

Department of Mechanical and Aerospace Engineering

Graduate Student Handbook

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The purpose of this handbook is to outline the policies and procedures of the graduate program of the Department of Mechanical and Aerospace Engineering at the University of Virginia. It is a supplement to the [University of Virginia Graduate Record](http://records.ureg.virginia.edu/index.php), which summarizes the rules and policies of the University and the School of Engineering and Applied Science (SEAS) and is available at

<http://records.ureg.virginia.edu/index.php>

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Message from the Chairman

Welcome to the Department of Mechanical and Aerospace Engineering (MAE) at the University of Virginia, an organization dedicated to cutting edge research and the highest quality engineering education. We are pleased that you have come to MAE to pursue your graduate studies. Here you can have an outstanding, intellectually challenging, and productive educational experience.

The MAE Department is committed to providing you with a superior education and instilling in you a desire to explore the frontiers of science and engineering within the context of lifelong learning. Our goal is to prepare you for a leadership position so that you may function as a valuable, productive, and responsible member of society. Together with dedicated and renowned faculty responsible for your education, you will pursue scientific and technological excellence in a stimulating pedagogical environment underpinned by the power of knowledge uncovered. We believe you should possess both breadth and depth in your education, and we are committed to your intellectual and personal well-being. We seek diversity among our students and value the varied cultural backgrounds and ethnic origins that enrich our department.

In the MAE Department you will find a balance between a tradition of excellence and a pioneering spirit of entrepreneurship in both education and research. Periodic revisions of our curricula keep us at the forefront of what is important to teach, learn, and experience. Major funded research activities maintain us at the cutting edge in various fields including biomechanics, dynamics, solids, fluid- and thermo-mechanics, high speed propulsion, rotating machinery and controls, nanoscale thermal transport, and smart manufacturing. Some of these activities have their homes in major laboratories such as the Aerospace Research Lab (ARL), the Center for Applied Biomechanics (CAB), the Nano-Scale Heat Transfer Lab, the Aero/Bio/Energy Lab (ABEL), and the Rotating Machinery and Controls Lab (ROMAC).

The MAE Department is home to approximately 367 undergraduate students, 108 full-time graduate students and 10 part-time graduate students. The department offers Master of Science (MS), Master of Engineering (ME) and Doctor of Philosophy degrees (PhD) in Mechanical and Aerospace Engineering (combined, not separate). Our primary classrooms, laboratories, and offices are housed in an independent four-story building and at the ARL, located on the Grounds of the University, and at the CAB, which is located at the University's North Fork Research Park.

I hope you find this information helpful. Please do not hesitate to contact any one of us (fellow student, faculty, or staff member) to help make MAE a happy, interesting, and productive home for you over the next few years.

Eric Loth
Rolls-Royce Commonwealth Professor and Chair

Department Policies and Organization

Advisor, Procedures, and General Information

A faculty Advisor is a graduate student's mentor, supervisor, primary research guide, resource on curricular decisions, and representative to the MAE faculty. Ideally, this relationship will be established prior to the start of a student's graduate program. MAE faculty and their areas of interest are listed on the MAE website at www.mae.virginia.edu. Any graduate student who does not have an Advisor should use this information to identify faculty members whose research interests most closely match his or her own and should approach these faculty members to discuss advisement.

A student's Advisor is his/her primary resource regarding significant matters of curriculum, graduation, and the graduate program. The MAE Graduate Office, located in MEC 326, can provide students with forms, keys (MEC 325), and guidance concerning the day-to-day operations and logistics of the department. The names of personnel in the Graduate Office are available on the MAE website. The SEAS Office for Research and Graduate Programs is a student's primary resource for broader procedures and regulations related to the SEAS graduate programs. There are also several university resources available to assist students, including the University of Virginia Ombudsman (<http://www.virginia.edu/ombudsman/>). The University Ombudsman is an independent, confidential resource available to assist faculty, staff, and students in resolving problems, complaints, conflicts, and other issues when normal processes and procedures have not worked satisfactorily. The normal track for academic dispute resolution is the course instructor, then the advisor, the MAE Graduate Director, the Assoc. Dean for Research and Graduate Studies, and finally the Dean. The office of the Dean of Students can assist with problems not of an academic nature. UVA Student Health and Counseling and Psychological Services (CAPS, <http://www.virginia.edu/studenthealth/caps.html>) is also available for consultation and education.

Department Policies

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

KEYS

Keys to the building and to the student offices are available from the Administrative Assistant in MEC 325. A replacement fee of \$5.00 will be charged for each lost key.

OFFICES

A student's Advisor will normally assign an office. Offices should be kept neat and clean as visitors often tour the department. Office space is limited and can normally only be provided to students with research or teaching assistantships.

TELEPHONES

Telephones are provided in most 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 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. To call a local phone number located off-grounds from any university phone, dial 9 followed by the number. To reach any phone number within the university directory, dial the last five numbers (e.g. 3-4567).

OFFICE SUPPLIES

The department does not supply paper, pencils, pens, or other office supplies to graduate students. Research laboratories may have their own office supplies for use on research projects.

LAB SUPPLIES

Supplies must be ordered by the fiscal administrator in MEC 325, or by the appropriate research lab personnel. A student can be trained and authorized to make research equipment/materials purchases through the University online ordering system, called the "UVA Marketplace", upon approval by his or her research Advisor. See the fiscal administrator in MEC 325 for more details.

COPY MACHINE

The department photocopier machine, located in the MAE mailroom in MEC 344, requires an access code provided by a student's Advisor. The machine is available to make copies relating to research or teaching activities, from 8am to 5pm Monday through Friday only. There are other machines located throughout the University, but most require either coins or a special copy card.

MAILROOM

University mail service is not to be used for personal mail.
The mailroom is also where research orders are delivered.

E MAIL, WORD PROCESSING & COMPUTING FACILITIES

Information Technology and Communication (ITC) provides general purpose computing resources for the University of Virginia, and their website (www.itc.virginia.edu) will be helpful as students setup their computers for access to the University system. New students should obtain an email account (<http://www.itc.virginia.edu/getstarted.html>) promptly and read their email daily, as this is the primary method by which the department communicates important information. A copy of Microsoft Office is available for purchase for personal computers from Cavalier Computers in the UVa Bookstore. A work computer may be provided to a student by his or her Advisor for research, but a student may also be expected to bring a personal computer to work. A specialized computer lab is available in MEC 213 for MAE students. A personal account to access this lab may be obtained by contacting meclab@virginia.edu.

ADDRESS CHANGES

Students must inform the Graduate Coordinator, as well as the University, of any address changes. It is important that the department has an address at which a student can be reached during the holidays and summer as well as the academic year. Upon graduation, a student should leave a forwarding home or business address.

BUILDING USE AND SECURITY

Theft is rare in the MAE building, but it can happen. The following procedures are required in order to minimize the risk:

- An office door must remain locked whenever the office is unoccupied.
- Teaching assistants must not leave until all students have left the laboratory and they must then secure all doors and windows.
- If a student sees someone carrying equipment from the building on nights or weekends, he or she should call the University Police (dial 911) and notify the Department Chair or Assistant Chair.
- Only recognized student organizations are permitted to hold

private parties or other events in the building or Darden Court. All such functions must be scheduled and approved in advance through SEAS.

- Personal belongings are not covered under the University insurance policies.
- The MEC building will be locked on football game days and on weekends. ID card access is through the North entrance.

CONFERENCE AND OTHER ROOMS

Rooms are available for departmental functions. The department conference room (MEC 305) can be reserved by all staff members. The SEAS Dean's office (924-3593, 924-3155) can provide direction for reserving all other rooms.

Academic Policies

Graduate Studies Committee

The MAE Graduate Studies Committee is composed of MAE faculty and is responsible for all graduate-related matters in the department, including admissions, curricula, qualifying exams, graduation, course scheduling and staffing, and petitions. The committee also periodically reviews graduate courses and recommends new course offerings to the faculty.

Financial Support

Financial support may be provided by the department in the form of a fellowship, teaching assistantship (GTA), or research assistantship (GRA). Students 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 faculty investigator feels a student is not performing to the professional standards expected of a graduate engineer.

Graduate Teaching Assistants are assigned to specific courses and complete instructions for GTAs will be given by the faculty member in charge of the course. Some preliminary preparation may be required before the beginning of the semester. In particular, GTAs must pass minimum language requirements and have a minimum level of mastery of the course's subject matter. At the end of the semester, the GTA should check with the faculty member in charge of the course to make sure that all expected duties have

been completed.

Graduate Research Assistantship (GRA) support is provided for assistance on sponsored research contracts or grants. This work not only aids the research project but also may provide a topic for a student's thesis or dissertation. This financial aid is not a gift to the student. The student is expected to complete the work specified by the Investigator of the project in a professional manner. The Investigator and the student should discuss what is expected from the student during the employment period. Masters students receiving financial assistance will normally be required to be enrolled in the M.S. (thesis) program.

Students are also encouraged to apply for external fellowships. The Office of the Vice President for Graduate Studies and Postdoctoral Programs maintains a list of fellowship opportunities at the following URL: <http://www.virginia.edu/vprgs/gradstudies/students.html>.

Financial aid is not automatically renewable from one year to the next. It is the student's responsibility to make arrangements with the Investigator of his/her research regarding the possibility of continued employment for the next academic year.

All students receiving financial assistance are responsible for providing withholding tax information, a social security card, and completing the Federal Employment Eligibility Form I-9. Please report to the Budget Office for the School of Engineering and Applied Science in Thornton Room A205.

Students receiving financial aid from the School of Engineering and Applied Science must be registered as full-time students, defined as at least 12 credits of lecture-laboratory courses and/or research during the academic year, must maintain a grade point average of 3.0, and must maintain satisfactory progress toward a degree. Graduate research assistants must register for a minimum of 6 credits of research during the summer term. Students receiving financial aid are not permitted to have other employment without approval of their advisor and of the Office of the Assoc. Dean for Research and Graduate Programs. Students are awarded financial assistance to enable them to devote maximum effort to graduate studies.

Graduate Curriculum and Degree Requirements

The faculty of the department strives to offer graduate courses that will challenge the students' capabilities, inform them of cutting-edge innovations, and develop in them an appreciation of the beauty and history of our discipline. Toward these ends, our curriculum has three goals:

- To ensure that all graduates possess a broad knowledge of the fundamentals underlying Mechanical and Aerospace Engineering.
- To ensure that all graduates have a depth of knowledge within their fields of study.
- To provide sufficient flexibility within our program for interdisciplinary students, acknowledging the great diversity within MAE and its emerging areas.

The Curriculum:

Graduate students in our program choose a field of study from one of the following two tracks:

- Mechanics
- Thermofluids

Each track has a required core of 5 courses (15 hours). Every MS and PhD student must complete one of the tracks.

Required Core Courses in Each Track

Mechanics Track		Thermofluids Track	
MAE 6020	Continuum Mechanics	MAE 6100	Thermomechanics
MAE 6210 or 6250	Analytical Dynamics or Multibody Mechanical Systems	MAE 6310	Fluid Mechanics I
MAE 6410	Eng Math I	MAE 6410	Eng Math I
MAE 6100 or 6310	Thermomechanics or Fluid Mechanics I	MAE 6020, 6210, or 6250	Continuum Mechanics, Analytical Dynamics, or Multibody Mechanical Systems
MAE 6710	Finite Elements	MAE 6720	Computational Fluid Mechanics

No other UVA courses will be considered as replacements for the core courses, but a student may petition the MAE Graduate Studies Committee to have courses taken at another university satisfy analogous courses in the core curriculum. Any replacement course must be substantially similar to the core offering at UVA and, while the course grade does not impact the official UVA GPA calculation, it will be considered in the calculation of the

composite core GPA for PhD candidacy (see below). The burden will be on the student to prove that any replacement course is substantially similar and to translate any course grade to the grading scale used at UVA. Any grade translation will require convincing documentation.

The graduation requirements also include completion (satisfactory grade) of

- At least two semesters of MAE 7510 for an MS degree
- At least six semesters of MAE 8591 or MAE 7510 for a PhD degree (seminar series courses taken towards an MS degree can satisfy this requirement).

These courses can be taken for 0 credits each semester and a satisfactory grade requires attendance at six or more seminars, where at least four of these are MAE- or NIA-sponsored seminars (CAB seminars are considered MAE seminars). If the MAE or NIA seminars regularly conflict with a student's enrollment in another course or with TA commitments, then seminars in another department may be substituted for that semester.

The required total number of course credits is:

- ME degree: 30 hours of graduate coursework, which must include 18 credits from MAE.
- MS degree: 24 hours of graduate coursework (9 hours of graduate course work beyond the core).
- PhD degree: 36 hours of graduate coursework (21 hours of graduate course work beyond the core).

In addition to the MAE departmental requirements, there are degree requirements set by the University and by the Engineering School, which are in the University Graduate Record (<http://records.ureg.virginia.edu/index.php>) and on the SEAS Graduate Studies website (http://www.seas.virginia.edu/admin/research_grad.php). These include course restrictions beyond those described in this Handbook. Students should refer regularly to the Student Information System (SIS, <https://sisuva.admin.virginia.edu>) to monitor their progress toward the fulfillment of all academic requirements (university level, SEAS level, and MAE level).

Publications

All MS and PhD students are expected to complete publishable original research. Regular publication and presentation of scholarly work is an expected part of any graduate level research program.

MASTER'S DEGREE REQUIREMENTS & PROCEDURES

The department offers two Master's degrees: a Master of Science (MS), which requires a thesis, and a Master of Engineering (ME), which is a course-based masters degree requiring no research. Masters students enrolled in the MS program must obtain the agreement of an Advisor to supervise an MS thesis. ME students are assigned an Advisor to aid in course selection.

Degree Requirements

Master of Engineering – Course Requirements:

- 30 credits of graduate coursework
- 18 credits from Mechanical and Aerospace (MAE) graduate classes
- No more than 9 credits from 5000 level classes
- No more than 6 credits from 5000 level MAE classes
- No courses below 5000 level may be counted

Master of Science – Course Requirements:

- 24 credits of graduate coursework
- At least 6 hours of MAE 8999 Master's Thesis Research
- Completion of core courses described above
- No more than 9 credits from 5000 level classes
- No more than 6 credits from 5000 level MAE classes
- No courses below 5000 level may be counted

Thesis Preparation and Examination

A student's thesis Examining Committee is selected by the student and the student's Advisor. The purpose of this committee is to provide the student with a broad base of guidance in formulating and executing a plan of study and thesis project. This committee attends the final Master of Science thesis examination (oral defense) and makes the ultimate decision regarding the

student's completion of the thesis requirement. The Examining Committee consists of a minimum of three SEAS faculty members, at least two of whom must be MAE faculty. The Chair of the committee cannot be the student's Advisor and must be from the MAE Department. One research professional from outside UVA or a faculty member from outside SEAS may be a fourth voting member of the committee, provided that his/her qualifications are commensurate with those of a university professor. The Examining Committee may be reconstructed as appropriate.

The format of the final thesis examination is a presentation by the student, which is followed by a question and answer period. The student presentation portion of the defense should not exceed 30 minutes.

The student is responsible for reserving a suitable conference room and should send the thesis title and abstract to the graduate coordinator at least 7 days prior to the date of the exam so that the coordinator can announce the exam. The completed thesis must be delivered to each member of the Examining Committee at least 14 days prior to the date of the final thesis examination. After the final thesis examination, the Examining Committee will complete a Thesis Assessment Form, which the student should acquire from the graduate coordinator and bring to the examination.

The Examining Committee may suggest or require changes to the thesis. These changes must be completed to the satisfaction of the committee.

DOCTOR OF PHILOSOPHY DEGREE REQUIREMENTS

PhD students must obtain the agreement of an Advisor to supervise a PhD dissertation.

Course Requirements – Doctor of Philosophy

- 36 credits of graduate coursework
- 24 hours of MAE 9999 Dissertation Research

- Completion of core courses described above
- No more than 9 credits from 5000 level classes
- No more than 6 credits from 5000 level MAE classes

Selection of Advisor and Advisory Committee

A PhD student must select an Advisor and, in consultation with the Advisor, an Advisory Committee during their **first semester** of doctoral study. The Advisor is normally a faculty member in the student's primary area of interest. The Advisory Committee recommends a program of formal courses, advises the student on areas in which he or she must take PhD examinations, discusses research objectives and plans with the student, and approves the student's dissertation proposal. The chair of the Advisory Committee must be on the MAE faculty but may not be the Advisor. The PhD Advisory Committee must include a minimum of 3 SEAS faculty, one additional UVa faculty member from outside the student's home department, and a minimum of 4 total members.

Individuals from outside UVa may serve on a student's Advisory Committee, provided that his/her qualifications are commensurate with those of a university professor. For non-professors, a current C.V. or professional bio-sketch must be submitted for any Advisory Committee members who are not UVa faculty. The C.V. or biography should include the highest degree attained, the year and institution, and any relevant experience or research which would provide expertise needed for sitting on the committee.

The Advisory Committee can be restructured as appropriate at any time during a student's period of enrollment.

PhD Plan of Study

A student should meet with his/her Advisor to determine a plan of study as early as possible, preferably in the first semester after entering the PhD program. The plan of study must satisfy the department course requirements outlined above and the SEAS requirements listed in the University Graduate Record and on the SEAS Graduate Studies website. The student's Advisory Committee should be consulted during the development of the plan of study and may require additional courses.

While most PhD students will complete a Master's Degree before entering

the PhD program, students may be admitted directly to the PhD program from a Baccalaureate program with the approval of the Graduate Studies Committee.

Transfer of Credit

PhD students typically do not transfer credits from other universities. All PhD students must satisfy all MAE requirements, but courses taken at other universities as part of an MS or PhD program may be used to satisfy certain of those departmental requirements. Students should discuss their graduate coursework at other universities with their Advisor and Advisory Committee as the plan of study is developed and then, if appropriate, petition the Graduate Studies Committee to allow that course work to fulfill the appropriate curriculum requirements. The following should be included in the petition to the Graduate Studies Committee: an endorsement from the student's faculty Advisor, a detailed description of the course taken elsewhere along with the syllabus (including the text book used), and the student's complete plan of study showing how the course fits into the overall PhD plan of study.

Admission to PhD Candidacy

A PhD student must satisfy all of the requirements for PhD candidacy at least one semester before graduating. In order to become a PhD candidate, a student must

- Have completed all of his/her core courses, and
- Have a composite GPA of at least 3.60 in his/her required core of 5 courses, and
- Have no grade lower than a B- in his/her core courses, and
- Have passed the PhD Qualifying Exam, and
- Have successfully completed a PhD Dissertation Proposal

PhD Qualifying Exam

The PhD Qualifying Exam is an oral examination that includes a formal presentation and critique of a research paper and a period of open questioning by an Examining Committee. ***This period of open questioning may include any topic considered relevant by the Examining Committee as it evaluates the student's case for admission to PhD candidacy. In other words, it is an oral comprehensive examination of the student's entire education.***

Scheduling

The Qualifying Exam is offered in the fall semester. A student should take the exam as soon as he/she has completed the necessary coursework and other preparations. This will typically be the first offering occurring one year after the student begins the PhD program. The student's readiness for the exam should be determined jointly by the student and the student's Advisor. In no case shall a student be admitted to PhD candidacy before successfully completing the Qualifying Exam.

At the beginning of each fall semester, all MAE graduate students will be asked to inform the MAE Graduate Studies Committee and the graduate coordinator if they are going to take the PhD Qualifying Exam that semester. If a student intends to take the exam that semester, he/she must respond with a brief description of his/her research area, the name of his/her advisor, and a few keywords to aid the Examining Committee in the selection of research papers.

If a student fails to pass the examination, he/she may be given one additional opportunity to take the exam. The scheduling of that second examination is at the discretion of the Examining Committee, but will generally occur in the subsequent spring semester.

General Information

The PhD Qualifying Exam is a crucial aspect of the PhD program in that it is intended to evaluate a student's engineering knowledge, ability to conduct independent research, and capacity for critical thought. Therefore, a student may not solicit the help of his/her Advisor, co-workers, students, or *any other person* in regards to any aspect of the exam. The information provided in this Handbook is the only information that may be provided to a student preparing for the exam. ***It will be deemed an honor violation if a student solicits or receives help on any of the specific technical points in the assigned paper.***

All MAE faculty members are encouraged to attend the exams and any SEAS faculty member may attend. A student's entire exam shall be closed to other students.

Formation of the Examining Committee

An Examining Committee will be appointed each year by the MAE Graduate Studies Committee. If there is a large number of students within any track, such that it is impractical for a single committee to hear all of the exams, then additional committees may be formed. At least three members of the Examining Committee must be present at each student's exam. The Advisor of a student taking the exam may serve on the Examining Committee. If the student's Advisor is on the Examining Committee and attends the exam,

then at least four members of the Examining Committee must be present at the exam (i.e., three plus the advisor). The Examining Committee shall determine whether a student has passed the exam.

Research Paper Selection, Presentation, and Critique

The Examining Committee will identify one paper in each track for the exam. Candidate papers may be supplied to the Examination Committee by any faculty member and different papers may be selected each year. Papers should be seminal contributions to the literature (i.e., widely cited and influential). Typically, a paper must have more than 50 citations to be considered widely cited.

The exam will occur one month after the date on which the student is informed of the paper for the exam. On the day prior to the oral exam, the student must submit

- A one page (maximum) synopsis of the paper, with bullet items for discussion points
- A copy of all slides and other presentation materials to the chair of the Examining Committee.

The Examining Committee shall consider the student's performance in four general areas: 1-the student's general knowledge, 2-the student's critical analysis of the research paper, 3-the student's suggestions for improvement or future work, 4-the student's communication skills.

Format of the Examination

The student's formal presentation of the research paper should be approximately 45 minutes in length and should be addressed to the Examining Committee. The presentation should include the following:

- Discussion of the work done in the field prior to the publication (i.e., the paper should be placed into historical perspective)
- Presentation of the paper in a standard format (introduction, approach, results, conclusions, etc.)
- Critique of the paper. This should include a discussion of any errors, incorrect or unjustified assumptions, alternative approaches, etc.
- Discussion of the impact/significance of the paper to the field.
- Review of the progress in the field since the publication of this paper.
- If applicable, relation of the work in the paper to the student's research.

The presentation will be followed by a question/answer session conducted by the Examining Committee. Performance on the oral exam will be evaluated primarily on the technical content of the presentation and how well each of the above points was addressed; however, the quality of the presentation will also be considered in the overall evaluation.

Dissertation Proposal

A PhD student must work with his/her Advisor to define a dissertation topic. Prior to admission to PhD candidacy, a written dissertation proposal based on this topic must be developed in close collaboration with the student's Advisor, submitted to the student's Proposal Examining Committee, and defended in a public presentation to the satisfaction of the Proposal Examining Committee. The Proposal Examining Committee must include at least four members of the student's Advisory Committee.

The dissertation proposal should be presented before extensive research is undertaken, in order to receive feedback, guidance, and faculty approval of the proposed research. The written proposal document should have a length of around 20 single-spaced pages, including figures and references. It should be prepared according to the following guidelines:

The document should succinctly describe:

1. The research questions or hypotheses
2. The motivation for the research
3. The research plan including specific research activities, research objectives, milestones, outcomes, and a detailed plan for completion of the proposed work
4. Preliminary results
5. Expected contributions and means of dissemination, including past publications; publications in preparation, review, or press; future publications planned and their anticipated submission dates

The proposal should not include a comprehensive literature review.

The student must make a detailed presentation of the proposed research to his/her Proposal Examining Committee, after which the Proposal Examining Committee may ask for additional information, make recommendations, and require changes before deciding on the suitability of the proposed research. This presentation and all discussions with the Proposal Examining Committee are open to the public and any member of the public may ask questions or provide suggestions. **It is recommended that the proposal be presented within two semesters after successfully completing the Ph.D. Qualifying Examination.** The student should provide the Proposal Examining Committee with the written proposal document at least two weeks prior to the oral

defense. A copy of the student's plan of study (complete with grades), vita, and any publications should also be given to the committee at this time.

Successful defense of the dissertation proposal will be determined by the Proposal Examining Committee and is a requirement for admission to PhD candidacy. The student must complete at least one full semester as a candidate before the degree is awarded. If a suitable proposal is not presented, the Proposal Examining Committee will decide if another public proposal defense will be allowed, if another document must be prepared, or both. The Proposal Examining Committee will determine the timeline for a second public defense and resubmission of a written proposal, but typically this would occur within 6 months of the original proposal presentation.

Once the Proposal Examining Committee has approved the proposed research, the student must prepare his/her PhD dissertation, which will be evaluated by the student's PhD Final Dissertation Examination Committee.

PhD Final Dissertation Examination Committee

The Final Dissertation Examination Committee must include a minimum of 3 SEAS faculty, a minimum of 4 UVa faculty members, and a minimum of 5 total members. **One of the UVa faculty members must be from outside the student's home department.** The chair of the Final Examination Committee must be on the MAE faculty but may not be the student's Advisor. The committee is typically composed of the student's PhD Advisory Committee along with one additional member.

Dissertation

Before beginning to write a dissertation, a PhD student should review the SEAS instructions for thesis preparation.

The student must publicly defend his/her dissertation to his/her Final Dissertation Examination Committee. A complete dissertation draft must be delivered to each member of the Final Dissertation Examining Committee at least 14 days prior to the defense. At this time, the student should also provide to the committee a copy of his/her plan of study, vita, and copies of all publications. The student is responsible for reserving a suitable conference room and should send the dissertation title and abstract to the graduate coordinator at least 7 days prior to the defense for public announcement.

The dissertation defense will include an oral presentation of the dissertation,

which should be no more than 45 minutes in length, followed by a period of questioning. Any member of the public may ask questions of the student and each member of the Final Dissertation Examination Committee will be invited by the chair to ask questions and provide comments regarding the dissertation. Following the questioning and comments, the Final Dissertation Examination Committee will meet privately to discuss the dissertation defense and to determine whether the student has satisfactorily completed a dissertation worthy of a doctoral scholar. After this deliberation, the Final Dissertation Examination Committee may ask for additional information, make recommendations, require changes, or determine that the student has not satisfactorily defended the dissertation. If changes are required, the Final Dissertation Examination Committee will determine the method for evaluating these changes. This may include a second review of the written document by the entire committee, by a subset of the committee, or by the Advisor. A second public defense may also be required. Once the Final Dissertation Examination Committee is satisfied with the dissertation, the student must submit the document for publication and can use it toward the satisfaction of the PhD graduation requirements.

Students should refer to the University Graduate Record and the SEAS Graduate Studies website for information on the submission procedures and scheduling requirements for dissertations once they have been successfully defended.

Application for Graduation

Students should refer to the University Graduate Record and the SEAS Graduate Studies website for information on the paperwork requirements and deadlines for graduation following the satisfactory completion of all requirements. Students should refer to SIS frequently to track their progress and to confirm that all graduation requirements are completed on schedule.