their website at http://web.jhu.edu/disabilities/index.html or contact them at 410-516-4720 or studentdisabilityservices@jhu.edu. You may also visit their office in 385 Garland Hall.

11. GROUPS AND ACTIVITIES

11.1. Institute of Electrical and Electronics Engineers, Inc. (IEEE)

The Johns Hopkins University student chapter of the Institute of Electrical and Electronic Engineers strives to promote the career opportunities available and to raise awareness of new developments in the field among electrical and computer engineering students by fostering interaction among students, faculty, employers and professional engineers.

Graduate students are invited to join the student chapter of the IEEE. Applications are available in the ECE Department office.

11.2. University and Department Graduate Student Representative

Each year the graduate students elect a full-time Ph.D. student to serve as a departmental representative to the University's Graduate Representative Organization. The GRO, whose website is http://gro.jhu.edu, is an advocacy group for all graduate students. The GRO serves the student body as a liaison to the University's schools, administration, and dean's offices as well as hosts social activities and provides extensive information about life on campus and in and around Baltimore. Each department sends a graduate student representative to serve in the GRO, and an announcement is made each year as to who will represent the department. You are welcome to forward to the representative your questions and concerns, which will be presented at GRO meetings.

11.3. Extracurricular Activities

Many groups and organizations throughout the University provide ample opportunities for social times and fun. Check out these websites for information:

- Campus Life - https://www.jhu.edu/life
- Arts and Culture - https://www.jhu.edu/life/arts-culture
- Baltimore Area Convention and Visitors Association - http://baltimore.org
- Baltimore Office of Promotion and the Arts - http://promotionandarts.org

12. NOTICE OF NONDISCRIMINATION POLICY STATEMENT

The Johns Hopkins University admits students of any race, color, gender, religion, national or ethnic origin, age, disability, or veteran status to all of the rights, privileges, programs, benefits, and activities generally accorded or made available to students at the University. It does not discriminate on the basis of race, color, gender, religion, sexual orientation, national or ethnic origin, age, disability, or veteran status in any program or activity, including the administration of its educational policies, admission policies, scholarship and loan programs, and athletic and other University-administered programs. Accordingly, the university does not take into consideration personal factors that are irrelevant to the program involved.

Questions regarding access to programs following Title VI, Title IX and Section 504 should be referred to the Office of Affirmative Action for the University, responsible for the coordination of equal opportunity programs, 205 Garland Hall, (410) 516-8075.

13. ELECTRICAL AND COMPUTER ENGINEERING PERSONNEL
13.1. Tenure and Tenure-Track Faculty

Andreas G. Andreou, Professor
Muyinatu Bell, Assistant Professor
Najim Dehak, Assistant Professor
Mounya Elhilali, Associate Professor
Ralph R. Etienne-Cummings, Professor and Chair
Amy C. Foster, Assistant Professor
Mark A. Foster, Associate Professor
John I. Goutsias, Professor
Hynek Hermansky, Julian S. Smith Professor
Pablo A. Iglesias, Edward J. Schaefer Professor
Jin U. Kang, Jacob Suter Jammer Professor
Sanjeev P. Khudanpur, Associate Professor
Jacob B. Khurgin, Professor
Enrique Mallada, Assistant Professor
Jerry L. Prince, William B. Kouwenhoven Professor
T. E. Schlesinger, Professor and Benjamin T. Rome Dean

Susanna Thon, Assistant Professor
Trac D. Tran, Professor
Archana Venkataraman, Assistant Professor
Howard L. Weinert, Professor
James West, Professor

Note that all tenure-track faculty members are eligible to supervise doctoral dissertations in the ECE doctoral program.

13.2   Joint and Secondary Appointments

Emad M. Boctor, Assistant Professor, JHU SOM Radiology
Paul A. Bottomley, Professor, JHU SOM Radiology
Sang (Peter) Chin, Assistant Research Professor
A. Brinton Cooper III, Associate Research Professor
Noah I. Cowan, Associate Professor, Mechanical Engineering
Nicholas Durr, Assistant Professor, Biomedical Engineering
Eric C. Frey, Professor, JHU SOM Radiology
Gene Fridman, Assistant Professor, JHU SOM Otolaryngology
Dennice F. Gayme, Assistant Professor, Mechanical Engineering
Donald Geman, Professor, Applied Mathematics and Statistics
Gregory D. Hager, Mandell Bellmore Professor, Computer Science
Marin Kobilarov, Assistant Professor, Mechanical Engineering
Xingde Li, Professor, Biomedical Engineering
Michael I. Miller, Herschel and Ruth Seder Professor, Director, Biomedical Engineering
Carey E. Priebe, Professor, Applied Mathematics and Statistics
Arman Rahmim, Associate Professor, JHU SOM Radiology
Suchi Saria, Assistant Professor, Computer Science
Nitish V. Thakor, Professor, Biomedical Engineering
Benjamin M.W. Tsui, Professor, JHU SOM Radiology
René Vidal, Professor, Biomedical Engineering
Raimond L. Winslow, Professor, Biomedical Engineering

13.3. Department Staff

Nicole Aaron, Administrator, naaron1@jhu.edu
Melissa Gibbins, Administrative Coordinator, mgibbin1@jhu.edu
Laura Granite, Administrative Coordinator, granite@jhu.edu
Makea King, Communications Specialist, mking51@jhu.edu
Cora Mayenschein, Senior Research Service Analyst, coram@jhu.edu
Eileen Miller, Administrative Coordinator, emiller@jhu.edu
Debbie Race, Academic Program Administrator, drace@jhu.edu
Sathappan Ramesh, Senior Laboratory Coordinator, sramesh@jhu.edu
Dana Walter-Shock, Senior Academic Program Coordinator, dwalte10@jhu.edu

14. ECE MASTER OF SCIENCE IN ENGINEERING GRADUATION PROCESS

1. The candidate gets the "Certificate of Departmental Approval, Master of Science in Engineering Degree Program in Electrical and Computer Engineering" form from the ECE website at http://engineering.jhu.edu/ece/departmental-forms

2. The student fills out the "Certificate of Departmental Approval, Master of Science in Engineering Degree Program in Electrical and Computer Engineering," has it approved and signed by his/her advisor, and gives the form to the Administrator.

   If Option B, written master's essay is chosen, essays will be submitted only by electronic media. Hardbound books will not be printed on campus, but information will be provided on where they can be printed and bound. The library will do some brief format checking. They will then approve the submission or email you about necessary changes. For information, see http://www.library.jhu.edu/library-services/electronic-theses-dissertations/.

   If Option C, completion of a special project report is chosen, the candidate gives a copy of the report to the Administrator, who makes a copy of the title page for the WSE Graduate Committee, and files the report in the candidate's departmental file.

3. The candidates apply for graduation through their SIS record.

4. Documentation submitted to the WSE Graduate Committee by the Administrator:

   - "Certificate of Departmental Approval Master of Science in Engineering Degree Program in Electrical and Computer Engineering" form
   - "Certification of Completion of Departmental Requirements for Master's Degree in Engineering" form
   - Title page of special project report or master's essay, if applicable
   - The student's transcript

Deadlines for Terminal M.S.E. Degree

End of August: If M.S.E. paperwork is submitted by that deadline, the student need not register for classes for the fall semester and may request an interim certificate in December.

Beginning of September: Student must register for classes if M.S.E. paperwork has not been submitted. If the student intends to submit M.S.E. paperwork by the mid-October deadline, the student may request a tuition waiver.

Mid-October: If M.S.E. paperwork is submitted by this deadline, the student is entitled to a tuition refund and may request an interim certificate in December.

Mid-January: If M.S.E. paperwork is submitted by this deadline, the student need not register

for classes for the spring semester.

Early May: Deadline to submit M.S.E. paperwork in order to get a degree in May.

15. Ph.D. DEGREE REQUIREMENTS SUMMARY

To fulfill the requirements for the Ph.D. degree in ECE, the student must:

1. Satisfy the University Ph.D. residency and the Department course load requirements.
2. Pass the Departmental Qualifying Examination and select a Research Advisor.

   - Departmental Qualifying Examination: The student must select and complete the examinations posed by three examiners eligible to supervise doctoral dissertations in the ECE Department, of which at least two must be tenure-track ECE faculty.
   - Research Advisor Selection: The Research Advisor must be eligible to supervise doctoral dissertations in ECE.

3. Pass the Graduate Board Oral Examination.

4. Submit a Preliminary Research Proposal and a proposed Dissertation Committee consisting of between three and five members, including the Research Advisor. At least two must have tenure-track appointments (from the list in §13.1) and three have Ph.D. supervising privileges in the ECE Department (from list in either §13.1 or §13.2.).

5. Successfully present a Departmental Seminar.

6. Submit a dissertation and successfully complete a Public Dissertation Defense.

   - The dissertation must have two Dissertation Readers with the first reader being the Research Advisor.
   - The Dissertation Committee administers a Public Dissertation Defense and votes on the acceptance of the dissertation.

16. CHANGES TO PROGRAM REQUIREMENTS

1. **Regulation 8.d.**

   The dissertation must have two Dissertation Readers with the first reader being the Research Advisor. ~~The two readers must be eligible to supervise doctoral dissertations in the Department of Electrical and Computer Engineering, and at least one reader must be regular, tenure track ECE faculty~~.

   Approved by faculty vote at faculty meeting, September 4, 2008

2. **Regulation 6.1. b.**

Coursework: All full-time students must satisfactorily complete at least three graduate courses per semester until they have a Research Advisor. <u>Students must enroll and complete satisfactorily the ECE Departmental Seminar (520.600) during this time</u>. Until the Departmental Examination is passed, no more than one Independent Study course per faculty member can be counted toward these three courses. Added the requirement for the ECE Departmental Seminar.

Approved by faculty vote at faculty meeting, February 19, 2009

3. **Regulation 6.8.e-g.**

- From c) "The student submits a copy of his Ph.D. dissertation, the dissertation readers' letter"
- From d) "The Dissertation Committee consists of at most five members, must include the two Dissertation Readers, and must include at least three regular tenure-track ECE faculty members. As the members of the Dissertation Committee must be approved by a vote of the faculty, the chair polls the faculty by e-mail no sooner than two weeks after submission of the dissertation to the Administrator. "
- From e) "The Dissertation Committee administers a Public Dissertation Defense no sooner than three weeks after submission of the dissertation". The rule was clarified to state that the two readers could be approved before the dissertation is submitted. Provided that the two readers meet the departmental requirements, this is a *de facto* approval by the Director of Graduate Studies. The complete dissertation committee will continue to be voted on by the faculty no sooner than two weeks after submission of the dissertation.

Approved by faculty vote at faculty meeting, February 19, 2009