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I. INTRODUCTION

This manual is a guide for students who are planning their graduate studies in Engineering Mechanics. Included in this manual are admission and degree requirements along with information on required courses, examinations, and grades. This guide is intended to supplement, not to replace, the Graduate Catalog published by the Graduate School of Virginia Tech.

All references to credit hours are based on the semester system.

These regulations apply to all new students entering graduate studies at the beginning of and after the 1997 fall semester.

Graduate courses are offered, and students may earn credits toward graduate degrees in Engineering Mechanics, at several off-campus locations.

Each fall the ESM Department organizes an orientation session for all graduate students. The orientation will cover the information and forms that will be of value to students during their studies in the Engineering Mechanics Program. Included will be information regarding registration, course request forms; timetables; advisors/selecting of advisors; assistantships; tuition; applying for permanent in-state status; paychecks; the qualifying, preliminary, and final examinations; the dissertation proposal; the status report that shows the progress of the student (given once a semester to both advisor and student); office assignments; mailboxes; e-mail; computer labs; seminars; adding and dropping classes; plan of study; various graduate forms; etc.

II. GENERAL INFORMATION FOR ALL GRADUATE STUDENTS

At the beginning of the 1972-73 academic year, the name of the department was changed from Engineering Mechanics to Engineering Science and Mechanics, and today the department is commonly known as the ESM Department. However, all graduate degrees are still designated as Degrees in Engineering Mechanics. The cover pages of theses and dissertations must state that the degree is in Engineering Mechanics.

A. Admission to the First Year of Graduate Study in Engineering Mechanics

Admission to graduate study at Virginia Tech is granted by the Graduate School, upon receiving a favorable recommendation from the ESM Department. The department graduate committee reviews all applications and then reports to the director of graduate studies who makes a recommendation to the Graduate School.

The student may be admitted into one of the following six categories:

1. Ph.D.
   a) Students who have earned a master’s degree in engineering, mathematics or physics from a recognized university may apply for admission to pursue doctoral graduate work in ESM. Students not having an adequate background in such fundamental subjects as mechanics,
mathematics, and physics must take basic courses in the areas where they are deficient. These courses do not count towards the plan of study.

b) Students who have earned a bachelor’s degree in engineering, mathematics or physics from a recognized university may apply for admission to the Direct Ph.D. Program. Students not having an adequate background in such fundamental subjects as mechanics, mathematics, and physics must take basic courses in the areas where they are deficient; these courses do not count towards the plan of study. A subsequent decision to complete only a master’s degree may be made without any negative consequences.

2. Regular Master’s
   a. To have regular master’s status, a bachelor’s degree in engineering, mathematics or physics from a recognized university is required. Students not having an adequate background in such fundamental subjects as mechanics, mathematics, and physics must take basic courses in the areas where they are deficient. These courses do not count towards the plan of study.
   
b. A minimum grade-point average (GPA) of 3.00 (where A = 4.0) in previous undergraduate and graduate work, as well as an adequate and current academic background, are also required.
   
c. International students may be required to take remedial courses in oral and/or written English if their advisory committee makes such a recommendation. These courses do not count towards the plan of study.

3. Provisional Student
   A student whose cumulative grade point average (GPA) is between 2.75 and 2.99 and/or whose academic background is deficient or not current may be admitted as a provisional student. Upon completion of 9 (but no more than 12) credit hours of course work, the departmental graduate committee may recommend that the student be changed to regular status.

   The provisional student must earn a grade point average of at least 3.0. Some or all of the credits earned during provisional status may be approved for the student’s plan of study. Students in this status may not hold assistantships. Note: International students are not eligible for provisional status.

4. Non-Degree
   Students who fully qualify for admission to the Graduate School may be admitted as a non-degree student for one or more of the following reasons:

   a. They do not want to work toward a graduate degree.
   b. They want to transfer credits for use toward a graduate degree at another institution.
   c. They are salaried employees of the University (Employee Relations at 231-7779 can provide additional information).

   With the recommendation of the department graduate committee and the department head and with the approval of the dean of the Graduate School, non-degree graduate courses may
be used subsequently to satisfy some graduate-degree requirements. Non-degree graduate students are not eligible for graduate assistantships (GAs) or tuition scholarships.

5. **Commonwealth Campus**

Qualified students who wish to enroll in selected graduate courses may do so in the commonwealth campus program. Examples of students who seek admission into the commonwealth campus program include in-or out-of-state students who (a) may qualify for regular admission but do not currently wish to work for a graduate degree, (b) do not qualify for admission because of a poor undergraduate record but who have several years of appropriate professional experience and wish to improve their credentials, (c) require graduate courses for professional certification. Students may take up to 12 hours of course work as a commonwealth campus student. Students may not earn a degree while enrolled in the commonwealth campus program.

6. **ESM Students Who Have Successfully Completed the Master’s Degree**

ESM students who have successfully completed the master’s degree and wish to pursue doctoral graduate work must submit a Change of Degree Status form (http://www.esm.vt.edu; Graduate Students, Forms). ESM graduate coordinator in 231 Norris for the Graduate Program Director approval.

B. **Student's Responsibility**

All students are expected to know and comply with all graduate school regulations as stated in official publications such as the *Graduate Catalog*, and the *ESM Graduate Regulations Manual*.

C. **Financial Support**

There are two categories of appointment for graduate students: Graduate Teaching Assistant (GTA) and Graduate Research Assistant (GRA). Both will be referred to as Graduate Assistants (GAs) unless specific information pertaining to one of them is involved. GAs must maintain an overall GPA of 3.00 or above.

Students receiving assistantships are expected to perform their assigned duties (on a research project, teaching, grading, etc.) for a minimum period of one academic semester. Students on an assistantship are required to work a minimum of 20 hours per week. They will be evaluated continuously by the faculty member supervising their work. If their work is not satisfactory or if they are not making satisfactory progress towards their EM degree, their financial support could be discontinued.

Financial support may be extended on a semester-to-semester basis, within the guidelines of the Virginia Tech Graduate School and with the mutual agreement of the student, the project director, and the department head. All GAs must sign an *Assistantship Agreement* form for the period of their appointment. Because GRA appointments are subject to the availability of external funding and GTA appointments are subject to the availability of state funding, the department cannot guarantee the continuity of these appointments.
Work periods for GAs are normally based on the academic year extending from August 10 through May 9. GRA’s are required to work between the dates stated on their appointment letter. Financial support for summer school is handled on an individual basis.

a. Graduate students who have been in residence for one or more years compete for the Daniel Frederick, Manuel Stein, Liviu Librescu and Amir Chand and Dewki Bai Batra Scholarships. Each of these has a different set of requirements as specified by the donor.

b. Graduate students have the opportunity to apply for funds to travel and present their research at scientific conferences. These funds are provided by Bechtel and Terry Alfriend travel fellowships.

c. The College of Engineering holds a competition for the Torgersen Research Awards. Students are invited to present their research findings to a committee that selects the awardees.

d. The University Student Council provides funds to partially defray travel expenses incurred by graduate students for presenting their research at a conference.

D. Evaluation of the Progress of Graduate Students

The Graduate School requires that each department conduct an annual performance and progress evaluation for its graduate students. The committee chairperson (also known as the faculty advisor, major professor, or mentor) will administer the annual evaluation each spring semester for his/her advisees. Students will be evaluated in academics and research, and both the committee chairman and the student must sign an evaluation form.

Additionally, students are required to submit a progress towards degree report by May 15 of every year. Failure to submit these reports may result in removal from GTA assignments and ESM scholarship awards.

Failure to maintain a minimum overall GPA of 3.0 will result in academic probation. Students who are placed on academic probation are normally given one semester to raise their GPA to 3.0 before being removed from the graduate program.

E. Exceptions

Students may petition the Graduate School for an exception to existing policy. The petition must cite the regulation and justify the exception to these rules. The student's advisory committee, the department graduate committee, and the department head must also approve the petition.

F. Grievance Procedures

Students filing grievances should appeal to their advisory committees first and then to the department executive committee. The ESM Department abides by the university's grievance procedures for graduate students.

G. Minimum Hours of Registration

*Students being supported on an assistantship must sign for at least 12 credit hours each semester.*

For students who are not on an assistantship, 9 credit hours is considered full-time. The required credits may consist of any combination of course credits, dissertation credits (5994, 7994),
independent study credits (5974, 6974), or special study credits (5984, 6984). Students registered for 5994 and 7994 are expected to devote time to research in proportion to the numbers of credit hours registered. (See sections III, B and IV, D for IS and SS restrictions.)

Summer school enrollment is optional

Students who plan to defend their final examination within the first three weeks of classes can apply for defending student status (DDS) by filling out the Defending Student Status form at the Graduate School web site (http://www.grads.vt.edu/forms/index.html). These students must schedule their final examinations prior to the beginning of the semester in which they are given, and the defense must take place within twenty days after the first day of classes. Once the Graduate School receives the form, the student will be signed up for one credit hour. The student must go to the Bursar’s Office and pay the fee for this credit hour before the exam card can be picked up from the Graduate School.

II. Seminar

In addition to the minimum registration, students must register each semester for one credit hour of ESM 5944 Seminar (P/F), and they must attend the departmental seminars regularly. Seminar notices and the seminar log are posted on the ESM website: http://www.esm.vt.edu. Every student must submit a typed, double-spaced report on at least 7 seminars (4 must be sponsored by the ESM Department) to his/her advisor for approval by the last day of classes. Once the advisor has signed the seminar log, each student must give the log to the ESM graduate coordinator in 231 Norris by the reading day. Seminar credits are not included on the plan of study and do not count toward the graduate degree.

I. Continuous Enrollment

All graduate students who use the resources of the university during the academic year must be enrolled. Any person who undertakes any form of academic study within the university including supervised research, or who uses any facilities of the university other than the library, or who consults regularly with a faculty member concerning graduate work must be enrolled.

Students must register for each semester during the academic year until they complete all requirements for their degrees. The number of credit hours taken must reflect the extent of a student’s study or research activity.

J. Retention of State Property

When students leave the university for any reason they must return all property belonging to the Commonwealth of Virginia to their faculty supervisor or other appropriate persons. It is unlawful to remove from the university campus any property that was purchased with state funds (including sponsored research funds) or developed while employed by Virginia Tech in any category. Some examples of items that cannot be taken away or destroyed are door keys, computer programs, books, original drawings and figures for research reports, electronic and mechanical equipment, tools, calculators, drawing equipment, slide and movie projectors, specialized equipment developed for research projects, and materials and supplies.
K. **Student Health Care**

All full-time graduate students are required to pay a health-service fee. The Health Services Office provides limited medical care in the infirmary (McComas Hall) for all students when the university is in session and for those students who are required to work between terms. Persons are not eligible for health services when they are not registered. The fee does not provide health services for the student's family.

Students who maintain 50-100% assistantship appointments and who have purchased the university-sponsored health care plan are eligible to receive a contribution towards their health insurance premiums. Visit [www.grads.vt.edu](http://www.grads.vt.edu) for more information.

The infirmary lacks operating facilities, extensive equipment, and medical specialists, and thus provides services only for minor medical ailments and sicknesses. A health plan is available to all full-time graduate students.

*International students are required to have insurance on themselves and all family members. The insurance policy can be obtained through the university or through private U.S. and foreign insurance companies.*

Students must report immediately to the department head any accident or injury occurring while they are on university business or related travel.

L. **Revalidation of Courses**

Academic work, including transfer credit must meet the time limits specified below. Requests for revalidation of out-of-date courses must be submitted by the student and include signatures of all members of the student’s advisory committee and the chairman of the graduate committee. Revalidations are normally for a period of one year unless otherwise noted.

1. Course work more than five years old at the time of submission of the plan of study must be revalidated to count toward the master’s or doctorate.
2. Course work proposed on the master’s plan of study and yet to be taken at the time of approval must be completed within five years or revalidated to count towards the master’s degree.
3. Course work proposed on the doctoral plan of study and yet to be taken at the time of approval must be completed within seven years or revalidated if the preliminary exam for the Ph.D. degree has not been completed by then.

M. **Pass-Fail System**

A limited pass-fail (P/F) grading system is available to encourage students to explore courses outside their majors. These courses may not be used to satisfy minimum degree requirements, but they do appear on the student’s transcript. Under the pass/fail grading system, a "P" is granted for earning a "C-" or better in the course; otherwise an "F" is given. The GPA is unaffected by the grade of "P"; however, the grade of "F" is counted in the calculation of the GPA. A course taken P/F or Audit, can NOT be repeated later for a grade.

N. **Independent-Study**

Independent Study (5974, 6974): At the graduate level, the department offers independent-study courses to allow students to pursue studies in areas for which there are no approved formal courses. All independent studies are graded on a P/F basis. Each independent study requires a syllabus, a
title, justification, and the method of evaluation. Such courses may be used to satisfy degree requirements. (Restrictions for the master’s and doctoral program are discussed in III, B; and IV, D.)

O. “D” Grade

All courses on the plan of study must be passed with a minimum grade of C-. Courses on the program of study in which a grade of D or F is earned must be either replaced by equivalent ones or repeated.

III. REQUIREMENTS FOR THE DEGREES OF MASTER OF SCIENCE AND MASTER OF ENGINEERING

A. Degree Options

The Department offers the Master of Science (thesis and non-thesis) (M.S.), and Master of Engineering (M. Eng.) degrees. Each degree requires a minimum of 30 credit hours with a minimum overall GPA of 3.0.

1. Master of Science (thesis and non-thesis)

Students pursuing the master of science thesis option must take 21-24 course credit hours and 6-9 thesis credit hours for a minimum total of 30 credit hours.

Students electing the Master of Science non-thesis option will take a minimum of 30 course credit hours. This option must be declared at the time the plan of study is submitted to the Graduate School. Students choosing this option must have a committee of three and take a final oral examination.

*The final transcript will designate the degree as thesis or non-thesis.*

2. Master of Engineering

This program is oriented toward engineering practice instead of fundamental research, teaching or further study. (Recipients of this degree are not barred, however, from pursuing more advanced degrees.) It is intended to increase the competence of students who are interested in design, development, operation, and engineering practice.

Master of Engineering candidates must take 27 course credit hours and prepare a three-credit paper on an engineering project; the student’s advisory committee must approve the subject and outline. The purpose of the paper is to develop and demonstrate the candidate’s ability to plan and execute projects relating to the practice of engineering. Please see Appendix E for submission of the project and report to the department for binding.

3. Accelerated Undergraduate/Graduate Degree Program (UGG)

Upon completion of 90 credit hours and with at least one semester remaining until all requirements for the bachelor’s degree are completed, undergraduate students at Virginia Tech having an overall graduate point average of at least 3.3 may apply for the ESM Accelerated Undergraduate/Graduate Degree (UG/G/MS, BS/MEng or BS/PhD) Program.
This program allows these students to count up to 12 credit hours taken during the last twelve months before the awarding of the bachelor’s degree toward both the bachelor’s and graduate (MS, MEng or PhD) degrees. These credit hours must be taken before the completion of the undergraduate degree and after admission into the Undergraduate/Graduate Degree Program. Only 6 credit hours of 4xxx level courses may be counted towards the graduate degree. A grade of a least a B is required in each course taken before the completion of the BS degree that is used for the graduate degree.

Upon admission into the program, the ESM Associate Department Head and the Director of Graduate Studies will jointly advise the student until the Plan of Study is approved by the graduate school. The Plan of Study must be completed during the first semester after the completion of the bachelor’s degree.

Students wishing to apply for the Accelerated Undergraduate/Graduate Degree Program should

- Meet with the ESM Associate Department Head to discuss courses that may be used in the program.
- Complete an on-line graduate application, including all supporting materials, at http://www.grads.vt.edu/homeapply.html by January 1st for spring, May 1st for summer, or August 1st for fall semester admission. At this point, they will need to pay the application fee to the Graduate School.

Acceptance into the program will be determined by the Department after review of the completed application.

B. Plan of Study

Before completing 12 credit hours, students must select a committee chairman (also called faculty advisor or major professor). They must submit their plan of study to the ESM graduate coordinator in 231 Norris. Failure to submit the plan of study in a timely fashion may result in a loss of credits and the inability to hold an assistantship. The student’s advisory committee, and the director of graduate studies, must approve the plan of study. The director of graduate studies will serve as the student’s advisor until the advisory committee is formed.

The master’s plan of study may contain a combination of 5000 and 6000-level courses and a maximum of six hours of approved 4000-level courses. Approved ESM 4000, 5000, and 6000-level courses are given in Appendix B. Each plan of study must include:

- 30 total hours
- 6-9 research and thesis credit hours
- 24-21 course credit hours
- ESM 5014 Introduction to Continuum Mechanics
- Three credit hours of MATH
- Three credit hours at the 5000 to 6000-level of an ESM course from TWO of the following areas: solids and materials, fluids, and motion

A minimum of 12 course credits must be taken in the ESM Department. There are no restrictions on the remaining courses necessary to complete the plan of study except that they must be planned with a definite goal in mind. Interdisciplinary plans of study are viewed favorably.
Appendix B gives the grouping of all ESM courses under the following five headings: Fluids, Math, Solids and Materials, Motion, and Biomechanics.

Revalidation of coursework: See Section II, M.

Independent Study 5974/6974 (IS) and Special Study 5984/6984 (SS) courses: At the graduate level, the department offers independent-study and special study courses to allow students to pursue studies in areas for which there are no approved formal courses. IS courses can only be taken on a P/F basis. SS courses can be taken for a grade if the paperwork indicates it will be taken A/F. Each requires a title, justification, and the method of evaluation. Such courses may be used to satisfy degree requirements. For the thesis option there is a maximum of six credit hours of independent study or special study courses that can be used to complete the plan of study, with the total for both IS and SS courses not exceeding 6 hours; for the non-thesis option the maximum is nine credit hours of independent study or special study courses that can be used to complete the plan of study, with the total for both IS and SS courses not exceeding 9 hours; see the Graduate Catalog). IS and SS courses must be approved by the director of graduate studies, the College of Engineering and the Graduate School. Paperwork must be submitted no later than two weeks before the beginning of a semester or one week before the beginning of a summer session.

Plans of study are prepared for the benefit of both the student and the department. The department uses the plans for the purposes of scheduling courses, assigning teachers, and long-range planning. Therefore, there must be valid reasons for making changes in approved plans; and the student's advisory committee, the director of graduate studies, and the dean of the Graduate School must approve all changes.

C. Transferred Credit from Other Universities

As a general rule, students are allowed to transfer no more course credits than the number of credits they plan to take on campus. Student must have earned grades of “B” or above in all transfer courses.

Students must state on their plan of study the Virginia Tech course that is equivalent to the course being transferred.

D. Student Chairman and Student Advisory Committee

Each graduate student will have an advisory committee, which approves the plan of study and evaluates the student's academic work. The committee must be selected prior to the submission of a plan of study.

1. Master of Science, Non-thesis Option

The department graduate committee may act as the student's advisory committee.

2. Master of Science, Thesis Option

Before the end of the first semester, students must select a committee chairman (also known as the faculty advisor, major professor, or mentor). By the end of the first semester, they must submit their Plan of Study to the ESM Graduate Coordinator in 231 Norris. The M.S. student’s advisory committee is composed of the major professor acting as chairman or
advisor, and a minimum of two other faculty members, one of whom can be from another VT Department. Each student’s chairman (or co-chairman) must be an ESM tenured or tenure-track faculty member or affiliated faculty member. Research faculty members may chair those committees that involve students supported through their own sponsored research programs. The director of graduate studies, and the dean of the Graduate School must approve the committee members. The director of graduate studies will advise a student until his/her advisory committee is appointed. Failure to prepare the plan of study in a timely fashion may result in a loss of credits and the inability to hold an assistantship.

In exceptional cases, students may choose a qualified off-campus person at their place of employment as a "co-chairman." The graduate committee chairman and the department head must approve such an appointment. However, in such cases, at least two members of the student advisory committee must be ESM (or affiliate) tenured or tenure-track members, and one of these must also serve as a co-chairman.

The Committee's function is to conduct the final examination, to advise and aid students in completing the plan of study, to advise them in their research as is necessary and to evaluate their progress. Students are encouraged to confer with a broad spectrum of the faculty before deciding on a plan of study and a committee chairman. When a student and a member of the faculty have reached an agreement on a plan of study, the Plan of Study form (http://www.esm.vt.edu; Graduate Students, Forms), should be filled out, signed and submitted to the ESM graduate coordinator in 231 Norris for approval from the graduate committee chairman, the department head, and the dean of Graduate School.

3. Master of Engineering

Master of Engineering students should follow the procedures outlined for students pursuing the Master of Science Degree (thesis option) in selecting their advisory committee.

E. Final Comprehensive Examination

All master's students must pass an oral and/or written comprehensive examination upon completion of degree requirements. Except in very unusual circumstances, a student may not take this examination more than twice. All final examinations must be scheduled with the ESM graduate coordinator at least two weeks ahead of the time when they are to be held, and the candidate must be registered for a minimum of three credit hours or have defending student status (DSS). DSS requires that you defend within the first twenty-one days from the first day of classes.

The examination is to be administered by an examining committee, normally composed of members of the student’s advisory committee with additional members as necessary to cover the four areas of solids and materials, fluids, motion, and mathematics. The examination will cover all course work as well as the research or project completed by the student. The department head and the dean of the graduate school must approve the examining committee.

In cases where a thesis or paper is involved, a typed copy approved by the committee chairman must be in the hands of the examining committee one week prior to the examination.

In order to pass the final examination, a candidate is allowed at most one negative vote from the examining committee. If a student fails the final examination, there must be a lapse of one full
semester (a minimum of 15 weeks) before rescheduling the examination. The student is allowed no more than two opportunities to pass the final examination.

The Request to Admit Candidate to Final Exam form (http://www.esm.vt.edu; Graduate Students, Forms) must be filled out and received by the Graduate School two weeks before your scheduled exam.

F. Thesis

The thesis should be a scholarly discourse on a topic approved by the student's committee. It should demonstrate the student’s ability to perform independent research of professional quality. Students are required to hold regularly scheduled meetings with their committee chairman and, if necessary, their advisory committee members to keep them informed of progress. Detailed guidelines for publication of the thesis are specified in the Graduate Catalog (http://www.grads.vt.edu). The thesis is expected to be well organized and written clearly.

The original copy of the thesis must be electronically submitted to the Graduate School (see website http://etd.vt.edu) and a hard copy (do not bind) must be submitted to the ESM department (see Appendix E). The title of the degree, which appears on the cover page, is Engineering Mechanics.

G. Masters Candidates Continuing Towards the Doctorate Degree

Students who have not completed all requirements for the M.S. or M.E. degrees, but who are taking additional courses beyond those listed on their M.S. or M.E. plan of study and wish to continue towards the doctorate degree must request admission to that degree before the additional courses exceed 12 hours.

IV. REQUIREMENTS FOR THE ENGINEERING MECHANICS DEGREE OF DOCTOR OF PHILOSOPHY

A. Admission

Outstanding students with an intense interest in independent study and research can pursue the degree of doctor of philosophy.

Requirements for admission to the doctorate program are a master’s degree in engineering, mathematics, or physics from a recognized university; and an outstanding academic record and grade point average. Students may also apply for admission to the doctoral program directly after obtaining a bachelor’s degree by applying to the Direct Ph.D. Program.

B. Credits

A minimum of 90 credit hours beyond the bachelor’s degree is required for the doctorate degree. Of these 90 hours, 44-55 hours will be course credit hours and 35-46 hours will be for research and dissertation.
C. Transferred Credits from Other Universities

As a general rule, students are allowed to transfer no more course credits than the number of credits they plan to take on campus. Students must have earned grades of “B” or above in transferred courses.

Students who have earned a MS degree from another university can transfer up to 21 course credit hours towards the 44-55 course credit hours of the plan of study. Students who have earned two MS degrees, have taken more than 21 credit hours in their MS program, or have taken courses after completing their MS degree may transfer up to nine additional credit hours towards the 44-55 course credit hours of the plan of study. These nine hours must have been taken after earning the first MS degree.

*Students must state on their plan of study the Virginia Tech course equivalent to the course being transferred.*

D. Plan of Study (See Appendix D for Check Lists)

Each doctoral plan of study must include:

- 90 total hours beyond the bachelor’s degree
- 46-35 research and dissertation hours
- 44-55 course credit hours
- ESM 5014 Introduction to Continuum Mechanics.
- six credit hours of MATH at the 5000 to 6000-level (see Appendix B for approved courses).
- three credit hours at the 5000 to 6000-level of an ESM course in EACH of the three areas of solids and materials, fluids, and motion (see Appendix B for approved courses).
- nine credit hours of 6000-level courses relevant to student’s dissertation research (do not have to be ESM courses).

*There may be no more than a maximum of nine credit hours of 4000-level courses on the doctoral plan of study.* The background in mathematics must include ordinary and partial differential equations, complex variables, and integral transforms. Appendix B gives the ESM courses acceptable for the mathematics, solids and materials, fluids, and motion requirements.

Independent Study 5974/6974 (IS) and Special Study 5984/6984 (SS) courses: At the graduate level, the department offers independent-study and special study courses to allow students to pursue studies in areas for which there are no approved formal courses. IS courses can only be taken on a P/F basis. SS courses can be taken for a grade if the paperwork indicates it will be taken A/F. Each requires a title, justification, and the method of evaluation, and must be approved by the director of graduate studies, the College of Engineering, and the Graduate School. Paperwork must be submitted no later than two weeks before the beginning of a semester or one week before the beginning of a summer session. Such courses may be used to satisfy degree requirements. *For the doctorate program, students may take a maximum of 9 hours of IS or SS courses.*

Plans of study are prepared for the benefit of both the student and the department. It is undesirable to make changes in approved plans without valid reasons. All changes must be
approved by the student's advisory committee, the director of graduate studies, and the dean of the Graduate School.

Revalidation of coursework: See Section II, M.

E. Committee Chairman and Student Advisory Committee

Before the end of the first semester, students must select a committee chairman (also known as the faculty advisor, major professor, or mentor). By the end of the first semester, they must submit their Plan of Study to the ESM Graduate Coordinator in 231 Norris. The doctoral student’s advisory committee is composed of the major professor acting as chairman or advisor, and a minimum of four other faculty members, at least one of whom is from another VT Department (at least three committee members should be from ESM).

Each student’s chairman (or co-chairman) must be an ESM tenured or tenure-track faculty member or affiliated faculty member. However, research faculty members may chair those committees that involve students supported through their own sponsored research programs. The director of graduate studies and the dean of the Graduate School must approve the committee members. The committee should be balanced to reflect at least two of the three areas (solids and materials, fluids, and motion) closest to the research of the student, while a representative of the third area should be invited to participate in the Ph.D. Preliminary Exam so that all three areas of mechanics are represented. The graduate committee chairman will advise a student until his/her advisory committee is appointed.

In exceptional cases, students may choose a qualified off-campus person at their place of employment as a “Co-Chairman.” The director of graduate studies must approve such an appointment. However, in such cases, at least three members of the student advisory committee must be ESM (or affiliate) tenured or tenure-track faculty members, and one of these must also serve as a co-chairman.

The Committee's function is to conduct the oral preliminary examination, the dissertation proposal, and the final examination, to advise and aid students in completing the plan of study, to advise them in their research as necessary and to evaluate their progress.

Failure to prepare the plan of study in a timely fashion may result in a loss of credits and the inability to hold an assistantship. The student's advisory committee, the director of graduate studies, must approve the plan of study. The director of graduate studies will serve as the student's advisor until the advisory committee is formed.

It is an infrequent occurrence that graduate students wish to change their committee chairman or members of their committee. In these cases, a Change of Committee or Advisor form (http://www.esm.vt.edu; Graduate students, Forms) is to be filled out by the student, signed by both old and new committee members. After getting signatures, please take the form to the ESM graduate coordinator in 231 Norris.

Students should discuss such a change with their committee members (old and new) prior to requesting the change in order to reduce disruption in the work performed under the sponsorship of the old chairman. In most cases, changes are arranged by agreement between the student and the chairman; however, in the case of a dispute or disagreement, the student should present the case to the graduate committee, which will then attempt to resolve the issues.
F. Qualifying Examination

This examination serves to evaluate the student's mastery of fundamental knowledge and to diagnose deficiencies. The examination will also determine proficiency in written and oral English.

All ESM doctoral students are required to take and successfully complete a written qualifying examination before the beginning of their second semester. A departmental qualifying exam committee appointed annually by the department head administers this examination.

All matters relating to the examination such as the schedule, type of questions, etc., are to be decided by the committee. This examination will be broad in nature and should reflect the student's ability to comprehend the fundamental principles of mechanics. Moreover, it is intended to acquaint the faculty with the student's ability to integrate and apply knowledge of previous courses to practical and challenging problems. Students will be examined in the areas of solids and materials, fluids, motion, and mathematics.

The Committee will grade the examination and determine any deficiencies in the student’s background. Some students may then be required to take the specified courses in one or more areas of mechanics and/or mathematics. Some of these courses could be at the undergraduate level and must be taken at the earliest opportunity. Moreover, these courses must be passed in one attempt with a minimum grade of B+, and can’t be used to satisfy the required minimum of 90 credit hours on the plan of study. A student who fails to pass one or more of these courses in one attempt with a grade of at least B+ will not be allowed to continue in the ESM doctoral program.

To be well prepared, students should review undergraduate courses in Fluid Mechanics (ESM 3015), Mechanics of Deformable Bodies (ESM 2204), Dynamics (ESM 2304), and Mathematics (Math 4564 and 4574).

G. Preliminary Examination

All doctoral students must take an oral preliminary examination administered by the student's advisory committee. Some non-committee members may be asked to participate in order to have mathematics and all three areas of mechanics represented. The examination will cover all course work taken by the student. This examination must be taken at least nine months prior to the completion of all doctoral degree requirements and is normally taken after completion of all courses on the program of study.

The student is allowed at most two opportunities to pass this examination. To pass the examination, the student is allowed at most one negative vote from the committee.

The Request to Admit Candidate to Final Exam form (http://www.esm.vt.edu: Graduate Students, Forms) needs to be submitted to the Graduate School two weeks prior to the exam date. Once you’ve filled out the form and your chairman has signed it, bring the form to the ESM Graduate Coordinator in 231 Norris. The exam packet will be mailed to your advisor. Your advisor is responsible for taking the packet to your exam, getting the card signed by all members attending the exam, and then returning the card to the Graduate School after the exam. The Graduate Coordinator needs to make a copy of the card before it is taken back to the Graduate School.

Students should realize that preparation for this examination must not interfere with their assistantship responsibilities. Candidates must be registered to take the preliminary exam. If you are taking the exam during the summer sessions, you would need to be registered for at least three credit hours.
H. **Language Requirement**

There is no departmental language requirement. However, foreign languages or other requirements will be optional at the discretion of the student's advisory committee. International students may be required to take remedial courses in oral or written English if their advisory committee recommends such an action. These courses do not count towards the 90 hours on your plan of study.

I. **Dissertation Proposal**

Each doctoral candidate must present a written proposal of the proposed dissertation topic to the advisory committee for approval at least six months prior to completing the dissertation. The committee will then hold a meeting with the student to discuss the proposal orally.

The purpose of this oral and written presentation is to determine the feasibility and originality of the proposed research, the student's familiarity with the literature, and the student's knowledge of the background material involved, and to offer suggestions to the student on fruitful lines of approach and guidance on the proposed research. The student’s advisory committee must approve the topic of the dissertation.

Please notify the ESM graduate coordinator in 231 Norris of your proposal date, time and place. Print the Dissertation Proposal form ([http://www.esm.vt.edu/Graduate Students, Forms](http://www.esm.vt.edu/Graduate Students, Forms)), get signatures of all committee members at the proposal, and then take it to the form to the Graduate Coordinator in 231 Norris so that the form will be placed in your file.

J. **Dissertation**

The dissertation should be an original contribution to the literature in the field of mechanics. In a 90 credit hour doctoral program, 35-46 equivalent credit hours will be for the dissertation. Style and organization requirements are described in the Graduate Catalog ([www.grads.vt.edu](http://www.grads.vt.edu)). The dissertation must be completed and approved by the chairman of the student's advisory committee prior to scheduling the final examination. The style, organization, and standards of the dissertation shall be consistent with those for papers in the Journal of Applied Mechanics. The original copy of the dissertation must be electronically submitted to the Graduate School ([http://etd.vt.edu](http://etd.vt.edu)) and a hard copy must be submitted to the ESM graduate coordinator in 327 Norris (see Appendix E). The title of the degree, which appears on the cover page, is Engineering Mechanics.

K. **Final Examination**

Each doctoral candidate must pass a final oral examination, which is primarily a defense of the dissertation. An examining committee normally consisting of the student’s advisory committee and/or other members of the university faculty may be appointed by the dean of the Graduate School to administer it. This final examination is also known as the defense and is open to the public.

In order to pass the final examination, a candidate is allowed at most one negative vote from the examining committee. If a student fails the final examination, there must be a lapse of one full semester (a minimum of 15 weeks) before rescheduling the examination. The student is allowed no more than two opportunities to pass the final examination.

A copy of the final version of the dissertation must be given to each advisory committee member at least ten days before the examination.

The final examination must be scheduled at least two weeks before it is to be held, and cannot be scheduled any sooner than six months after the acceptance of the dissertation proposal.
Candidates must be registered for a minimum of three credit hours in courses or must have “Defending Student Status”. Students who plan to defend their final examination within the first three weeks of classes can apply for defending student status (DSS) by filling out the Defending Student Status form [http://www.grads.vt.edu/common/forms.htm](http://www.grads.vt.edu/common/forms.htm). These students must schedule their final examinations prior to the beginning of the semester in which they are given, and the defense must take place within twenty days after the first day of classes. Once the Graduate School receives the form, the student will be signed up for one credit hour. The exam packet will be mailed to the advisor. The advisor is responsible for taking the packet to the exam, getting the card signed by all members attending the exam, and then returning the card to the Graduate School after the exam. The Graduate Coordinator needs to make a copy of the card before it is taken back to the Graduate School.

L. **Public Presentation of Ph.D. Research**

All doctoral students are required to present their research in a public forum before defending their PhD dissertation. This can be done at a conference or at an ESM seminar. To schedule an ESM seminar, get in touch with the seminar instructor to get your ESM seminar scheduled so that you can satisfy this requirement.
Appendix A

Virginia Tech - Center for Biomedical Engineering

Requirements for the Degree Option in Biomedical Engineering

All graduate students will receive a degree from one of the traditional departments in the College of Engineering. Completion of the following requirements will make a student eligible to receive the additional Option in Biomedical Engineering.

(a) Successful completion of the requirements for the graduate degree in his or her home department.

(b) Successful completion of at least one course from the following list. Additional courses may be substituted contingent upon approval by the Center’s governing committee.

Engineering

These 4000-level courses are approved for graduate credit

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESM 4105-4106</td>
<td>Analysis of Physiological Systems</td>
</tr>
<tr>
<td>ESM 4204</td>
<td>Musculoskeletal Biomechanics</td>
</tr>
<tr>
<td>ESM 42XX</td>
<td>Orthopedic Biomechanics</td>
</tr>
<tr>
<td>ESM / MSE 4574</td>
<td>Biomaterials</td>
</tr>
<tr>
<td>ESM 5305-5306</td>
<td>Biomechanics of the Cardiovascular System</td>
</tr>
<tr>
<td>ESM 5405-5406</td>
<td>Clinical Internship in Biomedical Engineering</td>
</tr>
<tr>
<td>ISE 5614</td>
<td>Human Physical Capabilities</td>
</tr>
</tbody>
</table>

Veterinary Medical Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMS 5454-5464</td>
<td>Veterinary Physiology</td>
</tr>
<tr>
<td>VMS 5474</td>
<td>Veterinary Neurobiology</td>
</tr>
<tr>
<td>VMS 5184</td>
<td>General Pathology</td>
</tr>
<tr>
<td>VMS 5194</td>
<td>Clinical Micropathology</td>
</tr>
<tr>
<td>VMS 5394</td>
<td>Experimental Techniques and Management of Experimental Animal Surgery</td>
</tr>
<tr>
<td>VMS 5434-5444</td>
<td>Veterinary Anatomy</td>
</tr>
</tbody>
</table>

Other courses will be added to the list as they are developed and/or approved

(c) Participation in the BME Seminar Series. Participation is defined as attendance and presentation of a student’s own research.

The student’s chairman or co-chairman must be a member of the center, and the student’s thesis or dissertation must be in the area of Biomedical Engineering.
APPENDIX B
ESM COURSES IN FLUIDS, MATHEMATICS, SOLIDS AND MATERIALS, MOTION AND BIOMECHANICS

Core Course: ESM 5014 INTRODUCTION TO CONTINUUM MECHANICS

<table>
<thead>
<tr>
<th>FLUIDS</th>
<th>MATHEMATICS</th>
<th>SOLIDS AND MATERIALS</th>
<th>MOTION</th>
<th>BIOMECHANICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESM 4024</td>
<td>ESM 4074</td>
<td>ESM 4105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 4044</td>
<td>ESM 4114</td>
<td>ESM 4106</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 4054</td>
<td>ESM 4444</td>
<td>ESM 4204</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 4064</td>
<td>ESM 4524</td>
<td>ESM 42XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 4084</td>
<td>ESM 4574</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 4154</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 5064</td>
<td></td>
<td>ESM 5304</td>
<td>ESM 5305</td>
<td></td>
</tr>
<tr>
<td>ESM 5074</td>
<td></td>
<td>ESM 5314</td>
<td>ESM 5306</td>
<td></td>
</tr>
<tr>
<td>ESM 5124</td>
<td></td>
<td>ESM 5324</td>
<td>ESM 5354</td>
<td></td>
</tr>
<tr>
<td>ESM 5134</td>
<td></td>
<td>ESM 5344</td>
<td>ESM 5405</td>
<td></td>
</tr>
<tr>
<td>ESM 5144</td>
<td></td>
<td>ESM 5354</td>
<td>ESM 5406</td>
<td></td>
</tr>
<tr>
<td>ESM 5174</td>
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<td>ESM 5414</td>
<td>ISE 5614</td>
<td></td>
</tr>
<tr>
<td>ESM 5194</td>
<td></td>
<td>ESM 5464</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 5204</td>
<td></td>
<td>ESM 5184</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 5234</td>
<td>ESM 5264</td>
<td>ESM 5444</td>
<td>ESM 6464</td>
<td></td>
</tr>
<tr>
<td>ESM 6044</td>
<td></td>
<td>ESM 5194</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Also known as: Math 5495

**Also known as Math 5496

GENERAL

| ESM 4004 | Or ANY Math 5000 | ESM 6054 |
| ESM 4094 | or 6000-level class | ESM 6084 |
| ESM 4714 |                | ESM 6104 |
|          |                | ESM 6154 |

A maximum of 3 credit hours may be in courses not approved for graduate credit and numbered 4000 if outside the student's major field and if judged by the student's committee to be on a level warranting graduate credit. Graduate level courses offered by other departments cannot be used to meet the requirement of taking one graduate level course in solids and materials, fluids and motion.
APPENDIX C
ENGINEERING MECHANICS
GRADUATE STUDENT PROGRESS

Name ________________________________ Campus On ________________ Off ________________

Address __________________________________________________________ Location ________________

Support ________________________________(GRA/GTA/GA/other)

Phone ________________

M.S./M.E. Program

Chairman: ___________________________ DATE (SEM/YR) COMMENTS

1. First Enrollment
2. Expected Graduation
3. Program of Study
   a. Course hours
   b. Thesis hours
4. Final Examination and/or Thesis Defense

Ph.D. Program

Chairman: ___________________________ DATE (SEM/YR) COMMENTS

1. First Enrollment
2. Expected Graduation
3. Qualifying Examination
4. Program of Study Submitted
   a. Course hours
   b. Thesis hours
5. Preliminary Examination
6. Dissertation Proposal
7. Final Examination
### APPENDIX D

**EM CHECK LIST FOR M. S. THESIS OPTION**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>HOURS</th>
<th>Courses Chosen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research (ESM 5994)</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>ESM 5014</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>(2 out of the following 3 courses)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 5000 or 6000 solid mech.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ESM 5000 or 6000 fluid mech.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ESM 5000 or 6000 motion</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MATH requirement (see approved courses in Appendix B)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other 4000, 5000, or 6000 courses</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL FOR PROGRAM**

30

ESM Seminar

1 each semester

(Do not include on your plan of study)

Additional Information regarding plan of study/degree requirements:

1. All students must submit a plan of study by the time they complete 12 hours
2. A plan of study cannot have more than a maximum of 9 credits from approved 4000-level courses
3. A plan of study may contain a maximum of 6 credit hours from approved independent study and special study courses, with the total for both IS and SS courses not exceeding 6 credit hours
4. A plan of study must have a total of 30 hours, of which 6-9 are *research and thesis credit hours* and 21-24 are *course credit hours*

*Please note: If you are in the Undergraduate/Graduate (UG/G) program, the 4000 level courses may only be used as the elective courses.*
## EM CHECK LIST FOR M.S. - NONTHESES OPTION

<table>
<thead>
<tr>
<th>COURSE</th>
<th>HOURS</th>
<th>Courses Chosen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 5014</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>(2 out of the following 3 courses)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM 5000 or 6000 Solid Mech.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ESM 5000 or 6000 Fluid Mech.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ESM 5000 or 6000 Motion</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MATH requirement (see approved Courses in Appendix B)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other 4000, 5000, or 6000 courses</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL FOR PROGRAM</strong></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>

ESM Seminar                                     1 each semester  
(Do not include on your plan of study)

Additional Information regarding plan of study/degree requirements:

1. All students must submit a plan of study by the time they complete 12 hours
2. A plan of study cannot have more than a maximum of 9 credits from approved 4000-level courses
3. A plan of study may contain a maximum of 9 credit hours from approved independent study and special study courses, *with the total for both IS and SS courses not exceeding 9 credit hours*

*Please note: if you are in the Undergraduate/Graduate (UG/G) program, the 4000 level courses may only be used as the elective courses.*
# EM CHECK LIST FOR M. ENGR. DEGREE

<table>
<thead>
<tr>
<th>COURSE</th>
<th>HOURS</th>
<th>Courses Chosen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min.</td>
<td>max.</td>
</tr>
</tbody>
</table>

## Basic Requirements

- **Project and Report, ESM 5904**
  - 3
  - 3

- **ESM 5014**
  - 3

- **(2 out of the following 3 courses)**
  - **ESM 5000 or 6000 Solid Mech.**
    - 3
  - **ESM 5000 or 6000 Fluid Mech.**
    - 3
  - **ESM 5000 or 6000 Motion**
    - 3

- **MATH requirement (see approved courses in Appendix B)**
  - 3

- **Other 4000, 5000, or 6000 courses**
  - 12

### TOTAL FOR PROGRAM

- **30**

- **ESM Seminar**
  - 1 each semester (required)
  - (do not include on your program)

- **ESM Seminar**
  - 1 each semester
  - (Do not include on your plan of study)

## Additional Information regarding plan of study/degree requirements:

5. All students must submit a plan of study by the time they complete 12 hours

6. A plan of study cannot have more than a maximum of 9 credits from approved 4000-level courses

7. A plan of study may contain a maximum of 6 credit hours from approved independent study and special study courses, with the total for both IS and SS courses not exceeding 6 credit hours

*Please note: if you are in the Undergraduate/Graduate (UG/G) program, the 4000 level courses may only be used as the elective courses.*
# EM CHECK LIST FOR DOCTORATE DEGREE
## AND DIRECT PH.D. DEGREE

<table>
<thead>
<tr>
<th>COURSE</th>
<th>HOURS</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min.</td>
<td>max.</td>
</tr>
<tr>
<td>Basic Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research (ESM 7994)</td>
<td>35</td>
<td>46</td>
</tr>
<tr>
<td>ESM 5014 or equivalent transferred course</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>ESM 5000 or 6000 Solid Mech.</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>ESM 5000 or 6000 Fluid Mech.</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>ESM 5000 or 6000 Motion</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>Six credit hours of MATH 5000 or 6000-level (see approved Courses in Appendix B)</td>
<td>6</td>
<td>______</td>
</tr>
<tr>
<td>Other 5000 or 6000-level courses</td>
<td>26</td>
<td>______</td>
</tr>
<tr>
<td>ESM Seminar (do not include on your plan of study)</td>
<td>1 each semester (required)</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL FOR PROGRAM** 90

---

**Additional Information regarding Program of Study/Degree Requirements:**

1. All students must submit a plan of study by the time they complete 12 hours
2. A plan of study must have a total of 90 hours beyond the bachelor’s degree, of which 42-48 are research and dissertation credit hours and 48-42 are course credit hours
3. A plan of study cannot have more than a maximum of 9 credits from approved 4000-level courses
4. A plan of study may contain a maximum of 9 credit hours from approved independent study and special study courses, with the total for both IS and SS courses not exceeding 9 credit hours
5. A plan of study must have 6 credit hours of Math at the 5000 or 600-level approved courses
6. A plan of study must have 9 credit hours at the 6000-level approved courses
7. The qualifying exam must be taken during the students first semester of enrollment
8. The preliminary exam must be scheduled at least nine months prior to the dissertation defense
9. The dissertation proposal must be submitted at least six months prior to the dissertation defense
APPENDIX E

INDIVIDUAL DEGREE REQUIREMENTS FOR SUBMISSION OF DISSERTATIONS, THESES OR PROJECTS AND REPORTS

Ph.D and Direct Ph.D. Degree:

Dissertation must be submitted to the Graduate School via electronic file and to the department via an original, hard copy (to include high quality photographs, drawings, graphs, etc.).

M.S. Degree (thesis option):

Thesis must be submitted to the Graduate School via electronic file and to the department via an original, hard copy (to include high quality photographs, drawings, graphs, etc.).

M.S. Degree (non-thesis option):

Not Applicable

M.Eng. Degree:

Project and Report must be submitted to the Graduate School via electronic file and to the department via an original, hard copy (to include high quality photographs, drawings, graphs, etc.).

PROCEDURES FOR SUBMITTING THE ETD TO THE GRADUATE SCHOOL AND A PRINTED COPY TO THE DEPARTMENT FOR BINDING:

1. Submit the thesis/dissertation electronically to the Graduate School (instructions can be found at http://www.grads.vt.edu/current/etd.htm)
2. The ETD Approval Form is at http://www.esm.vt.edu; Graduate Students, Forms
3. All committee members listed on your plan of study must sign the ETD Approval Form
4. After your committee members have signed the ETD form, give the form along with the printed copy (see #5) to the graduate coordinator. The Graduate School will not clear any ESM students without the ESM graduate coordinator signature on the ETD Form
5. You are required to print (without binding) a high-quality copy of their thesis/dissertation on at least 25% cotton-bond paper for the department. The formatting instructions for the department's copy are basically the same as it is for the ETD submission. Colored figures in the ETD version must also be in color in the hard copy. If you have questions, please contact the graduate coordinator