Electrical Engineering Graduate Handbook
2017-2018

Charles L. Brown Department of Electrical & Computer Engineering School of
Engineering and Applied Science
University of Virginia
This handbook outlines the policies and procedures of the graduate program of the Department of Electrical and Computer Engineering at the University of Virginia. It should be viewed as a supplement to the University of Virginia Graduate Record, which summarizes the rules and regulations of the University and the School of Engineering and Applied Science

http://records.ureg.virginia.edu/content.php?catoid=44&navoid=3141

Contacts: 434-924-6077 (Graduate Office)
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Message from the Chairman

Welcome to the Electrical Engineering Graduate Program at the University of Virginia! During your time in the program, I hope that you take advantage of the vast array of opportunities to advance your education and personal development through research, coursework, seminars, teaching, and interactions with faculty, staff, and your fellow students. If you do, upon graduation you will be well prepared for the career of your choosing and to be a leader in technological innovation for decades to come.

The Electrical Engineering Graduate Program has established an excellent reputation throughout industry and academia as a source of outstanding engineers and researchers. The department faculty maintains this reputation by continually updating curricula to reflect current scientific and technological advances and requirements and by maintaining a vigorous research program designed to provide staff and graduate students with high-level learning experiences relevant to the needs of our society. Technical areas range from nano-scale electronic and photonic devices to large-scale computer systems, and from communication and control systems to signal processing and data analysis algorithms. These technologies find application in energy systems, medical technologies, transportation, information technology, ubiquitous computing, astronomy, and numerous other fields, creating limitless opportunity for impacting society.

Students will find courses and research opportunities in all of these technologies and application areas, with a particular emphasis on emerging cross-cutting fields. For example, our faculty are leading research programs in areas such as the following:

- **Terahertz Electronic and Photonic Integrated Technology**: Lead the convergence of electronics and photonics (100 GHz to 20 THz), bridging the gap between millimeter-wave lengths (< 300 GHz) and infrared (> 20 THz) by creating integrated systems capable of enabling a range of applications, such as wireless links with >100 GB/s data rates, medical imaging at THz frequencies, and multi-pixel receivers for next generation radio astronomy observations.

- **Large-Scale Networks of Ultra-Low-Power Devices**: Design large networks of devices with extremely low power requirements, suitable for cooperatively sensing and interacting with their environment, with innovations in low-power circuits and systems, wireless communications and networking, signal and image processing, and applications to medical technologies, energy efficiency, and smart cities.

- **Post-CMOS Nanocomputing**: Explore devices, circuits, and architectures that provide increased computational capabilities beyond the limits of modern CMOS by building on significant on-grounds strengths in spintronics and
nanomagnetics, molecular electronics, solar cells, 2D materials, and nanoscale heat management.

- Multi-Scale Medical Imaging: Work with researchers and clinicians in the UVa Medical School to create the next generation of low-cost, highly-accurate imaging of cellular and molecular structures in patients by providing new imaging technologies, including novel electronics, devices, and image processing methods.

- Neural Engineering: Work with neuroscience researchers across UVa to build a human neurome ($10^{12}$ neurons) – which will involve processing and analyzing more than $10^{18}$ pixels – with innovations in image processing, information theory, and computation.

With its excellent facilities and internationally recognized faculty, the Charles L. Brown Department of Electrical and Computer Engineering at the University of Virginia has become a major player in the development of cutting-edge technology and engineering personnel for the 21st century. Thank you for becoming a part of that legacy and for helping us shape the future of our program, our field, and our world.

Please do not hesitate to contact me with any questions or suggestions you may have.

Nikos Sidiropoulos, Professor and Chair
General Academic Policies

The Department of Electrical and Computer Engineering offers programs of study leading to the M.E., M.S. and Ph.D. degree. The academic requirements for the degrees are set by the faculty of the department. The EE Graduate Committee acts on behalf of the faculty on matters relating to admission, implementation of the graduate program procedures, and directing financial aid. Graduate students, together with their advisor, are responsible for planning a course of study leading to a desired degree. The EE Graduate Office and SEAS Graduate Office are charged with ensuring that the appropriate degree requirements are met.

The EE Graduate Committee is responsible for tracking your academic progress. The Graduate Office ensures SEAS documentation is completed, disburses GTA and GRA funds, assigns GTAs, supports graduate student admissions, and provides other day-to-day support.

Students should refer to the SEAS Website for additional information, and for all forms mentioned in this handbook: https://engineering.virginia.edu/current-students/current-graduate-students

Student Status and Residency Requirements

Candidates for the Master of Science degree must complete at least one semester in residence as a full-time student at the University of Virginia. Candidates for the Doctor of Philosophy degree must complete at least six semesters of graduate study beyond the baccalaureate degree, or four semesters after the master's degree. At least two semesters beyond the master's degree must be in full residence at the University in Charlottesville. These regulations do not include the summer.

A student receiving financial aid from the School of Engineering and Applied Science must be registered full time, defined as at least 12 credit hours of lecture-laboratory courses and/or research per semester during the academic year, must maintain a grade point average of at least 3.0, and must maintain satisfactory progress toward a degree. Graduate research assistants must register for a minimum of 6 credit hours of research only during the summer. Students receiving financial aid are not permitted to have other employment without prior approval of the Office of the Associate Dean for Graduate Programs.

Probation and Dismissal Policies

A graduate student will be considered to be on probation if their cumulative GPA for graduate work is less than 3.0 and will be notified of this situation by the Dean's
Office. Graduate students on probation are usually ineligible for financial aid. A graduate student will be subject to dismissal if the cumulative GPA is not raised to 3.0 within one semester. Undergraduate courses and courses taken on a Pass/No Credit basis may not be used to meet requirements for a graduate degree and will not be used in computing the GPA.

Time Limit for Degrees

The time limit for completion of the M.S. is five years after admission. The time limit for the M.E. is seven years, and the Ph.D. is seven years after admission into the Ph.D. program.

Transfer of Credit

Master of Science and Ph.D. candidates may transfer a maximum of 6 credits of approved graduate courses into the program. Master of Engineering candidates may transfer 12 hours of graduate credit. Students may only transfer courses with a grade of B or better. Students in the Commonwealth Graduate Engineering Program (CGEP) may include up to 15 hours of credit with grades of C or better from participating institutions (an overall GPA of 3.0 must have been maintained at the participating institution). Students should discuss courses acceptable for transfer of credit with their advisor; the transfer credit form can be found on the SEAS website. This form is required for transferring courses along with a catalog statement of course level and the grading system that justifies classification of these courses as graduate-level courses. An official copy of the transcript from the institution where the course(s) was taken is required.

PhD candidates who have completed a Master's degree may apply that degree toward the requirements of the PhD. Up to 24 graded credits can be applied, based on review of the transcript by the EE Graduate Director.

Graduate Course Drop Deadline

The last date for dropping a graduate course is determined by the Registrar's Office. Check the academic calendar for the current list of deadlines. (When deadlines are missed, students may petition the Dean's Office for a W or WP upon concurrence of their instructor and advisor).

Incomplete Grades and Repeated Courses

A 10-day period past the end of the semester (end of the examination period) is automatically allowed to remove an incomplete. Maximum extension to the end of the following semester (e.g., following Fall for a Spring class) may be granted by special request to the Dean's Office. If a course is repeated both grades are used in the GPA calculation.
Articulation Requirements

Graduate level electrical and computer engineering research is a broad discipline that utilizes skills from many diverse fields. Students entering the graduate ECE program from a non-electrical background are welcome within the UVA ECE department. All students should have completed undergraduate coursework in at least three of the following electrical and computer engineering undergraduate topic areas. This background capability is required by the faculty to 1) exhibit sufficient core knowledge associated with graduate-degree electrical engineers, and 2) to provide adequate preparation for graduate classes and research.

- Circuit Analysis
- Logic Design
- Linear Systems
- Communication Theory
- Electronics
- Signal Processing
- Control Theory
- Electronic Materials
- Optoelectronics
- Computer Architecture
- Device Physics
- Electromagnetics
- Power
- Software Engineering
- Quantum Physics
- Engineering Mathematics

These requirements may be satisfied in the following ways:
- Relevant undergraduate course work - For example, a physics course in electromagnetic fields.
- Successful completion of an appropriate UVA undergraduate course (B or better grade).
- Independent study and examination. Students may take a proficiency examination and pass with a B or better in an appropriate UVA undergraduate course during the normally scheduled examination period, or by special arrangement with the instructor.

Responsibilities of Graduate Students

As a graduate student in the University of Virginia you have been given a unique opportunity for intellectual growth in a vibrant academic community. This opportunity comes with some responsibilities on your part as a student, researcher, and teacher.

Academic Progress

The responsibility for your academic progress is largely your own. You must ensure that you are completing the necessary documentation as you progress through the program. The EE Graduate Program Director will be able to give you general
guidance in meeting the academic regulations of the institution, SEAS, and the department. Your own academic advisor will assist you in preparing a plan of study that fits with the graduate-level courses.

Research Assistants

The award of a Graduate Research Assistantship (GRA) and the stipend and tuition fee remission associated with it is paid out of research-group funds. A GRA is not a grant to the student but is payment for student contributions to the research program. GRA funds are awarded to the research group for the completion of a project of research, the results of which will be reported back to the funding organization. If you receive a GRA, then you are essentially an employee working on that particular project. Your responsibility is to complete the assigned project tasks while maintaining your own academic progress. It is possible that your GRA funding will come from a research project other than the one with which your research work is connected. In this case, it is still your responsibility to maintain academic progress in both research and coursework.

Teaching Assistants

The award of a Graduate Teaching Assistantship (GTA) and the stipend and tuition fee remission associated with it is paid by institutional funds. As a teaching assistant, a graduate student carries considerable responsibility as a representative of the University in the laboratory and the classroom. To be appointed to a GTA position, an international graduate student must have passed the SPEAK Test or completed the appropriate follow-up coursework. This test is administered by the Center for American English Language and Culture as part of the International Teaching Assistant Testing and Training Program. This program scores the verbal communication skills of prospective GTAs and offers further training as needed. This test is in addition to the TOEFL (required for admission) and the UVELPE (University of Virginia English Language Proficiency Exam) required of all international graduate students.

As a GTA, your primary responsibility is to the course instructor. Once selected for a GTA position you should contact the instructor and clarify the duties expected of you. As a GTA laboratory assistant, your most important task is to become familiar with the experiments. This involves discussing them with the instructor, reading the laboratory manual, and performing the experiments before the scheduled day of the laboratory class. You should expect ample support from the faculty supervisor for the class, so ask for more help if it’s not adequate.

Scholarship

As a graduate student, a high level of scholarship is expected. You are required to maintain a B average (cumulative) in your coursework. You will be engaged in a
specific field of research, yet you will be required to know (and possibly teach) broad fundamentals. You will be expected to know detailed technical literature relevant to your project and know the fundamental concepts and breakthroughs that brought your field to its current state of development. You will present your work in the form of project reports, theses, dissertations, conference proceedings, and journal publications. You will give presentations to faculty and students within the SEAS community and to wider audiences at conferences and colloquia.

These expectations will place your verbal, written, and technical communication skills under the microscope. Before reviewers will take your work seriously, it must be free from spelling, grammatical, typographical, and style errors. It must be readable and it must be presented according to the principles of clear technical communication. To assist you in the continuous improvement of your communication, mathematical, and scientific skills, the EE Graduate Committee strongly recommends the following:

1. Obtain a good dictionary (such as Webster's Collegiate) and use it. Don’t rely on your spell-checker.
3. Have access to a definitive reference on issues such as units, number usage, prefixes, abbreviations, designations, and mathematical and scientific symbols. All of these items are treated in the NIST publication: Guide for the Use of the International System of Units (SI). Have access to a definitive reference for the symbols used in your field. Comprehensive symbols and designations listings are available from the IEEE Standards Society.
4. Read at least one of the many texts available that review the procedure for writing technical reports and scientific papers. Two very good works are:
   - How to Write and Publish a Scientific Paper (SCI-ENG T11.D33)
   - How to Write and Publish Engineering Papers and Reports (SCI-ENG T11.M14)
5. You may often need to review mathematical topics or look up an integral or identity. A good mathematical reference for engineers is:
   - The Handbook of Mathematical Formulas and Integrals (ISBN 0-12-382251-3).

Involvement

All graduate students should attend the annual graduate-student orientation activities at the beginning of fall semester. This is a good opportunity to meet with your peers, welcome new graduate students, and be reminded of the academic policies and procedures.

Library

You should get to know the services available from the Charles L. Brown Science and Engineering Library (Clark Hall). The library contains current periodicals, and has
considerable holdings of back issues of the major journals. An inter-library loan service is offered for prints and books. The library website (www.lib.virginia.edu/science) contains a wealth of information relating to databases for engineering and the electrical sciences. You can schedule a research tutorial (from the website) with one of the librarians, and tailor this tutorial to your research activities. A liaison is assigned by the library to each academic department. The ECE liaison is currently Ricky Patterson.

Institute of Electrical and Electronics Engineers (IEEE)

Graduate student membership and participation in IEEE activities is strongly encouraged. A student member may attend the Central Virginia Section monthly dinner meetings that rotate between Charlottesville, Waynesboro, and Lynchburg. There is also an active Student Chapter of IEEE, which sponsors technical talks on career choices, employment areas, plant visits, and some social events. A small membership fee is required. Stop by the office of the faculty advisor, Professor Harry Powell, in E203 Thornton Hall, and pick up an application form.

Seminars

The Department of Electrical and Computer Engineering sponsors weekly seminars featuring UVa faculty and visiting scholars. All graduate students are encouraged to attend unless they have a conflict due to classes or research travel. Talks are designed to inform the non-specialist about current research on a wide variety of science and engineering topics. Announcements of seminars are emailed to faculty and students. First year students are required to register for a seminar class in the Fall (ECE 6505).

Master's Degree Requirements

The department offers two master’s degrees, a Master of Science (MS) that requires a thesis, and a Master of Engineering (ME) that does not. Students receiving financial support from the department in the form of a GRA, GTA, or a fellowship will generally be required to pursue the MS (thesis) option, unless approval is obtained from the EE Graduate Committee. Students enrolled in the MS program must obtain the agreement of an advisor to supervise a Master’s thesis.

English Language Proficiency Requirements

If applicable (see Special Graduate Course Requirements on page 18 of this handbook).
Requirements

With the assistance of your assigned advisor, determine a plan of study (no form required). The plan must include 31 graduate credits:

Master of Science (MS):

- 1 credit of ECE 6505: ECE Seminar (only offered in the Fall semester)
- 24 credits of graded coursework
  - A minimum of 12 credits must carry ECE designation
  - 3 credits of mathematics at, or above, 5000- level are required and may be taken from APMA, MATH, ECE 6711, ECE 7438, MAE 6410 and SYS 6005
- 6 credits of ECE 8999 – Thesis
- No more than 9 credits of 5000-level courses are permitted
- No more than 6 credits of 5000-level courses may be in the ECE Dept
- No more than 3 credits of Independent Study (e.g. ECE 6993, ECE 7993) are permitted
- Thesis Defense (see below)

Master of Engineering (ME):

- 1 credit of ECE 6505: ECE Seminar (only offered in the Fall semester)
- 30 credits of graded coursework
  - may include 3 – 6 credits of ECE 6995/ECE 7995–Master’s Project
  - A minimum of 18 credits must carry ECE designation
  - 3 credits of mathematics at, or above, 5000- level are required and may be taken from APMA, MATH, ECE 6711, ECE 7438, MAE 6410 and SYS 6005
- No more than 9 credits of 5000-level courses are permitted.
- No more than 6 credits of 5000-level courses may be in the ECE Dept.
- No more than 3 credits of Independent Study (e.g. ECE 6993, ECE 7993) are permitted
- Assessment forms (Engineering Analysis, Technical Writing, and Oral Communication)

https://engineering.virginia.edu/sites/default/files/common/offices/graduate-programs-office/Files/engineering_analysis_assessment.pdf


https://engineering.virginia.edu/sites/default/files/common/offices/graduate-programs-office/Files/engineering_oral_communication_assessment.pdf
For both MS and ME degrees, undergraduate articulation courses may be required of students with other than the traditional ECE background.

Final Examination (Thesis Defense – MS only)

1) Apply for the master's degree by entering intended graduation in SIS. Observe the due dates.

For ME, MCS, MEP and MMSE degrees: [https://engineering.virginia.edu/current-students/current-graduate-students](https://engineering.virginia.edu/current-students/current-graduate-students)

For MS and PhD degrees: [https://engineering.virginia.edu/current-students/current-graduate-students](https://engineering.virginia.edu/current-students/current-graduate-students)

2) Student and advisor select an examining committee and date for the examination. Committee must consist of at least 3 UVa faculty members, at least 2 of whom must be SEAS faculty. All faculty with a primary appointment in Biomedical Engineering are considered SEAS faculty for this purpose. One research professional from outside UVa or faculty member from outside SEAS may be a fourth voting member, provided that their qualifications are commensurate with that of a research faculty or equivalent rank. For committee members outside of UVa, attach a CV to the committee request form
   - Thesis advisor cannot chair the examining committee.
   - The committee chair must be from the ECE Department.

3) Request Examining Committee 14 days before the examination date. ([https://engineering.virginia.edu/sites/default/files/common/offices/graduate-programs-office/Files/form_final_examination_committee.pdf](https://engineering.virginia.edu/sites/default/files/common/offices/graduate-programs-office/Files/form_final_examination_committee.pdf))

4) Prepare thesis for distribution and reserve room. Select a conference room for your examination and check availability with the ECE Graduate Office.

5) Announce the oral examination of the thesis.
   a. Obtain an electronic announcement template from the ECE Graduate Office.
   b. Send the completed announcement to the ECE Graduate Office (bae3y@virginia.edu)
   c. When the committee has been approved by the Dean's Office, the ECE Graduate Coordinator will send the announcement to the SEAS community.

6) Conduct master's thesis examination as scheduled. The format of the oral defense is a presentation by the student followed by a question and answer period. The
student presentation portion of the defense should not exceed 45 minutes. In the event of an unsuccessful thesis examination, a majority of the examining committee may recommend a further examination—after the student has been given time to prepare.

7) Submit the Report on Final Examination and the Thesis and Dissertation Assessment form to the ECE Graduate Office.


8) Upload your completed thesis to Libra: http://libra.virginia.edu

Doctoral Degree Program

English Language Proficiency Requirements

If applicable (see Special Graduate Course Requirements on page 15 of this handbook).

Academic Advisor and Advisory Committee

1) Select an advisor and, in consultation with the advisor, an advisory committee during the first semester of doctoral study. The advisor normally is a faculty member in the student’s primary area of interest. The advisory committee requires a minimum of four members. At least three should be SEAS faculty, one of whom should represent minor interests and one must be from outside the ECE Department. The chair of the advisory committee must be an ECE faculty member. Submit the appropriate form to the Dean’s Office for approval of the advisory committee
(https://engineering.virginia.edu/sites/default/files/common/offices/graduate-programs-office/Files/Form%20Doctoral%20Advisory%20Committee.pdf)
The form may be resubmitted if changes to the committee are made.

2) The student should meet with their advisor and prepare a preliminary academic outline consisting of previous degrees, proposed Ph.D. major and minor areas of study, list of completed graduate courses, a copy of a transcript of graduate and undergraduate courses, and a list of proposed courses for the Ph.D. degree.

Degree Requirements
A) Students entering without a Master’s degree *(see pg. 7 for transferring external graduate-level courses)*

- 36 hours of graded coursework
  - Graded coursework must include 3 credits of mathematics at, or above, 5000-level taken from APMA, MATH, ECE 6711, ECE 7438, MAE 6410 and SYS 6005
  - No more than 9 credits of 5000-level courses are permitted
  - No more than 6 credits of 5000-level courses may be in the ECE Dept
  - No more than 3 credits of Independent Study (e.g. ECE 6993, ECE 7993) are permitted
- 9 hours of coursework and/or research
- 24 hours Dissertation Research ECE 9999
- 3 hours Supervised Teaching Experience ECE 6996 or 1 semester as a paid teaching assistant
- 1 hour of ECE 6505: ECE Seminar

B) Students entering with a Master’s degree (both from an external institution and earned at UVA):

- 36 hours of graded coursework (up to 24 of these credits may be transferred, based on department approval)
  - No more than 9 credits of 5000-level courses are permitted
  - No more than 6 credits of 5000-level courses may be in the ECE Dept
  - No more than 3 credits of Independent Study (e.g. ECE 6993, ECE 7993) are permitted
- 9 hours of coursework and/or research
- 24 hours Dissertation Research ECE 9999
- 3 hours Supervised Teaching Experience ECE 6996 or 1 semester as a paid teaching assistant
- 1 hour of ECE 6505: ECE Seminar

Earning an En Route Master’s Degree

A student admitted to the PhD program may wish to earn an en route Master’s degree.

A) To earn a Master of Science (MS) – Students will be expected complete all the requirements of the terminal MS, including writing and defending a Master’s Thesis.
B) To earn a Master of Engineering (ME) – Students will be expected to complete all the requirements of the ME. Upon receipt of the ME degree, students will be expected to take an additional 12 graded credits to complete the PhD requirement, for a total of 42 graded credits. These additional credits can be Master’s Projects, Independent Study, or regular classes. Please see page 20 for regulations regarding Independent Study and Projects courses.

Ph.D. Qualifying Examination

Ph.D. students are required to pass a qualifying assessment early in their graduate studies. The objective of the qualifier is to assess the student’s potential to perform doctoral-level research. Students who have a master’s degree must take the qualifier in the second semester of their studies. Students who have an undergraduate degree must take the qualifier in the third semester of their studies. Students who fail the qualifying assessment test must take the test again the following semester.

Students taking the qualifier will be assigned a foundational paper by the Ph.D. Qualifier Committee. The qualifier is composed of two parts. The first part is a ≤ 4 page critique of the chosen paper. The critique is to give context, describe the important assumptions and limitations, and evaluate the conclusions of the paper (it is not to be a regurgitation of the paper). The Critique Paper is to be the written work of the student, not the advisor (the advisor should only provide general advice). Students will have approximately four weeks to write and submit the critique paper before the second portion of the exam. The second part of the qualifier is an oral examination (lasting no more than 2 hours) that begins with a presentation (with slides) by the student on their critique of the selected paper. This presentation will last no more than 20 minutes (it is not to be a regurgitation of the paper). The Critique Paper and the Oral Presentation will serve as a starting point for questions from the qualifying examination committee. The questions can be in-depth or in-breadth, and may cover any topic logically connected to the paper, Critique Paper and the Oral Presentation. The student should be well grounded in the fundamentals of topic areas related to the paper.

The particular Ph.D. Examination Committee (chosen by the Graduate Committee from the larger six member Ph.D. Qualifier Committee) requires three ECE professors. One of the members will be from an area not closely related to the student’s Ph.D. research area. If one member of the Committee is the student’s advisor, a substitute member will be used. The Examining Committee will schedule the qualifying examination soon after the Critique Paper submission deadline. The student’s research advisor can be present at the qualifying examination, but may not ask questions or answer questions put to the student.
The Examining Committee will verbally inform the student and their research advisor of the outcome shortly after the qualifier exam period, and, within 72 hours after the qualifying examination, submit to the Graduate Office the PhD Examination Report and the SEAS assessment form. The result will be a pass or fail; no remedial work will be allowed to alter the outcome. A student who fails the qualifying assessment on the first try may retake it during the following semester, or petition to take it again during the summer. At least one faculty member from the first examining committee will serve on the second examining committee. A student who fails the examination twice must leave the program at the end of that semester.

Doctoral Dissertation Proposal

1) After a student has been admitted to Ph.D. study, the student should work with their advisor and define a dissertation topic. A dissertation proposal based on this topic should be submitted to the student’s advisory committee in advance and a public oral presentation of the proposal be made within two semesters following successful completion of the Ph.D. Qualifying Examination (during the fourth or fifth semester of study), and must be submitted at least one semester prior to graduation.

2) The proposal document submitted to the examining committee should be limited to 25 pages including figures. Supplemental information should be placed in appendices to the proposal.

3) Obtain an announcement template from the ECE Graduate Office. Complete and return the template via e-mail to the Student Resources Coordinator. Coordinator will send the announcement to the SEAS community.

4) The proposal presentation should last 30-40 minutes and will be followed by questions from the audience and the examining committee. Successful completion of the dissertation proposal examination will result in your being admitted to candidacy for the degree. You must complete at least one semester as a candidate before the degree is awarded.

Final Examination (Dissertation Defense)

Publications and presentation of scholarly work is an expected part of any graduate level research program. At a minimum, all Ph.D. candidates are required to submit an article related to their research to a refereed journal, prior to completing their dissertation defense. If the student’s advisor is not a co-author of the paper, the advisor must provide the graduate committee with a note indicating the advisor’s approval of the paper.

1) Apply for the doctoral degree by entering intended graduation in SIS. Observe the due dates,

For ME, MCS, MEP and MMSE degrees:
https://engineering.virginia.edu/current-students/current-graduate-students
For MS and PhD degrees:
https://engineering.virginia.edu/current-students/current-graduate-students

2) A public oral defense is required by the department after the student has completed their dissertation to the satisfaction of their advisor. The Final Dissertation Examining Committee must include a minimum of 3 SEAS faculty, a minimum of 4 U.Va. faculty, and a minimum of 5 total members. One of the U.Va. faculty members must be from outside the student’s home department. All faculty with a primary appointment in Biomedical Engineering are considered SEAS faculty for this purpose. The purpose of the member from outside of the student’s home department is to ensure consistency across the University, to help ensure fairness to the student and to prevent conflict inside the department. The outside member must be UVa faculty. For committee members outside of UVa, attach a CV to the committee request form.

3) Request Examining Committee 14 days before the examination date. (https://engineering.virginia.edu/sites/default/files/common/offices/graduate-programs-office/Files/form_final_examination_committee.pdf)

4) Prepare the dissertation for distribution and reserve room. The completed dissertation must be delivered to each member of the examining committee at least 14 days prior to the defense.

5) Announce the oral defense of the dissertation.
   • Obtain an announcement template from the ECE Graduate Office.
   • Send the completed announcement to the ECE Graduate Office
   • When the committee has been approved by the Dean’s Office, the ECE Graduate Coordinator will send the announcement to the SEAS community.

6) Conduct doctoral dissertation final examination as scheduled. The format of the oral defense is a presentation by the student followed by a question and answer period when all participating people (including the committee members and other students and faculty members) are present. The student presentation portion of the defense should not exceed 45 minutes.

7) Submit the Report on Final Examination and the Thesis and Dissertation Assessment form to the ECE Graduate Office.


8) Complete the Survey of Earned Doctorates ([https://sed.norc.org/showRegister.do](https://sed.norc.org/showRegister.do)) and e-mail the Certificate of Completion to Barbara Graves (bag2y@virginia.edu).

9) Upload your completed dissertation to Libra: [http://libra.virginia.edu](http://libra.virginia.edu)

**Other Graduate Course Regulations**

**English Language Proficiency**

All new graduate students whose native language is not English are tested for English proficiency near the beginning of their first semester at UVa by taking the University of Virginia English Language Proficiency Exam (UVELPE) administered by the Center for American English Language and Culture (CAELC).

Based on the results of this test, students may be assigned to English as a Second Language (ESL) classes to improve their proficiency in writing, speaking, or both. All students assigned to ESL classes are expected to complete them and may only request a deferral to the following semester for the below reasons:

1. If you are recommended for two courses, the department will approve a deferral request for one of the courses to the following semester.

2. If you are recommended for a course where all sections of the course conflict with your current academic load, the department will approve a deferral request to the following semester.

3. You will be away for part or all of the semester on an internship.

The department will only consider waiver requests for ESL 912, which is not a class, but a one-on-one experience designed for International Teaching Assistants currently assigned to TA positions.

These requests should be submitted to the Graduate Office no later than one week prior to the start of classes for current students and as soon as the assignment is known for new students. Failure to request a deferral or waiver on time and subsequent failure to attend the course will result in an Unsatisfactory grade on your transcript.

In addition to the UVELPE, the Center for American English Language and Culture also administers the SPEAK test, which is a more rigorous test designed for those students who will be acting as Graduate Teaching Assistants. **Only those students who have been awarded a GTA funding package and will be serving as a paid GTA in their first semester need to take the SPEAK test upon arrival.** The department submits the names of those people needing to take the SPEAK to CAELC.
and they reach out to you to schedule the exam. The SPEAK score determines what tasks you are allowed to perform in a GTA capacity from lab set-up to significant student interaction. Just like the UVELPE, the SPEAK score will determine which, if any, ESL courses you will need to complete.

Successful completion of all recommended ESL classes will result in the designation of No Further Training. If you are recommended for both speaking and writing courses, you are expected to receive a No Further Training designation in both.

Independent Study (ECE 6993/7993)

Any student planning to study graduate course material on an independent basis under the supervision of a faculty member must submit a syllabus for ECE 6993 or ECE 7993 to the EE Graduate Office. This syllabus may be in the form of a beginning-of-course memo and must be submitted no later than the add deadline of the semester in which the student registers for Independent Study. The syllabus must include textbooks and references to be used during the study as well as a detailed outline of topics to be covered. Samples of problems solved and/or copies of any reports written during the course must be provided for the student’s file by the end of the semester exam period. All Independent Study courses must be completed within the period of the normal semester, unless extenuating circumstances prevent the student from completing the work. No more than one Independent Study course (3 credits) may be applied towards an M.S., M.E., or PhD degree.

Master's Project (ECE 6995/7995)

Subject to the approval of their advisor, an M.E. student may include up to six hours of project work toward their degree program. MS and Ph.D. students cannot use 6995 or 7995 to fulfill degree course requirements. A project proposal must be submitted to the EE Graduate Office no later than the add deadline of the semester in which the student registers. When the project has been completed, a copy of the project report must be supplied to the EE Graduate Office for inclusion in the student’s academic file.

Electrical and Computer Engineering Seminar (ECE 6505)

This one-hour weekly seminar course features presentations given by ECE faculty members and visitors, to introduce various research areas, topics, and advances in Electrical and Computer Engineering. It is a one-credit course required for all first-year ECE graduate (ME, MS and Ph.D.) students. This course is offered only in the Fall semester.

Supervised Graduate Teaching Experience (ECE 6996)
It is the faculty’s belief that this experience is valuable for the professional development of our Ph.D. students. In addition, the department and its undergraduates benefit from additional teaching support. It is expected that such an assignment will require about five hours per week and may be a combination of laboratory support, office hours for tutoring, grading assistance, or a combination. Ph.D. students in the ECE Department must pass one semester of a guided teaching experience. The ECE Graduate Office will select the course instructor for each student. The graduate student will be evaluated by the course instructor and assigned a pass/fail grade as appropriate. As with all graduate-teaching positions at UVa the student must have passed the SPEAK Test (or completed the appropriate CAELC recommendations) in order to fulfill this graduation requirement. Students should apply to the ECE Graduate Office at least 30 days before classes begin. They will be assigned a course to assist and the student should contact the instructor of the course to discuss duties and expectations. This course does not count toward the graded credit requirements.

Note: This requirement may be met by serving as a paid GTA (ECE 8897/ECE 9897) in the department. No additional compensation is provided for this one-time experience.

ECE 8999/9999 – Thesis/Dissertation

All students conducting research as part of their degree requirements should enroll in one of these classes to maintain a formal record of their research progress. Enrollment in these classes is irrespective of funding type. Students may choose between 0 and 12 credits of research each semester, depending on what is needed to maintain a full-time student status of 12 total credits.

MS students should enroll in ECE 8999 – Thesis. PhD students should enroll in ECE 9999 – Dissertation. All students should enroll in the section with their advisor as the instructor. If you do not see a section with your advisor, please let the graduate office know so that one can be added.

These credits DO NOT count toward the graded credit requirement.

ECE 8897/9987 – Graduate Teaching Instruction

All students acting as paid teaching assistants for the department should enroll in at least one credit of this course in the semester they are working to maintain a formal record of their experience. Students may choose more than one credit if needed to maintain a full-time student status of 12 total credits.

MS/ME students should enroll in ECE 8897. PhD students should enroll in ECE 9987.
These credits DO NOT count toward the graded credit requirement.

Financial Support

Financial support may be provided by the department in the form of a Fellowship, Graduate Teaching Assistantship (GTA) or Graduate Research Assistantship (GRA). The student should consider such support an honor and make every effort to meet the requirements specified for such support. Financial aid may be terminated at any time if the department or the project supervisor feels the student is not performing to the professional standards expected of a graduate engineer.

A student receiving a department fellowship will typically be required to provide some type of service for this financial assistance. This service may include such jobs as helping a faculty member develop a new research area or working as a graduate teaching assistant. The student should meet with the faculty member and report progress on a regular basis. Fellowships are generally given to supplement GRA and GTA awards. Fellowships are usually paid monthly in eight equal installments during the academic year.

Graduate teaching assistants are assigned to specific courses and are expected to prepare adequately before each meeting. Some preliminary preparation may be required before the beginning of the semester. At the end of the semester, the GTA should check with the faculty member in charge of the course to make sure that all duties have been completed. The member of faculty responsible for the course will issue detailed instructions for GTAs. Generally, first year international students are not eligible for a GTA position, unless they pass the English Proficiency Test and SPEAK Test.

Graduate Research Assistantship support is provided for assistance on sponsored research contracts or grants. This work not only aids the research project but may also provide a topic for the student’s thesis or dissertation. The student is expected to complete the work specified by the project supervisor in a professional engineering manner. The project supervisor and the student should discuss what is to be expected from the student during the employment period and the student should expect to make a progress report (verbal or written) every week. Master’s students receiving financial assistance will normally be required to be enrolled in the M.S. (thesis) program. This is particularly true for students receiving a GRA. Financial aid is not automatically renewable from one year to the next. It is the student’s responsibility to make arrangements with the project supervisor of their research regarding the possibility of continued employment for the next academic year. Students interested in a GTA position should contact the ECE Graduate Office.

All students receiving financial assistance are responsible for providing withholding tax information and a Social Security Card to the Payroll Office and completing Federal Employment Eligibility Form I9. Please report to the Budget Office for the
School of Engineering and Applied Science in Room A205, Thornton Hall. Failure to do so will preclude being placed on payroll. All male students must complete the Selective Service Form: this form is required by the Commonwealth of Virginia and your employment will be terminated if it is not completed on time.

**Miscellaneous**

The following policies have been established concerning the use of equipment, supplies, and materials.

**Keys**

Keys to the building and to the student offices are available from the ECE Office in Room C215.

**Offices**

You will be assigned a shared office, either by your research group or by the department. Office space is limited, and can normally only be provided to those with research or teaching assistantships. It is important that you follow some guidelines in the use of this space. The office must be kept neat and clean as we often show visitors through the department. Do not use tape on the walls as it will damage the wallboard when removed. Remember that someone else will occupy your office after you. Don’t change offices without contacting the EE Office first; don’t move furniture in or out of your office; and remember to be considerate of the other students with whom you share the room.

**Telephones/Fax Machine**

Telephones are provided in some graduate student office areas. Necessary research related long distance calls are made with a forced authorization code (FAC). The FAC number allows the cost of the call to be directly charged to the research contract. FAC numbers may be obtained from the faculty investigator of the research project. University policy prohibits personal long distance calls to be made at University expense.

Personal long distance calls must be made “collect”, or by credit card, or charged to your home telephone number. A fax machine is located in the department mailroom in C222. Proper usage of the fax machine is dictated by the same policies that apply for telephones.

**Office/Lab Supplies**

You should contact the faculty investigator of your project regarding research supplies.
Copy Machines

The photocopy machine can only be used with the proper copy card. The department copy card is for specific teaching assignments and departmental business only. Each research investigator typically has his/ her own copy card. The copy form login sheet located on the counter top in the main ECE office is only used for departmental copying and not for laboratory or research copying. The photocopy machine is available from 9am-5pm Monday through Friday only.

Email, Word Processing & Computing Facilities

The Division of Information Technology and Communication (ITC) provides general purpose computing resources for the University of Virginia. Please obtain an account ([http://its.virginia.edu/home.php](http://its.virginia.edu/home.php)) promptly and read your mail daily, as these will be primary methods by which the department will communicate important information to you.

If you wish to send email to all ECE graduate students, address your message to [eegrad@virginia.edu](mailto:eegrad@virginia.edu)

Travel

Your advisor can advise and assist you concerning research or Department-related travel.

Reimbursements for travel expenses are done online at [http://www.virginia.edu/~travel](http://www.virginia.edu/~travel).

Address Changes

Please update SIS of any changes to your address or telephone number. It is important that we have an address at which you can be reached during the holidays and summer as well as the academic year. If you are graduating, please leave a forwarding home or business address.

Building Use and Security

We need your help and cooperation in deterring would be thieves! Please observe the following procedures:
- Keep your office door locked whenever it is unoccupied.
- Teaching assistants must not leave until all students have left the laboratory and must then secure all doors and windows.
- If you see someone carrying equipment from the building on nights or weekends, call the University Police (dial 911) and notify the department Chair or Graduate Director.

Personal belongings are not covered under the University Insurance Policies. Check your home policy to see if you are covered.

Conference Rooms

Conference rooms are available for oral and written exams, research meetings, and other course or research functions. The department conference rooms C310 and C311 can be reserved through the ECE website, under the Events menu.