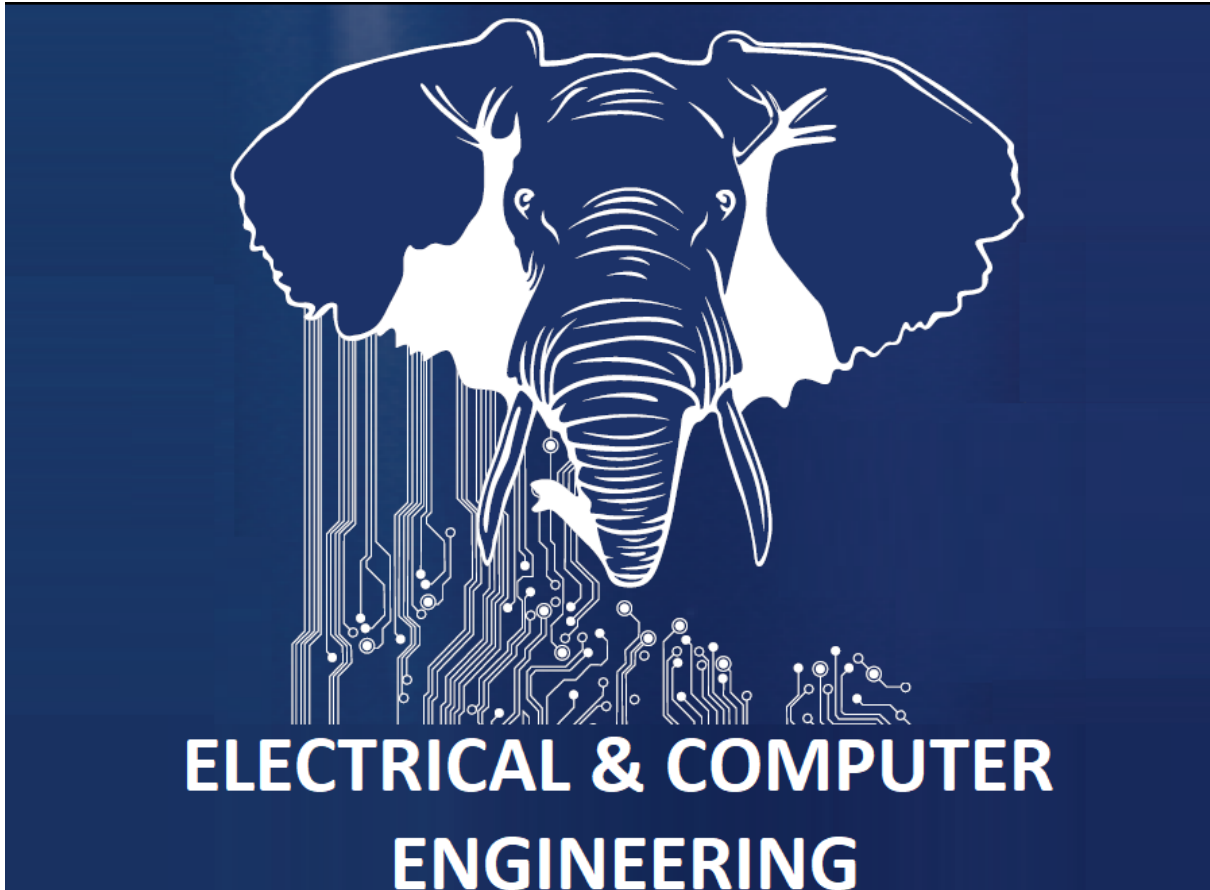




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Halligan Hall | 161 College Ave, Medford, MA 02155
617-627-3217 | ece@tufts.edu

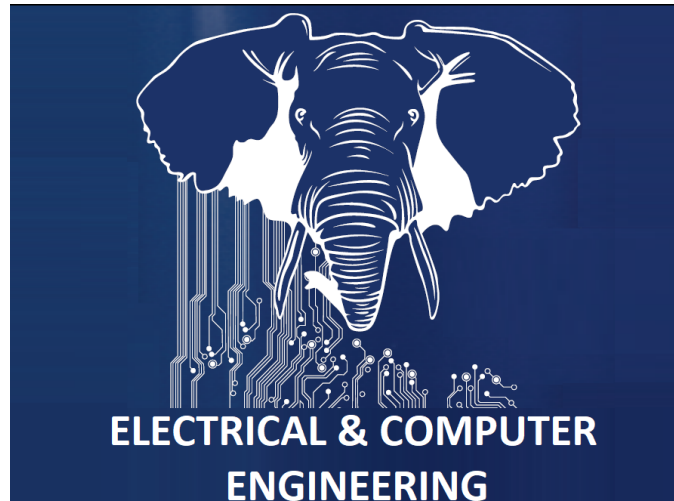
**GRADUATE STUDENT
HANDBOOK**

2019 - 2020



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Welcome

The mission of the Department of Electrical and Computer Engineering is to provide our students with educational experiences that give them a sound basis for professional practice, advanced education, and lifelong learning. At its core is the goal that students learn the fundamental principles of electrical and computer engineering and master engineering methods to solve challenging and diverse problems. Further, the department strives to have each student develop the leadership and communications skills necessary to relate these solutions to both technical and non-technical communities. The faculty is dedicated to accomplishing this mission through the integration of teaching and research.

This goal of the handbook is to help familiarize you with our department, faculty, and staff; and answer questions that you may have or direct you to other resources for further assistance and information. In addition to this document, the [Tufts Graduate Student Handbook](#) is invaluable in detailing the procedures and paperwork associated with completing your degree requirements successfully. Please keep both sources of information handy and refer to them frequently.



Graduate Programs of Study

The Department of Electrical and Computer Engineering in the School of Engineering at Tufts University offers programs of study leading to the Master of Science (MS) and the Doctor of Philosophy (PhD) Degrees. We are a growing interdisciplinary engineering department with a focus on research and education in a wide variety of sub-disciplines, all of which are discussed in depth on our [web site](#). The department gives students a unique perspective on how electrical and computer technology can be used to solve important human problems. With expert faculty, cutting-edge research, and innovative facilities, our students are given the opportunity and resources to make significant contributions to the field and become leaders in industry, government, and academia.

The department has particular strengths in the areas of materials science, computer engineering, microfabrication, VLSI design, signal processing, communication theory, electro-optics, and microwave theory, with newer facilities for research in emerging areas of bio- and nano-technology. In addition, other departments in the School of Engineering offer programs in distinctive specialties, including additional efforts in biotechnology, environmental health, hazardous materials management, product engineering, human factors, multimedia, and biomedical optics. The Tufts Graduate School also offers an interdisciplinary doctoral program that allows students to devise their course of study.



1.1 Master of Science

The department offers programs leading to the MS degree in Electrical Engineering, MS in Computer Engineering, MS in Data Science, MS in Human-Robot Interaction and MS in Material Science and Engineering. These degrees provide the opportunity for research and education in a wide variety of sub-disciplines. The department also offers a specialized track within the MS degree in Bioengineering offered by Tufts School of Engineering. The Signals and Systems track educates biotechnology engineers in the analysis and processing of signals with an emphasis on biomedical image processing and image formation, as well as, the design, control, and synthesis of systems for biotechnology.

The Master of Science degree requires thirty (30) semester-hour units (SHUs) and the fulfillment of at least ten (10) courses; At least 6 of the courses taken must have the ECE course designation, all courses must be at the 100 level or above. For full-time students, four (4) SHUs must be the Electrical and Computer Engineering Seminar. Students wishing to have the designation of “with thesis” must have identified a faculty member who has agreed to be their thesis supervisor and sign up for the MS thesis course. A maximum of twelve (12) MS Thesis SHUs may count toward the degree. This course takes the form of a creative thesis work, written and defended orally, and performed under the supervision of a faculty member. Students choosing not to complete an MS thesis may complete additional course work in the department or related departments which can include up to six (6) SHUs of MS project, six (6) SHUs of directed study, or six (6) SHUs of internship. The student’s advisor must agree upon the path chosen. Grades in all courses must be B- or better. Receiving more than two grades of less than a B- or a GPA below 3.0 is cause to be removed from the program.

Students should be aware that the scope of a master's thesis is much more involved than a master's project and it is not always possible to complete the work within a tight schedule, or predict in advance how long it might take. We, therefore, advise that those wishing to write a thesis take an optimistic, but cautious strategy. This means starting work on your project/thesis early enough in your studies.

Ideally, one would seek project/thesis ideas during the second semester, do some background reading, and even start actual work in the summer. In this way, a substantial amount of work will already be done during the summer and fall. The final approved thesis or dissertation must be submitted online. Please refer to the [Graduate Student Handbook](#) for graduation information and deadlines.

For students who intend to continue studying towards a PhD, this provides an excellent opportunity to identify topics of interest and potential supervisors within the time frame of the master's degree.



Master of Science in Computer Engineering

The department offers a program leading to the M.S. degree in Computer Engineering administered jointly by the Department of Electrical and Computer Engineering and Computer Science. The Master of Science degree requires thirty (30) semester-hour units (SHUs) and the fulfillment of at least ten (10) courses; At least 6 of the courses taken must have the ECE course designation, all courses must be at the 100 level or above. At least four lecture-based courses must be taken from a published list of computer engineering core courses. From these core courses, at least one course must be taken from each of the following three core areas: (1) Computer Networking; (2) Computer Architecture; and, 3) Computer Software/Systems. Only one bridge course (e.g. EE 200 and EE 201) may count as one of the four computer engineering core courses. Please see the program [website](#), a participating faculty member, and the attached appendix for details.

Master of Science in Data Science

The Master of Science in Data Science (M.S.D.S.), administered jointly by the Departments of Computer Science and Electrical and Computer Engineering, prepares students for future careers and/or further study in Data Science. The M.S.D.S. is a one-year program that may be completed in either 9 or 12 months of study.

The M.S.D.S. is built upon a disciplinary core of statistics and machine learning, with depth provided by courses in each of the following areas: Data infrastructure and systems; Data analysis and interfaces; Computational and theoretical aspects of data science; and, Practice of Data science.

Prerequisites for the M.S.D.S. include a Bachelor of Science degree in a Science, Technology, Engineering, or Mathematics (STEM) field. Applicants with Bachelor's degrees in non-STEM fields may begin study with a Certificate in Data Science that, in an additional term, gives the applicant a sample of the program.

Master of Science in Materials Science and Engineering

Tufts offers a program leading to the Masters of Science degree in Materials Science and Engineering (M.S.-M.S.E.), administered through the School on Engineering. This is an interdisciplinary degree program in its very nature that connects nine departments across two schools at Tufts. Students must complete thirty (30) SHUs and at least ten (10) courses, of which one (1) must come from the MSE core course list and at least another five (5) from the approved MSE course list. Both Non-Thesis and Thesis options are available. Please consult the program website for additional details.



Master of Science in Human-Robot Interaction

The Department of Electrical and Computer Engineering offers students in [Human-Robot Interaction](#) (HRI) a course-based, one-year M.S. program. The degree will stipulate "non-thesis." The Department of Electrical and Computer Engineering does not offer a thesis option in HRI. A designated faculty or staff member formally affiliated with the Department of Electrical and Computer Engineering will advise Electrical and Computer Engineering HRI students. Please consult the program website for additional details on this program.

MS Non-Thesis/Project Option	
Semester 1	Semester 2
12 SHUs of course Work ¹	12 SHUs of course Work ¹
2 SHUs EE Seminar	2 SHUs EE Seminar
1 SHU elective ²	1 SHU elective ²

¹Course work may include up to 6 SHUs of MS project, direct study or internship. At least 18 SHUs must be from EE.

²The elective credit can be used for an internship, a course, or an independent study.



1.2 Doctor of Philosophy

The department offers a program leading to the PhD in Electrical and Computer Engineering (ECE) as well as a joint PhD in Material Science and Engineering and Human-Robot Interaction. Students in the program are generally expected to have a Masters of Science (MS) degree, or equivalent advanced preparation, in ECE or a related field. Applicants to the PhD program who do not have an MS degree can be considered for admission to the MS/PhD program, wherein, they will automatically be promoted to the PhD program upon successful completion of their MS degree without the need to reapply.

The department differentiates between admission to the PhD program and PhD candidacy. No students are accepted as formal doctoral candidates until they have: (a) identified a faculty member who has agreed to be their dissertation supervisor; (b) exhibited merit through a qualifying examination process; and (c) successfully defended a PhD proposal. The qualifying examination (PhD Qual) must be taken within one academic year of admission to the PhD program (within two academic years for part-time students, see Table 2), unless delayed with the advisor's permission.

Under the direction of their advisor and with the guidance of the Research Committee (RC), doctoral candidates are expected to plan a program of research. The table below provides a timeline, including various terms and processes.



Student starting with a BS degree (or equivalent) and planning to complete a PhD

MS	Action to be taken	Notes:
Y1	Form RC by end of 2 nd semester	
	Meet with committee by end of summer (Sept. 15 th)	
Y2	Finish MS and/or meet with RC by end of summer	Defer only with advisor's consent
Y3	Take PhD Qual in Jan.	MS Year 3 = PhD Year 1
	Finish MS, if not done in Y2 and/or meet with RC by end of summer (Sept. 15 th)	Only if continuing on to PhD

Students Starting with MS degree (or equivalent)

PhD	Action to be taken	Notes:
Y1	Take PhD Qual in Jan.	Defer only with advisor's consent
	Form RC by end of 2 nd semester	
	Meet with committee by end of summer (Sept. 15 th)	
Y2	Defend Proposal by end of summer (Sept. 15 th)	RC's approval of project
Y3	Pre-Defense meeting 6-12 months before Dissertation OR meet with RC by end of summer (Sept. 15 th)	Garner RC's permission to defend
Y4	Defend PhD Dissertation OR Pre-Defense meeting 6-12 months before Dissertation OR meet with RC by end of summer (Sept. 15 th)	Garner RC's permission to defend OR Defense with the DC
Y5+	Defend PhD Dissertation OR Pre-Defense meeting 6-12 months before Dissertation	Garner RC's permission to defend OR Defense with the DC

Abbreviations

RC Research Committee

DC Defense Committee

Y Year

Advisor:

Each PhD student should start under the guidance of an advisor approved by the ECE department. The student will do research under the direction of the advisor and write a dissertation about that work. A Dissertation Committee (see below) will read the dissertation and the student must defend the work in an oral presentation to the committee and all who are interested.

Research Committee:

All graduate students planning to complete a PhD in the ECE department (whether they started with a BS, MS, or equivalent) must assemble a Research Committee (RC) by the end of the second semester at Tufts, with the consultation of their advisor.

The Research Committee (RC) consists of three people:

1. Advisor;
2. ECE faculty member in the same, or a similar, area of study; and
3. An unrestricted member (faculty or equivalent), inside/outside ECE or outside Tufts, who is chosen jointly by the advisor and student.

Graduate students must meet with their Research Committee yearly to assess their progress. This meeting should occur between May 1st and September 15th. At this meeting, the Research Committee will complete a [Research Progress Form](#) (available in the Appendices) after spending 30-60 minutes with the student discussing his/her progress over the past year. The format of this discussion is at the discretion of the committee. One example could be a 15-30 minute PowerPoint presentation, followed by a 15-30 minute question and answer session. In general, the Research Committee meeting will be closed-door, with two exceptions: 1) the proposal; and, 2) the pre-defense, both of which are detailed below. These events are open to other members of the department. A closed-door RC meeting will take place following the proposal and pre-defense. The goals of the RC meetings are twofold: 1) to determine if the student's project is feasible, based on the resources available; and, 2) to assess the student's progress towards project completion.

Dissertation Committee:

The student will coordinate with their advisor to form a Dissertation Committee (DC) that will be proposed to the ECE Graduate Committee for approval. The Dissertation Committee composition follows the SoE guidelines: chaired by the advisor, the committee must include at least two ECE faculty members (including the advisor, if applicable), one member from outside the department, but inside Tufts, and one additional person from outside of Tufts who is expected to be a recognized authority on the subject of the dissertation. The outside member is included in the committee in order to provide an objective and disinterested evaluation of the student's work. Once the committee is formed, the outside member is expected to participate in giving the student the assistance and feedback necessary to assure that the dissertation meets the appropriate standards.



Annual PhD Progress Report:

PhD candidates are to be reviewed annually by their advisor, Research Committee, and the ECE department. This process requires the submission of the [Annual Progress Report](#), available in the Appendices.

Coursework:

PhD students in ECE must take a minimum of fifty-four (54) SHUs beyond the MS degree. These SHUs include a minimum of eighteen (18) SHUs of lecture-based class work, eight (8) SHUs of ECE Seminar, and thirty (30) SHUs of dissertation. At least three (3) SHUs of class-based course work should be taken from outside the department.

Grades in all courses must be B- or better. Receiving more than two grades less than a B- or a GPA below 3.0 is cause to be removed from the program.

PhD Qualifiers:

This exam is offered in January of each year. For students with an MS degree starting the PhD track in spring, the qualifier exam must be taken in January of the following year. The RC meetings and the proposal timeline remains the same.

Details, PhD Qualifying Exam Intent Form and sample exam are available at <https://engineering.tufts.edu/ece/current/phd>

PhD Proposal:

The purpose of the proposal is to verify that the students have a comprehensive understanding of the background material needed to perform their research projects. The student will prepare a written document (up to 50 pages¹, e.g., the first chapter of the PhD dissertation) that describes:

1. the context and motivation for performing this research;
2. the background information needed to understand the primary research question;
3. the prior-art in this research field on this primary question;
4. the specific question(s) this research will answer;
5. the materials, methods, and theoretical underpinnings to be used in this research;
6. the initial results; and,
7. a research plan and how the expected results relate back to the motivation.

The proposal must be submitted to the student's Research Committee at least two weeks prior to their planned meeting. Additionally, the student will prepare a 30-minute presentation on the proposed research to be presented to the Research Committee and public members of the department, followed by a private meeting with the Research Committee. This meeting takes the place of the standard Research Committee meeting for that year. *NOTE:* Many MS/PhD students may wish to defend their proposal shortly after defending their MS thesis. This is acceptable. The

¹ Single-column, 12 pt., Times, with 1.5 line spacing and one-inch margin on all sides.



proposal may be defended any time prior to the end of their second summer as a PhD candidate. Additionally, if a student defended a master's thesis in ECE on the same subject as their PhD research, then the RC may choose to waive the proposal requirement for that student.

Pre-Defense:

This extended RC meeting takes place 6-12 months before an intended defense date. The purpose is to finalize the department's expectations about the graduate student's research prior to defending their dissertation. The RC produces a document at the end of this meeting, which states work (specific goals) the student must finish before defending. These specific goals should include an agreement about the number of papers to be published prior to awarding the degree. Once these goals are reached, the student is allowed to schedule their defense. The Pre-Defense is open to all of the members of the department. This meeting will take the form of a 30-45 minute lecture by the student, followed by questions, and then a closed discussion period with the Research Committee. If a member of the RC is not on the PhD defense committee, it is recommended that the person be present at this meeting (a conference/video call suffices).

This meeting takes the place of the standard Research Committee meeting for that year. Students are responsible for the scheduling of their Research Committee meetings, proposal, and pre-defense, and for making sure an announcement of each event is sent to the whole department at least two weeks prior to the meeting.

PhD dissertation:

As a rule, PhD dissertations should be extended studies that go well beyond the scope of individual scholarly articles. They are expected to present a broad review of relevant literature and theory, to study extensively the problem posed, and to place the results in a larger intellectual context. On occasion, the dissertation may substitute two to four less-extended, original studies on closely-related problems. Such a dissertation must be presented as a single document, must have a common general introduction and literature review, must have appropriate connecting matter, and must have a general conclusion relating the results of the separate studies. The written dissertation is submitted to the DC at least two weeks prior to being publicly defended in front of the DC.

1.3 Graduate Seminar Series

The department holds a weekly seminar series, which is a mandatory course requirement for all full-time graduate students. The focus is on research topics presented by outside guest speakers from academia and industry, interspersed with research topics presented by our own MS/PhD students. The seminars meet on Fridays from 10:30 am -12:00 p.m. in Robinson Hall SEC complex room 253. A list of the speakers for the 2019-2020 academic year will be posted on the ECE website as soon as the schedule is set. <https://engineering.tufts.edu/ece/news-events/colloquia>

As with all other courses, you are responsible for attending all registered classes.

1.4 Advising

All ECE students are assigned an advisor. Students must meet with their advisor before they are able to register. Tuft University uses an online registration system, [Student Information System \(SIS\)](#). Students who have found a thesis/dissertation advisor may switch their academic advisor to combine the roles.

Teaching Assistant and Research Assistant Guidelines

Graduate Research Assistants (RA) and Teaching Assistants (TA) are expected to fulfill a total of 20 hours a week for their assigned faculty members. For TAs, this includes duties such as running laboratories, grading, holding office hours, leading review sessions, assisting the professor in developing labs and homework assignments, posting solutions, and proctoring examinations. For RAs, activities include both performing research, as well as, reporting on the results through the writing of peer-reviewed journal and conference papers and presentation of the work at conferences, group meetings, seminars, etc.

Each semester, the manager of graduate students and/or the faculty will review the evaluations of all department-funded TAs and RAs. Should a student receive an unsatisfactory review, a recommendation to the department chair will be issued to revoke the student's support. A copy of this review sheet is included in the Appendices so students can see how their performance will be evaluated. The student must find his/her own financial support to continue in the program.

The following guidelines are meant to help students understand the expectations and responsibilities of an Electrical and Computer Engineering Department TA/RA.

- ❖ All TA/RA's are expected to work 20 hours a week during the school year.
- ❖ RAs work full time during the summer.
- ❖ Outside jobs are not allowed.
Should the TA/RA find a part-time position in industry, he/she must relinquish RA/TA support.
The department will not coordinate TA/RA hours around work schedules.
- ❖ The student's teaching schedule is to be coordinated with the professor and around the TA/RA's class schedule. This includes specific duties such as office hours and specific grading instructions.
- ❖ TAs and RAs are responsible to the department from the time classes start (start of payroll) until the semester is over, not at the end of classes. This is true at the end of the school year in May. A TA or an RA must have permission from the department to arrive late or leave early from campus.
- ❖ The TA should meet with their faculty at least once a week and be responsive to their faculty's email.
- ❖ All TAs will have posted office hours, on the class web page, on their office door, and in the ECE office. TAs will be in their office during these hours, or close by where students can find them.



- ❖ In the case of schedule changes due to holidays, students are expected to follow the replacement day schedule. For instance, if you hold office hours on Mondays, and due to a holiday, Monday's schedule occurs on Wednesday, you are expected to hold office hours on that Wednesday.
- ❖ If a laboratory does not run each week, the TA is still expected to serve 20 hours and be available in their office during that time to help students and to be available to their faculty members.
- ❖ TAs must be flexible to answer questions for students in regards to all aspects of the class, whether it be laboratories or homework.
- ❖ Homework assignments and labs are to be graded and given back to the Instructor no later than one week after it was due. The homework should be given back BEFORE the class occurs on the seventh day, so the instructor can give back the old assignment and give out the new one on the same day.
- ❖ TAs should acknowledge students questions or concerns received via email. This means that students should receive some response in a timely fashion. If the same questions are being asked by many students, then the TA should alert the professor, so the professor can clarify or answer the question in the classroom.
- ❖ TAs should alert the professor to any plagiarism or cheating issues and discuss the situation with the professor before taking any action against the student.

Facilities

1.5 Halligan Hall

Access to Halligan Hall and the computer labs is available to all ECE majors, graduate students and students enrolled in ECE courses for the fall and/or spring semesters. Students may request access at the ECE main office within a week or two of enrolling for classes. Computer accounts on the department's UNIX system will be issued automatically during the first week or two of classes. If you need access to other labs, please check with the Department Office.

Faculty offices are located in Halligan Hall. Currently, room 137 is assigned to graduate TAs. Due to limited space, we are unable to provide office/desk space for our non-funded graduate students. You may use the Graduate Lounge/Kitchen or the common space on the second floor of Halligan for study purposes between classes if these areas are not reserved or occupied. Below is a list of computer/electronic/research labs with a brief description of their main functions and/or the equipment that is available for graduate students use.

- **116 & 118 Computer Lab** - 20+ Redhat Linux workstations for general course use
- **120 Computer Lab** - 20 Windows PCs for general computing course use
- **122 Computer Lab** - 20 Windows PCs for general computing course use



1.6 The Tufts Campus

For those of you who have just arrived on campus, we advise that you get acquainted with the rest of the campus in relation to Halligan Hall, particularly with the Tisch Library, Campus Center, Ballou and Dowling Halls. [Campus tours](#) are offered to the public on a daily basis throughout the year.

1.7 Library Facilities

The [Tisch Library](#) is the main university library supporting the research needs for faculty and students and is the primary source for full-text journals, indexes, and electronic databases. The library houses over 785,603 books, over 200 electronic databases, 1,500 journal titles (electronic and in print) and 14,000 videos. Your Tufts I.D. card will allow you to check out books, videos, and to order material/books through the inter-library loan system. The library provides lockers for students on a first-come basis. Please refer to the [Tish library's](#) web site for information about training and an overview of the facilities.

Miscellaneous

Mailboxes:

All full time graduate students have mailboxes that are located in 101 Halligan and are accessible during ECE office hours (Mon-Fri, 9am – 5pm).

Housing:

If you have not yet found accommodations within the area, a limited number of on-campus living quarters may be available through the [Office of Residential Life](#) . In addition, this office offers useful information about off-campus housing, specifically listings and information pertinent to typical rental fees, security deposits, and the rights and responsibilities of renting in the metropolitan and suburban Boston area.

Health Services:

Tufts University Health Services, located at 124 Professors Row, provides accessible and high-quality health care for undergraduate and graduate students. They strive to maintain the physical, psychological, and social health of our students through an interdisciplinary team approach of providing primary care and promoting health education and wellness. To schedule an appointment, call them at 617-627-3350. Tufts Health Services has physicians' on-call when their facilities are closed. You can reach the physician on-call by dialing the Tufts Police at 617-627-3030 and asking them to page the physician.



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Department of Electrical & Computer Engineering

APPENDICES



2 Appendix A - Research Progress Form

Return completed form to ECE Office

Date: [Click here to enter a date.](#)

Student Name: [Click here to enter text.](#)

Research Committee Members: [Click here to enter text.](#)
(Advisor)

[Click here to enter text.](#)

[Click here to enter text.](#)

[Click here to enter text.](#)

Projected graduation date: [Click here to enter a date.](#)

Descriptive title of research: [Click here to enter text.](#)

I. Research Committee Questions:

(If any answers are "No," then describe the action to be taken)

Project feasibility questions:

1	Is the project well defined with a reasonable scope/vision of the work to be done?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
2	Does the student possess the base knowledge and abilities needed to tackle this project?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
3	Is there sufficient funding to complete the project?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
4	Are the required resources (tools, computational time, etc.) readily available to the student?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		



Project progress questions:

1	Has the student garnered the skills (e.g. clean room training) needed to complete this project?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
2	Has the student met important milestones towards the completion of this project?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
3	Has the student presented this research at any conferences?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
4	Has the student written any peer reviewed journal articles on this research?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
5	Has the student won any awards?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
6	Is the student's progress satisfactory?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		
7	Has the student shown initiative in following new research directions based upon results?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Click here to enter text.		

II. Research Goals and Milestones: (From Progress Report Form)

Student's Research Goals for this year (as stated on last year's Research Progress Form):

[Click here to enter text.](#)

Were all these goals met? Yes

No

Why or why not?

[Click here to enter text.](#)

Student's Research Goals for next year:

III. Evaluation

The student's research progress towards the PhD:

Exceeded expectations

Met expectations

Did not meet expectations



3 Appendix B - PhD Student Annual Progress Report

By the student to the advisor: due **May 1st**

By the advisor to the Department: due **Sept. 15th**

Student Name:

Date:

Advisor:

Please list the student's funding source(s) over each of the semesters in the program:

Please list the student's anticipated funding source(s) for the coming year:

Progress timeline

Program Start Date:

Qualifier (passed/failed and dates, or expected date):

Breadth exam:

Oral exam:

Comments:

Courses completed:

Courses 6 required 1 outside of ECE						
Thesis credits and/or others:	1	2	3	4	5	6
	7	8	9	10		
Seminar 4 semesters required	1	2	3	4		



Dates of Research Committee meetings (past and future):

Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.	Click here to enter a date.
-----------------------------	-----------------------------	-----------------------------	-----------------------------	-----------------------------	-----------------------------

PhD proposal (passed or expected date):

Click here to enter a date.	Click here to enter a date.
-----------------------------	-----------------------------

PhD pre-defense (passed or expected date):

Click here to enter a date.	Click here to enter a date.
-----------------------------	-----------------------------

Graduation (expected date):

Click here to enter a date.

To be completed by the student

Please discuss below goals and other comments with your advisor because he/she will be asked to evaluate your plans. Please attach a maximum 2-page CV with this report.

Performance Goals and Accomplishments (preceding year)

Please comment on how your activities and accomplishments over the past year met your goals and expectations as described last year.

Click here to enter text.

Performance Goals and Expectation (coming year)

Please describe your future goals in academic, research, and professional activities for the next year.

Student's signature:

Date:



To be completed by advisor

Please indicate assessment of the student's progress so far.

It is recommended that the advisor discuss this assessment with the student.

Needs Improvement

On the right track

Motivation/Dedication

Research Potential

Research Accomplishments

Technical Writing Ability

Oral Presentation Skills

Research Initiatives/Independence

Working Relationship

Based on the **preceding year**, the student's progress:

Exceeded expectations

Met expectations

Did not meet expectations

To be copied from the latest Research Progress form, please check the appropriate box below.

(Please attach the research progress form completed by the Research Committee.)

The Research Committee evaluates that the student's research progress:

Exceeded expectations

Met expectations

Did not meet expectations

Based on the student's progress, advisor's remarks, and the Research Committee reports, the ECE Department will evaluate the PhD progress to be:

Satisfactory

Unsatisfactory.

This evaluation will be made available to the advisor and the student before the first day of class of each spring semester.

Please note that getting two unsatisfactory reports may result in the termination of your PhD studies, regardless of your PhD qualifier results.



3.1 Appendix C - Master of Science in Computer Engineering, Requirements

The MS in Computer Engineering degree requires thirty credit hours and all courses must be at the 100 level or above; grades in all courses must be B- or better. At least four lecture-based courses must be taken from a published list of computer engineering core courses. From these core courses, at least one course must be taken from each of the following three core areas (1) Computer Networking; (2) Computer Architecture; 3) Computer Software/Systems. Only one bridge course (e.g. EE 200 and EE 201) may count as one of the four computer engineering core courses.

For full-time students, four credit hours must be the Electrical and Computer Engineering Seminar. Students wishing for their MS degree to have the designation of “with thesis” must sign up for MS thesis credits, up to twelve credit hours may count for the degree. This course takes the form of a creative thesis work, written and defended orally, and performed under the supervision of a faculty member. Students choosing not to complete an MS thesis may complete additional course work in the department or related departments which can include up to six credits of MS project, six credits of directed study, or six credits of internship.

- *Core Requirements for All Degree Options (Project, Thesis, and Course-Only)*
 - a. Minimum of thirty-credit hour (SHU)
 - b. All credits must be from courses at the 100-level or above
 - c. 2 semesters of seminar (EE-191/192) for full-time students or 1 lecture-based course for part-time students.
 - d. 4 lecture-based courses from the list of Computer Engineering Core Courses enumerated below subject to the following requirements. Each student must take at least one course in the following areas
 1. Computer Networking
 2. Computer Architecture
 3. Computer Software/Systems
 - e. Only one bridge course (TBD EE 200 / EE 201) can count for the Computer Engineering core
 - f. No more than 2 professional development courses from TGI
- *Thesis Option (Roughly 15 Remaining Credits)*
 - a. At least 3 additional credits through ECE
 - b. At least 1 lecture-based course in ECE, COMP or any ECE related department
 - c. No more than 12 credits (SHUs) of MS Thesis (EE-295/296) – not to be combined with MS Project. Thesis must be advised by a participating Computer Engineering Faculty Member
- *Course and Project Based Options (Roughly 15 Remaining Credits)*
 - a. At least 3 additional credits through ECE



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- b. At least 1 lecture-based course in ECE, COMP or any ECE related department
- c. At most combine 6 SHUs of MS Project (EE-293/294); Directed Study; Internships
- d. If the project option is chosen, the project must be advised by a participating Computer Engineering Faculty Member who will grade the project course



Student: _____

Advisor: _____

ID #: _____

Computer Engineering Core Courses (From List) - must be at level 100 or higher				
Term	Course	Course Title	SHU	Area
				Networking
				Architecture
				Software Systems
				Any Core
		Seminar in ECE	2	
		Seminar in ECE	2	
Additional Courses - must be at level 100 or higher				

Requirements Checklist		
	Total Credits (SHUs)	≥ 30
	Lecture-Based Courses	≥ 5
	Credits for ECE Seminar or Course Replacement (part-time)	4 SHU or 1 course
	Thesis Credits (EE-295/296)	≤ 12 (Thesis Only)
	Credits for MS Project (EE-293/294), Directed Study, and Internships	≤ 6 (Course/Project Only)



Computer Engineering Core Courses

- **Computer Networking**
 - EE 129 Computer Communication Networks
 - COMP 112 Networks
- **Computer Architecture**
 - EE 201 Fundamentals of Computer Systems and Engineering
 - EE 126 Computer Engineering w/ Lab [cross-listed as COMP 146]
 - EE 155 Parallel Computing [cross-listed as COMP 122]
 - EE 156 Advanced Topics in Computer Architecture [cross listed as COMP 140]
- **Computer Software Systems**
 - EE 200 Machine-Centric Approach to Programming
 - COMP 111 Operating Systems [cross-listed as EE 128]
 - COMP 115 Database Systems
 - COMP 116 Computer Systems Security
 - COMP 181 Compilers
- **Other Core**
 - EE 103 Introduction to VLSI Design
 - EE 120 Computer Animation for Technical Communications
 - EE 127 Information Theory
 - COMP 135 Intro to Machine Learning
 - COMP 160 Algorithms
 - COMP 163 Cryptography
- **Recent Special Topics Courses that were Designated Computer Engineering Core Courses:**
 - EE 193 Special Topics: Software Engineering [Computer Software/Systems] <2018>
 - EE 193 Parallel Computing [Computer Architecture] <2017> (now EE 155)
 - EE 194 Advanced VLSI <2018>
 - EE 194 Advanced Computer Architecture [Computer Architecture] <2018, 2016> (now EE 156)
 - EE 194 Mobile Medical Devices and Applications [Computer Software/Systems] <2018>
 - EE 194 MITRE eCTF <2018, 2017, 2016>
 - EE 194 VLSI CAD Algorithms <2017>
 - EE 193 Intro to Internet of Things (IoT) [Computer Networking][Computer Software/Systems] <2016>