Graduate Handbook

School of Mechanical, Aerospace, and Manufacturing Engineering

UCONN
UNIVERSITY OF CONNECTICUT

Revision: October 4, 2024

Contents

1 Degree Programs . . . 2
2 Elective Concentrations . . . 2
3 Credit Transfer . . . 2
4 Course Substitutions . . . 3
5 Online Courses . . . 4
6 Full-time Status . . . 4
7 Independent Studies . . . 5
8 Major Advisor and Advisory Committee . . . 5
8.1 Major Advisor . . . 5
8.2 Advisory Committee . . . 6
9 Master of Science (M.S.) Requirements . . . 7
9.1 Required Credit Hours . . . 7
9.2 Plan of Study . . . 8
9.3 M.S. Final Examination . . . 9
9.4 Accelerated Master of Science . . . 9
9.5 Re-application . . . 11
10 Doctor of Philosophy (Ph.D.) Requirements . . . 12
10.1 Plan of Study . . . 12
10.2 Dissertation and Doctoral Examinations . . . 13
10.3 Format of the General (Qualifying) Examination . . . 16
10.4 Publications . . . 18
10.5 Residency . . . 18
10.6 Change of Program . . . 18
10.7 M.S. Degree while in Ph.D. Degree . . . 19
11 Graduate Seminar . . . 19
12 Registration and Orientation . . . 20
13 Graduate Assistantships . . . 20
13.1 Appointment . . . 21
13.2 Stipend Increases . . . 21
13.3 TA Language Test . . . 21
14 Additional Policies and Information . . . 21

14.1 Mandatory Training . . . 21
14.2 Resolution of the Council of Graduate Schools . . . 22
14.3 Withdrawal . . . 22
14.4 Leave of Abscence . . . 22
14.5 Time Limits . . . 22
14.6 Graduation Procedure . . . 23
14.7 Non-Degree Courses . . . 23
14.8 Mail . . . 23
14.9 Photocopying . . . 23
14.10 Laboratories and Computing Facilities . . . 24
14.11 Information Services . . . 24
14.12 Travel . . . 25
14.13 Orders . . . 25

1 Degree Programs

The School of Mechanical, Aerospace, and Manufacturing Engineering (SoMAM) offers degree programs leading to both Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees. The following sections of the handbook detail the academic requirements for these degrees.

This handbook covers the requirements corresponding to the new Mechanical Engineering catalog coming into force in the Fall of 2024. Graduate students enrolled in the school prior to Fall 2024 may request a change to the new catalog by sending an email to Degree Audit at degreeaudit@uconn.edu with copy to the school's Direction of Graduate Studies at engr-medgs@uconn.edu.

For Master of Engineering (MENG) program requirements, please visit the website of the Center for Advanced Engineering Education at https://advancededucation.engineering.uconn.edu/.

2 Elective Concentrations

The school offers two elective concentrations: *Systems and Mechanics* and *Thermal and Fluid Sciences*. Students taking four of the courses under each concentration (see Table 1) may request the concentration when submitting the final Plan of Study for their degree.

3 Credit Transfer

Students who have completed prior graduate work at an institution other than the University of Connecticut may transfer up to six credit hours of graduate-level work, provided the credits were not used to satisfy the requirements of a degree in that institution, and subject to approval by the school. The student must have obtained a grade equivalent to "B-" or higher

	Systems and Mechanics		Thermal and Fluid Sciences
ME 5105	Basic Concepts of Continuum Mechanics	ME 5110	Advanced Thermodynamics
ME 5190	Advanced Solid Mechanics	ME 5130	Advanced Heat and Mass Transfer
ME 5155	Geometric Modeling	ME 5120	Advanced Thermo-Fluids I
ME 5150	Analytical and Applied Kinematics	ME 5140	Heat and Mass Transfer in Multiphase Systems
ME 5180	Dynamics	ME 6170	Combustion and Air Pollution Engineering
ME 5160	Theory and Design of Automatic Control Systems	ME 5311	Computational Fluid Dynamics
ME 5420	Mechanical Vibrations		

Table 1: Core Courses for Concentrations

in the courses to be transferred. Students must first submit a graduate petition requesting the transfer, accompanied by the syllabi of the courses at the other institution. If approved, the student must complete a Transfer Credit Request Form and email it to Degree Audit at degreeaudit@uconn.edu.

Students who completed their undergraduate degree at the University of Connecticut may transfer up to 12 credits of graduate-level (i.e., 5/6000-level) courses taken during their undergraduate studies to satisfy the coursework requirements of their graduate degree, even if those courses were used to satisfy undergraduate degree requirements (e.g., electives). In this case, a graduate petition is not necessary, and the student may directly submit the Transfer Credit Request form to Degree Audit.

Note that undergraduate-level courses (i.e., 4000- and lower-level courses at the University of Connecticut or equivalent courses at other institutions) cannot be transferred to satisfy graduate degree coursework requirements. Please note that some University of Connecticut courses offer both a 3/4000-level and a 5/6000-level section (with a different course number); while the learning objectives and assessment between the two sections differ, they usually meet at the same time and place. Therefore, University of Connecticut undergraduate students who take these dual courses with the purpose of transferring them to a future graduate program at the University of Connecticut must make sure they are enrolled in the graduate-level section of the course. If an undergraduate student mistakenly registers for the 3/4000-level section of the course, it cannot be transferred to a graduate degree, even if the student completed all the work and assessments for the graduate-level section.

4 Course Substitutions

Students who have completed courses in a graduate program at an institution other than the University of Connecticut that are equivalent to the core courses listed in Table 1, and who wish to graduate with one of the elective concentrations, may apply for a substitution waiver by submitting a graduate petition accompanied by the syllabi of the course(s) to be substituted. That is, the course(s) taken at the other institution may be counted towards the satisfaction of the elective concentration. A substitution may also be requested for ME 5507-Engineering

Analysis I if equivalent coursework has been completed at another institution.

At most six credits may be substituted. Note that, unlike a course transfer, a substitution does not change the number of required coursework credits at the University of Connecticut; it only counts towards the requirements of the elective concentration or the ME 5507 requirement listed in Section 9.2.

5 Online Courses

M.S. and Ph.D. students should not enroll in courses that are specific to the school's Master of Engineering (MENG) programs, including MENG core courses (such as ENGR 5311, ENGR 5312, ENGR 5313, and ENGR 5314), ME courses that are exclusive to the MENG program, and MENG-reserved sections of courses that have another in-person section open to M.S. and Ph.D. students (for the latter case, an exception is made for part-time students working off-campus on their graduate degree). The University's class search system shows a note for these courses/sections noting that they are *"for RC MEng Students Only"*. MENG credits cannot cannot be counted towards satisfaction of coursework requirements.

For graduate-level courses that have an in-person section and an online section, full-time students must register for the in-person section. An exception to this rule may be granted by graduate petition (for instance, for part-time students and for students conducting their research remotely during an academic semester). In these exceptional cases, a graduate petition must be submitted for every semester the exception is needed.

International students on an F-1 or J-1 visa must adhere to the rules for attendance of online courses stipulated in the Center for International Students & Scholars (CISS) website. International students admitted to the M.S. and Ph.D. programs must be enrolled full-time and in predominantly in-person courses (one three-credit course per term may count towards full-time enrollment requirement) to be eligible for visa sponsorship.

6 Full-time Status

Students who wish to or must maintain full-time status for, e.g., financial and/or immigration purposes, are responsible for registering sufficient credits each semester to maintain the status. As stipulated in the Graduate School's website, a student may attain full-time status in one of three ways: 1) enroll in nine or more credits (coursework or research); 2) enroll in six or more credits while holding a graduate assistantship; or enroll for sufficient credits in GRAD 5960 Full-Time Master's Research in the case of M.S. students, or GRAD 6960 Full-Time Doctoral Research in the case of Ph.D. students. M.S. and Ph.D. students who have completed all their coursework requirements may enroll only in GRAD 5960 or GRAD 6960 credits, respectively. Students whose registered credits do not satisfy the aforementioned requirements are considered part-time students.

Note that summer term registration for M.S. and Ph.D. students is rare, and it will trigger tuition and fee charges that are generally not covered by graduate assistantships; however, some students whose degree is sponsored by an employer or government agency may require it.

7 Independent Studies

Graduate students may enroll in independent-study courses with their major advisor or other faculty in the school. The maximum number of independent studies for each degree is listed in Sections 9.2 and 10.1.

To request an independent study, students must first complete a Graduate Independent Study Approval Request Form no later than the first week of the semester. After approval is granted, the student must submit the Student Enrollment Request Form. The school designee to whom the form should be routed by the student's advisor is the Director of Graduate Studies.

8 Major Advisor and Advisory Committee

8.1 Major Advisor

The major advisor works closely with the student during their entire graduate program. Although the Director of Graduate Studies and the major advisor will explain the rules associated with the degree, the ultimate responsibility for meeting all requirements lies with the student. Students are encouraged to consult with the Director of Graduate Studies on any questions regarding the regulations in this handbook.

The research advisor of M.S. Plan A and Ph.D. students who receive an accept a research assistantship prior to starting their studies serves as the student's major advisor. The research advisor is usually the faculty member who obtained the research funds supporting at least 50% of the assistantship.

It is important to note that while it is typical that the work a research assistant performs as part of their duties is primarily or entirely related to their master's or doctoral thesis work, this is not a requirement. That is, the work performed by the student as part of their assistantship may be different from the work necessary to advance the student's thesis. Moreover, regardless of whether the research assistantship work is partially or entirely related to the thesis, students are expected to complete the work necessary to satisfy their research-related degree requirements, including writing and defending the thesis in the case of M.S. Plan A; and writing and defending the dissertation, and publishing and submitting manuscripts to archival publications in the case of Ph.D. students.

Prior to selecting a major research advisor, students should discuss with their potential advisor the expectations for successful completion of their research and, in the case of research assistantships, the expected duties of the assistantship. For Ph.D. students these expectations may include, for example, the number of archival presentations (which may be higher than

the minimum set by the school), travel to and presentation of their research at academic conferences, and supervision of undergraduate students.

For M.S. Plan A and Ph.D. students admitted without a research assistantship, the Director of Graduate Studies serves as their major advisor for the first semester. An M.S. Plan A or Ph.D. student admitted without a research advisor must complete their major advisor selection by the end of the second semester after entering the program. The selected faculty member must agree to supervise the student's doctoral work. Failure to comply with this deadline may be considered as lack of satisfactory progress toward the degree and may carry consequences, including discontinuation of financial support (for instance, through teaching assistantships) and dismissal from the program.

M.S. Plan B students have the Director of Graduate Studies as their major advisor throughout the duration of their degree and do not need to change the advisor.

To obtain an M.S. or Ph.D. degree from the school, the student's major advisor must be a member of the Graduate Faculty of the school. This includes all faculty whose primary affiliation is with the School of Mechanical, Aerospace, and Manufacturing Engineering. An up-to-date list of members of the school's graduate faculty can be found at https://mechanical-aerospace-manufacturing.engineering.uconn.edu/. Faculty members who are not members of the school's Graduate Faculty must first apply for membership; to initiate this process, the faculty member must email the school's Director. We recommend this process is started with at least two months in advance of any of the graduate examinations.

Ph.D. students are strongly encouraged to maintain continuous communication regarding their progress with their major advisor. A Ph.D. Candidate Annual Review is recommended as a periodic progress check. Students and their major advisors *may* use the electronic form developed by the College of Engineering for this purpose.

The student will normally work with their major advisor throughout the duration of their degree but, in exceptional cases, the student may request a change in the major faculty advisor. In this situation, the student must discuss the change with the school's Director prior to making the change. The change must be agreed to by the previous major advisor and the new one. Since there are significant implications associated with a change of major advisor (such as loss of time and, possibly, financial support), students are encouraged to make a careful initial selection of their major advisor.

To select or change the major advisor, or to add or remove a co-major advisor, the student must submit the Change of Graduate Major Advisor form with the required signatures and submit it to Degree Audit at degreeaudit@uconn.edu.

8.2 Advisory Committee

Students must assemble their Advisory Committee in consultation with their major advisor. The major and any co-major advisor are part of the Advisory Committee. It is recommended a majority of the Advisory Committee are faculty members of the school. It is also encouraged that at least one member of the committee is from outside of the school—either a faculty member

from another department or school at the University of Connecticut; a faculty member from another institution; or a member of a non-academic institution such as a national laboratory, a governmental institution, or industry. To appoint an individual not affiliated to the University of Connecticut as an external Associate Advisor in the student's Advisory Committee, a request must be made by the student's major advisor to the Graduate School, accompanied by a curriculum vitae of the individual; for more details, please visit https://gradcatalog.uconn.edu/grad-school-info/advisory-system/. As this process may take some time, it is recommended this request is initiated well in advance of scheduling any graduate examination.

The minimum number of members for the Advisory Committee is as follows:

- M.S. Advisory Committees must have at least three members. In the case of M.S. Plan B students, the Director of Graduate Studies (who is the student's major advisor) assembles an ad-hoc Advisory Committee.
- Ph.D. Advisory Committees must have at least five members. This is a requirement for *all* the Ph.D. examinations described in Section 10.2. Per Graduate School regulations, all examination forms must be contain at least five signatures.

9 Master of Science (M.S.) Requirements

The M.S. degree may be earned under either Plan A (thesis option) or Plan B (non-thesis option). Plan A emphasizes problem-solving through research, and involves supervised research work with SoMAM faculty members, while Plan B consists solely of graduate level coursework. Only Plan-A M.S. students are eligible for financial support by the school. M.S. Plan-A students who have been financially supported in their graduate studies via a research assistantship provided by the school or the College of Engineering, and who wish to change to the M.S. Plan B, must obtain the consent of the faculty advisor who provides the financial support.

9.1 Required Credit Hours

A total of 30 credit hours after the B.S. is required to earn the M.S. degree for either plan.

Plan A requires 21 credits of graduate-level coursework and successful completion of a thesis. Thesis work for the Plan-A option is equivalent to nine credit hours. The thesis must be an original and significant contribution to the field of mechanical, aerospace, and/or manufacturing engineering, and it must be defended orally according to Graduate School requirements.

Plan B requires 30 credits of graduate-level coursework. After completion of at least 24 credits, the student must hold an exit interview with the school's Director of Graduate Studies. This interview serves to fulfill the Graduate School's final examination requirement.

International students must enroll in enough credits each semester to satisfy full-time enrollment, as noted in the Center for International Students & Scholars (CISS) website.

9.2 Plan of Study

The plan of study consists of the credits the student registers for and completes during their graduate studies. Plan-A students should work with their major advisor on an ongoing basis to choose courses that will satisfy the degree requirements. Plan-B students should consult the Director of Graduate Studies to ensure their course enrollment plan satisfies the degree requirements. Discussions on course registration plans with the student's advisor should occur every semester, as course offerings in the school vary.

A final plan of study must be submitted to the Graduate School by completing the Plan of Study for Master's Degree Form. For Plan-A students, the form must be signed by all members of the student's Advisory Committee. For Plan-B students, the form is signed by an ad-hoc Advisory Committee assembled by the Director of Graduate Studies.

The following are requirements to the M.S. in Mechanical Engineering plan of study:

1. ME 5507 - Engineering Analysis I is mandatory; as noted in Section 4, it may be substituted in exceptional cases.

2. Coursework subject requirements:

   (a) At least 18 coursework credits for Plan A, and at least 24 coursework credits for Plan B must be in mechanical engineering (ME) courses.

   (b) The remaining coursework credits (i.e., three credits for Plan A and six credits for Plan B) must be in graduate-level courses in Science, Engineering, Mathematics or Statistics (SEMS) programs (including ME).

   (c) An exception for non-SEMS courses may be allowed via a graduate petition and approved in advance by the student's Advisory Committee for at most three credits for either M.S. plan.

3. For both plans, at most three credit hours of the required coursework credits can be in University of Connecticut 3-4000-level courses that are not required for the undergraduate mechanical engineering degree and are not open to sophomore students. The purpose of this allowance is to provide graduate students the opportunity to acquire foundational or remedial training lacking in their undergraduate studies. Registration in a 3/4000-level course to satisfy coursework requirements must have major advisor and Director of Graduate Studies approval via graduate petition. If approved, these 3/4000-level credits must be taken during the student's graduate studies and, as noted in Section 3, cannot be transferred from the student's undergraduate degree.

4. Students must enroll in and pass ME 6340 Graduate Seminar for at least two semesters, see Section 11.

5. At most three credits of in-person College of Engineering courses for graduate students (such as ENGR 5410, ENGR 5430, and ENGR 5450) may be used to satisfy coursework

requirements. As noted in Section 5, M.S. students are not allowed to enroll in ENGR courses exclusive to the MENG programs.

6. M.S. Plan A students must register for at least nine credits of GRAD 5950 - Master's Thesis Research. Note that a student can register up to nine credits of GRAD 5950 in a single academic period.

7. At most three independent studies may count towards coursework credit requirements; and at most two of those may be taken with the student's major advisor as instructor.

Note there is no requirement regarding when during the student's plan of studies the above requirements must be satisfied.

9.3 M.S. Final Examination

For students under Plan A, an oral examination (often called the thesis defense) is conducted based on thesis research. The examination consists of a closed-door presentation of the student's research to their Advisory Committee. The recommended time for the examination is one hour, with 40 minutes for the student's presentation, and 20 minutes for questions and deliberation by the Advisory Committee. The decision as to whether the student passes the examination is based on a vote by the student's Advisory Committee.

9.4 Accelerated Master of Science

The Accelerated M.S. is a program available to ME undergraduate students that allows them to complete a significant portion of their M.S. degree during their undergraduate studies. Upon graduation from their Bachelor's degree, students enroll in the M.S. program to complete the requirements. The Accelerated M.S. program is a Plan-A program, hence all the requirements listed in Section 9 for the Plan-A M.S. degree apply. As such, the Accelerated M.S. program is a research-centered degree. Seniors enrolled in the program conduct research under the supervision of their future M.S. major advisor, typically as their Senior Design Project; it is possible (but less common) for students to participate in a regular Senior Design Project and conduct separately their research work, contingent on approval from the faculty advisor. This research continues after graduation with a Bachelor's degree into the Master's degree studies and forms the basis for the student's Master's thesis.

In addition to conducting research during the senior year, undergraduate students enrolled in the program take 5/6000-level courses that satisfy the requirements of the M.S. degree to make progress towards the M.S. coursework requirements. As noted in Section 3, the University allows up to 12 credits of these graduate-level courses to be used to satisfy the requirements of both the undergraduate degree and the M.S. degree (for example, to be used as ME electives for the undergraduate degree). It is strongly recommended that Accelerated M.S. students take at least two graduate-level courses during their senior year to satisfy the M.S. coursework requirements.

The ability to conduct a significant portion of the research and coursework required for the M.S. degree during their undergraduate studies allows students enrolled in the program to complete the M.S. degree in a shorter time (typically one year) than the regular degree. Since this is a Plan-A M.S., students must write a Master's thesis and defend it to graduate from the program. Note also that Accelerated M.S. students need only enroll in ME 6340 - Graduate Seminar during the graduate portion of their degree (for two semesters, as listed in Section 9.2).

Accelerated M.S. students working on research projects are financially supported during their master's study (after finishing the bachelor's degree) via a research assistantship (see Section 13), which is provided by the faculty member who supervises the student's research. Often times, they also work as undergraduate researchers on a paid, hourly basis during the summer term between the end of the bachelor's degree and the beginning of the master's degree. Note that participation in the program requires that there is no time gap between the undergraduate studies and the subsequent M.S. studies.

The timeline for participating in the program is as follows:

- **Before the start of your senior year:**
  - Strive to maintain excellent academic standing during your undergraduate degree.
  - No later than the last Spring semester prior to starting ME 4972 - Senior Design Project I, contact faculty members in the school whose research areas interest you, express your intent to pursue the Accelerated M.S. program, and inquire whether they could serve as your research advisor and sponsor your Master's study via a graduate assistantship. When working towards your Accelerated M.S. requirements, it is expected that the faculty research advisor will cover the graduate application fee. It is suggested you discuss this with your intended faculty advisor prior to submitting the form to enroll in the program. You should also discuss if the faculty advisor has an opportunity and/or expectation that you will conduct funded research during the summer semester in between your graduation from the Bachelor's degree and the start of the Master's degree. If you would like to pursue the (uncommon) option of conducting your senior-year research separate from your Senior Design project, you should also discuss this with the faculty advisor.
  - By no later than June 15 prior to the semester you enroll in Senior Design Project I, submit the ME Accelerated Master's Mutual Agreement form. Once submitted, this form is sent to the research advisor for approval, indicating their agreement to serve as your research advisor and provide a research assistantship during the M.S. portion of your degree. The Director of Graduate Studies must also approve this form.
  - Upon submission and approval of the form, and if you indicated in the form that your Accelerated M.S. research during your senior year will be performed as your Senior Design Project, the instructors of ME 4972 - Senior Design Project I are

informed of the student's participation in the program so that the student is not assigned to a team working on a regular non-research based project.

- **During your senior year:**
  - Conduct research under the supervision of your research advisor as part of your Senior Design Project. While your work will be based on your research, you must complete all the assessments of Senior Design Project, including review presentations, reports, and participation in Senior Design Demo Day.
  - Enroll in at least two graduate-level (i.e., 5/6000-level) courses during the year.
  - Prepare (but do not submit yet) a regular graduate application for the M.S. program in your senior year, before the deadline for Fall admission (February 1.). *Before* submitting your graduate application, contact the school's Graduate Studies Coordinator at engr-me-dgs@uconn.edu to process the application fee waiver. If this step is omitted and you pay the application fee and submit the application, it is not possible to reimburse you. Also, as with any graduate application, you must provide 3 letters of reference. Typically, one of these letters is provided by the faculty research advisor.
  - Submit your application. You will receive notice of the admission decision during your last Spring semester.
- **During your M.S. studies:**
  - Complete and submit a Transfer Credit Request Form and email it to Degree Audit at degreeaudit@uconn.edu to transfer the graduate-level courses you took during your undergraduate degree to your M.S. degree.
  - Continue enrolling in courses to satisfy the remaining coursework requirements for the Plan A-M.S. degree, including registration in GRAD 6340 - Graduate Seminar.
  - Continue working on your research and register for at least nine credits of GRAD 5950 - Master's Thesis Research. It is recommended you discuss with your major advisor how to distribute these credits during the semesters of your M.S. degree. However, note that you may enroll in up to nine credits of GRAD 5950 in a single term.
  - Write and defend a Master's thesis as described in Section 9.3.
  - In the last semester of your M.S. studies, apply for graduation as detailed in Section 14.6.

9.5 Re-application

Students completing a master's degree program at the University of Connecticut who wish to continue toward the Ph.D. degree, as well as students desiring to transfer from a master's program in mechanical engineering to the Direct Ph.D. program (i.e., Ph.D. following a

B.Sc. degree), must re-apply for admission into the Ph.D. program. In the latter case, students need not write and defend an M.S. thesis.

10 Doctor of Philosophy (Ph.D.) Requirements

The Ph.D. is primarily a research degree and may be undertaken after prior completion of an M.S. degree or directly after completing a B.S. To be awarded the Ph.D. degree, a student must satisfy all requirements of the School of Mechanical, Aerospace, and Manufacturing Engineering and all the requirements of the university's Graduate School. These requirements are more extensive than those associated with the M.S. degree and are described in the following.

10.1 Plan of Study

The plan of study consists of the credits the student registers for and completes during their graduate studies. Discussions on course registration plans with the student's advisor should occur every semester, as course offerings in the school vary. Also, doctoral students are required to take the courses indicated by their Advisory Committee during the student's General Examination. A final plan of study must be submitted to the Graduate School by completing the Plan of Study for Doctor of Philosophy Form.

In the following description of requirements for the doctoral program, the Ph.D.-after-M.S. program will be referred to as the 'Regular Ph.D.', and the Ph.D.-after-B.S. program will be referred to as the 'Direct Ph.D.'. The requirements for the Ph.D. in Mechanical Engineering plan of study for both programs are:

1. At least 15 coursework credits for Regular Ph.D., and at least 30 coursework credits for the Direct Ph.D.

2. ME 5507 - Engineering Analysis I is mandatory. Regular Ph.D. students who completed their M.S. degree at the University of Connecticut and took and passed ME 5507 as part of their M.S. degree are exempt from this requirement. As noted in Section 4, ME 5507 may be substituted if the student has completed and passed similar graduate-level coursework in a prior graduate degree.

3. Coursework subject requirements:

   (a) At least nine coursework credits for the Regular Ph.D., and at least 21 coursework credits for the Direct Ph.D. must be in mechanical engineering (ME) courses.

   (b) The remaining coursework credits (i.e., six credits for the Regular Ph.D. and nine credits for the Direct Ph.D.) must be in graduate-level courses in Science, Engineering, Mathematics or Statistics (SEMS) programs (including ME).

(c) An exception for non-SEMS courses may be allowed via a graduate petition and approved in advance by the student's Advisory Committee for at most three credits for the Regular Ph.D., and at most six credits for the Direct Ph.D.

4. For both plans, at most three credit hours of the required coursework credits can be in University of Connecticut 3-4000-level courses that are not required for the undergraduate mechanical engineering degree and are not open to sophomore students. The purpose of this allowance is to provide graduate students the opportunity to acquire foundational or remedial training lacking in their undergraduate studies. Registration in a 3/4000-level course to satisfy coursework requirements must have major advisor and Director of Graduate Studies approval via graduate petition. If approved, these 3/4000-level credits must be taken during the student's graduate studies and, as noted in Section 3, cannot be transferred from the student's undergraduate degree.

5. Students must enroll in and pass ME 6340 Graduate Seminar for at least three semesters for the Regular Ph.D. and at least four semesters for the Direct Ph.D.; see Section 11.

6. At most three credits of in-person College of Engineering courses for graduate students (such as ENGR 5410, ENGR 5430, and ENGR 5450) may be used to satisfy coursework requirements. As noted in Section 5, Ph.D. students are not allowed to enroll in ENGR courses exclusive to the MENG programs.

7. Students must register for at least 15 credits of GRAD 6950 - Doctoral Dissertation Research. Note that a student can register up to nine credits of GRAD 6950 in a single academic period.

8. At most two independent study courses may count towards coursework credit requirements; and at most one of those may be taken with the student's major advisor as instructor.

Note there is no requirement regarding when during the student's plan of studies the above requirements must be satisfied.

10.2 Dissertation and Doctoral Examinations

A critical component of the Ph.D. degree is the writing and defense of a doctoral dissertation (also called thesis) based on the student's research. The dissertation must constitute an original and significant contribution to the field of mechanical, aerospace, and/or manufacturing engineering, and it must be defended orally according to Graduate School requirements. Unlike the thesis for the M.S. Plan A degree, the Ph.D. thesis must lead to publications in peer-reviewed venues. In addition to writing the dissertation, Ph.D. students must take and pass three examinations during the course of their graduate studies.

General Examination

The first examination a Ph.D. student must take is the General Examination (also known as the Qualifying Examination). The purpose of this examination is for the student to demonstrate that they possess the necessary skills to succeed in their doctoral studies. A detailed description of this examination is given in Section 10.3.

Prior to the examination, students must send by email to their major advisor an electronic copy of: 1) an unofficial transcript of all graduate degrees (if any) obtained prior to their current University of Connecticut graduate degree (including prior degrees at the University of Connecticut); and 2) a draft Plan of Study including graduate-level courses already taken at the University of Connecticut as part of the student's current graduate degree and a tentative choice of courses for the remainder of the student's degree. The draft Plan of Study must be developed by the student in consultation with their major advisor. The major advisor must then forward these documents to all other members of the Advisory Committee prior to the examination. The student's Advisory Committee will use this information to determine courses (if any) the student should take during the remainder of their studies, preferably prior to the student's Dissertation Proposal examination.

Dissertation Proposal

In their second Ph.D. examination, called the Dissertation Proposal (also called Prospectus Examination), students hold a closed-door oral presentation with their Advisory Committee in which they present a proposal for their doctoral dissertation. In preparation for the examination, students must write a Dissertation Proposal document containing an overview and motivation for their research; a summary of any preliminary research work completed by the time of the examination with a clear statement of research contributions; a list of publications made by the student (if any); and a description of proposed work for the remainder of the student's doctoral studies. While there is no mandatory minimum number of pages for this proposal, a typical length is around 10 pages. Students must complete the dissertation proposal document in advance of the examination, and email it to the members of their Advisory Committee no later than three business days prior to the examination.

It is recommended the Prospectus Examination be held at latest one year prior to the student's intended graduation date. The student is responsible for scheduling the time of the prospectus examination with all members of the Advisory Committee. A duration of 1.5 hours is suggested for this examination, which must include time for questions and for subsequent closed-door deliberation by the members of the Advisory Committee. After determining a time suitable to all members of the Advisory Committee and the student, the student can work with SoMAM staff to reserve a room for the examination.

A student who does not pass the examination must take any actions suggested by the Advisory Committee and reschedule the examination at a later time. Upon passing the examination, the student must complete and submit the Doctoral Dissertation Proposal form signed

by all members of the Advisory Committee, and email the completed form to Degree Audit at degreeaudit@uconn.edu.

More information on the Dissertation Proposal can be found in the Academic Regulations of the Graduate School. Note that the school does not require the appointment of an external reviewer for the Advisory Committee.

Ph.D. Final Oral Defense

The Final Oral Defense (also called the dissertation defense) is an oral examination in which the student defends their dissertation work. The defense is open to the public, and a public announcement of the time and place of the final examination must be made in the University's online Events Calendar at least two weeks prior to the date of the defense.

The student is responsible for scheduling the time of the final examination with all members of the Advisory Committee. A duration of 1.5 hours is suggested for this examination, which must include time for questions from the general public, and for subsequent closed-door questions and deliberation by the members of the Advisory Committee. After determining a time suitable to all members of the Advisory Committee and the student, the student can work with SoMAM staff to reserve a room for the examination. The student must send the title and abstract of the dissertation and the names of the major advisor and the other members of the Advisory Committee to the Graduate Student Coordinator at engr-me-dgs@uconn.edu. The Graduate Student Coordinator will make the public announcements of the dissertation. The scheduling of the final examination should not occur later than two weeks prior to examination, which is required to adhere to the Graduate School's two-week announcement period.

The student must send via email an electronic copy of their dissertation to all members of the Advisory Committee no later than five business days prior to the examination. The format of the dissertation must adhere to the dissertation specifications stipulated by the Office of the Registrar.

The preferred format of the examination is in person; however, depending on the circumstances, it may be held in hybrid mode (that is, in person and providing an online meeting for remote attendees from the Advisory Committee) or fully online. In the former case, you must ensure the room selected for the examination has the technology to support the online meeting. In the case that online attendance is provided, it is recommended that online attendees are accepted in the online meeting by the student's major advisor, and the general expectation is that members of the public attend the defense in person.

Per Graduate School regulations, the decision as to whether the student passes the examination requires a unanimous vote by the Advisory Committee. If the student fails the examination, the student must take any actions suggested by the Advisory Committee and reschedule the examination at a later time. Upon passing the examination, the student must complete and submit the Report on the Final Examination form, which is an electronic form that must be signed by all members of the Advisory Committee

More information on the Final Examination can be found in the Academic Regulations of

the Graduate School. Note that the school does not require the appointment of an external reviewer for the Advisory Committee.

10.3 Format of the General (Qualifying) Examination

Purpose

The Ph.D. Qualifying Examination fulfills the requirement for General Examinations as detailed in the Academic Regulations of the Graduate School. The examination has two objectives: (1) to make sure the candidate has sufficient mechanical engineering background for doctoral studies, and (2) to maintain quality, uniformity and consistency in the school's doctoral program. The qualifying examination is an oral exam intended to provide the student's Advisory Committee with evidence of the student's research preparedness and capabilities, and allow the Advisory Committee to give the candidate useful feedback on their research direction. It is also the time at which the Advisory Committee may require the student to include courses in their Plan of Studies to ensure the student acquires the fundamental knowledge needed to successfully conduct their research. For students with Graduate Assistantships, successful completion of the General Examination carries a stipend increase, see Section 13.2.

Timing

The student must take this examination for the first time during or immediately after their second semester of working with their major research advisor within the Ph.D. program at the University of Connecticut. In the event of an unsuccessful first attempt, the student must re-take the examination during or immediately after the following semester.

Procedures

The Qualifying Examination consists of a closed-door oral presentation to the student's Advisory Committee. As noted in Section 8, the student must assemble the Advisory Committee in advance of this examination. The student should schedule a one-hour exam with their Advisory Committee no later than two weeks into the second semester of enrollment. If the student fails the examination in their first attempt, the candidate should schedule a one-hour exam no later than two weeks into their third semester of enrollment for their second try.

A candidate's knowledge of undergraduate courses relevant to the proposed topic, as detailed below, must include as a minimum:

- an ability to list and explain the physical meaning of the basic principles of relevant engineering topics, and to explain the physical meaning of solutions;
- an ability to solve problems typically assigned in such engineering courses, explain the basic principles supporting each step, and to identify the assumptions and limitations of the underlying theory used; and

- an ability to identify the correct physical principles relevant to topics not typically covered in such courses, and apply these to solve engineering problems using the basic principles of the subject area.

The outcome of the oral examination will be one of the following: (1) pass, (2) fail with the option to re-take the examination, and (3) fail with dismissal from the program. Students will be given the option to re-take a failed exam no more than once. The results of the oral examination will be announced in writing to the candidate by their major advisor and additionally communicated to the Director of Graduate Studies.

Following a successful presentation to the Advisory Committee, the student will have passed the General Examination. The Report on the General Examination for the Doctoral Degree form should be submitted to Degree Audit at degreeaudit@uconn.edu and the School of Mechanical, Aerospace, and Manufacturing Engineering at engr-me-dgs@uconn.edu. This form must be signed by all members of the Advisory Committee.

Details of the Presentation

The presentation should focus on a particular research topic and should discuss relevant literature including no fewer than ten journal articles. The student should demonstrate a good understanding of (1) what is currently known about a particular topic; (2) the current approaches; and (3) the relevant research questions that are unanswered in the literature. This presentation is not intended to focus on the candidate's own research results or progress but instead to demonstrate that the student can formulate a research question and an approach to answer it that considers the relevant published knowledge. The student should discuss the topic and the presentation with their major advisor to attain additional guidance.

Room Scheduling

The student is responsible for reserving a room for the examination. A duration of 1.5 hours is suggested for this examination, which must include time for questions and for subsequent closed-door deliberation by the members of the Advisory Committee. After determining a time suitable to all members of the Advisory Committee and the student, the student can work with SoMAM staff to reserve a room for the examination.

Examination Procedure

The General Examination proceeds as follows:

- The student must send the slides of their presentation to the Advisory Committee no less than 48 hours in advance of the time scheduled for the oral presentation.
- The student should make a 30-minute presentation consisting of:

  - motivation,
  - research question,
  - background,
  - preliminary research (if any), and
  - proposed approach (if any).

- At least 15 minutes should be allotted for the Advisory Committee to ask questions. Question topics can include the presented research and related general topics.
- (Optional) 15 minutes should be allotted for members of the Advisory Committee to make suggestions.
- The Advisory Committee will then deliberate the outcome of the examination, and it will discuss what (if any) courses the student must take as part of their doctoral degree.

Final Reporting

If the decision on the outcome of the examination is not unanimous, the student's major advisor must communicate the split vote to the Director of Graduate Studies, who will interview the members of the Advisory Committee and establish a final decision. The result of the examination and the list of required courses will be sent to the student by the student's major advisor via email within one week, with copy to the Director of Graduate Studies.

10.4 Publications

The student must have submitted a minimum of two papers for publication in the archival literature (journals), and have at least one of these papers published or accepted for publication at the time of their Ph.D. final oral defense. These papers must be based on the student's dissertation research and must be co-authored by the student's faculty advisor from the School of Mechanical, Aerospace, and Manufacturing Engineering.

10.5 Residency

All doctoral students, full-time and part-time, must satisfy a residency requirement by spending at least two consecutive semesters in the second or subsequent years of graduate work on the Storrs campus, devoting all effort to graduate work and research.

10.6 Change of Program

Any student who entered the Ph.D. program, was supported by an assistantship, scholarship or fellowship, and abandoned the program before completion, may only pursue the M.S. Plan A option to leave with an M.S. degree. In this case, GRAD 6950 - Doctoral Dissertation Research credits can be counted towards the GRAD 5950 - Master's Thesis Research credit requirements.

10.7 M.S. Degree while in Ph.D. Degree

Ph.D. students may obtain an M.S. degree during their doctoral studies. To do this, the student must entirely and separately satisfy the requirements of the M.S. and the Ph.D.-after-M.S. degrees. In the case the M.S. degree pursued is the Plan A, the student must write and defend a Master's thesis, and register for nine credits of GRAD 5950. Note that, in this situation, GRAD 6950 credits cannot be counted in lieu of GRAD 5950 credits. Completion of an M.S. degree while in Ph.D. degree requires approval from the student's major advisor and submission and approval of a graduate petition.

11 Graduate Seminar

The school's Graduate Seminar (ME 6340) is a formal zero-credit course with a pass/fail grade. It consists of weekly talks by speakers from other academic and government institutions and from industry, and its goal is to expose students to research at the forefront of mechanical, aerospace, and manufacturing engineering. All graduate students must sign up for the course for a sufficient number of semesters, as stipulated in Sections 9.2 and 10.1. In a semester when the student registers for the zero-credit ME 6340, the student must attend at least five seminars during the semester. The seminar coordinator is the instructor on record for the course and will be responsible for grading.

Students may take seminars in any department or school of the College of Engineering to make up for missed SoMAM seminars and satisfy the five-seminar requirement. In this case, the student must complete the ME Missed Seminar Makeup Form, which must be signed by the faculty member in charge of the seminar. In exceptional circumstances, a student who does not complete the five seminars in a semester may be given an incomplete grade, and they may be allowed to make up for the missed seminars in the consecutive semester. It should be noted that the allowance for seminars in other departments is to make up for missed ME seminars, and the expectation is that students make every effort to first attend five ME seminars.

An exemption may be granted for Ph.D. students pursuing part of their University of Connecticut graduate program remotely while working on another research institution (for instance, a National Lab or another academic institution) to allow them to participate in five seminars at their host institution. To obtain this exemption:

- The student must submit a graduate petition no later than the second week of the semester when the exemption is requested.
- The student must register for ME 6340 for that semester.
- The student must attend five in-person or on-line seminars at the hosting research institution.

- The student's supervisor at the host institution must send an email to the SoMAM Graduate Seminar instructor providing a list of the seminars student attended. This email must be sent before the last date of final exams.

This exemption would be granted for at most two semesters, and the above process must be followed for each semester the exemption is requested.

12 Registration and Orientation

Continuing students should register for all of their courses in the University's computer system by December 1 for Spring semester classes and by June 1 for Fall semester classes. Enrollment in courses by these dates may be used to determine if the course will be offered. Prior to registering for courses, students should make an appointment with their faculty advisor to plan their class schedule for the following academic semester.

All incoming students are required to attend the school's new student orientation, usually held during the first two weeks of the Fall semester. Several important topics regarding the graduate program are discussed, and students can ask questions. Incoming students should register for classes no later than the mandatory orientation meeting held by the Director of Graduate Studies.

Courses may be dropped through the ninth week of a normal semester or prior to the halfway point during a summer semester. Courses can normally be added through the fourth week of the semester or as of the midpoint of a summer semester. For students supported on an assistantship or fellowship, all course adds/drops must be made with the prior consent of the faculty advisor. Adding or dropping a course without your advisor's consent may result in loss of financial support.

Students who have completed all the required coursework but require more time to complete their research must continue enrolling in GRAD 5950 in the case of M.S. students, and GRAD 6950 in the case of Ph.D. students.

University fees must be paid on time to be able to register for courses. For information on fees and deadlines for graduate students, visit the Office of the Bursar's website for graduate students.

13 Graduate Assistantships

An assistantship is awarded to a graduate student who provides teaching (teaching assistantship: TA) or research (research assistantship: RA) support to the University that is a part of their academic program. In recognition of this support, tuition is waived by the University and subsidized health insurance is offered. Graduate Assistants (GAs) are responsible for paying their student fees at the negotiated GA rate.

13.1 Appointment

To be appointed, to retain an appointment, or to be reappointed, a student must hold Regular (not Provisional) status, must maintain a cumulative average GPA of at least B (3.00) in any coursework taken, must be eligible to register (i.e., must not have more than three viable grades of Incomplete on their academic record), must be enrolled in a graduate degree program scheduled to extend through the entire period of the appointment or reappointment, and must be a full-time student enrolled in six or more credits. Additional GA information can be found here.

13.2 Stipend Increases

Successful completion of the General (Qualifying) Examination will carry a GA stipend increase. If the completed Report on the General Examination for the Doctoral Degree form (see Section 10.2) is submitted to Degree Audit prior to the first two weeks of the semester, the stipend increase will take effect the same semester. Processing of the stipend increase may take several weeks to be reflected in the student's paycheck; however, the increase will be processed based on the day the form is submitted to Degree Audit. If the form is submitted after the two-week period, the stipend increase will be effective starting the following semester. Ph.D. students should plan their Qualifying Examination accordingly.

13.3 TA Language Test

All Teaching Assistants for whom English is not a primary language must pass an oral English proficiency test regardless of citizenship or visa status. A primary language is defined as a language used to communicate since childhood. Please note this is separate from the English proficiency requirement for admission. Even if proof of proficiency was waived for purposes of admission, proof of proficiency is required for those who will be assigned instructional duties as part of their graduate assistantship. More information on the policy and testing format can be found here.

14 Additional Policies and Information

14.1 Mandatory Training

Graduate Assistants must complete all University mandatory training. In addition to that, all graduate students must complete all mandatory Environmental Health and Safety training. The specific training courses each student must take depend on the research they are performing and the laboratory spaces where they are performing the research. Faculty members maintain a list of members of their research groups in the HuskySMS system, and they indicate the type of physical hazards students may be exposed to (e.g., physical, chemical, biological, or electrical

hazards). Using this designation by the faculty advisor, the HuskySMS system determines what courses must be completed by each student.

14.2 Resolution of the Council of Graduate Schools

The University of Connecticut abides by the resolution of the Council of Graduate Schools, a national organization. The text of this resolution is included in the Graduate Catalog. The main features of the resolution are as follows:

- Acceptance of an offer of financial support by a prospective student completes an agreement that both the student and the graduate school expect to honor.
- Students are under no obligation to respond to offers of financial support prior to April 15.
- An acceptance of an offer of financial support given or left in force after April 15 commits the student to not accepting another offer from another school without first obtaining a written release from the institution to which the student has made a commitment.

14.3 Withdrawal

The School of Mechanical, Aerospace, and Manufacturing Engineering requires written notification from any graduate student who intends to withdraw permanently from the school's graduate programs. For students who are supported with a fellowship, or a teaching or research assistantship, written notification must be given to the Director of Graduate Studies and the student's faculty advisor at least six months prior to the student's departure. Students who are not supported financially must provide written notification at least three months prior to the student's departure. To withdraw from a graduate program, the student must submit the Voluntary Separation Notification form.

14.4 Leave of Abscence

A leave of absence from the graduate program may be taken under compelling personal or medical reasons. The request requires approval from the student's major advisor and the Director of Graduate Studies. A leave of absence may adversely impact financial aid. To request a leave of absence, the student must submit the Voluntary Separation Notification form. For detailed information on leaves of absence, please see the Policy on Leave of Absence from Graduate Studies in the Graduate School's Academic Regulations.

14.5 Time Limits

All requirements to obtain the degree must be completed within six years for M.S. degrees and eight years for Ph.D. degrees. Note, however, that typical times to complete these degrees are

much shorter. In exceptional cases, the time limit may be extended. For more information on time limits, please refer to the Academic Regulations of the Graduate School.

14.6 Graduation Procedure

Detailed information on the steps to graduation can be found in the Office of the Registrar's website. In addition to these steps, SoMAM students must complete a Graduate Program Evaluation/Exit Survey and a Graduate Separation Checklist. The latter form must be approved by SoMAM staff and by the student´s major advisor. Conferral of the graduate degree is contingent upon completion of these forms and approval of the Graduate Separation Checklist.

14.7 Non-Degree Courses

U.S. students who do not satisfy the requirements of, or do not wish to be accepted to the regular graduate programs, can take courses under a non-degree status. Applicants to the regular graduate programs can also register under this status while their application is being processed; registration will have no effect on the approval or denial of their application. Enrollment in non-degree courses requires approval via email from the Director of Graduate Studies.

If the student is admitted to the school's graduate programs after completing non-degree courses, up to six credits of non-degree courses can be transferred to their graduate program, provided the courses satisfy the coursework requirements. The student must have obtained a grade equivalent to "B-" or higher in the courses to be transferred. Students must first submit a graduate petition requesting the transfer, accompanied by the syllabi of the courses at the other institution. If approved, the student must complete a Transfer Credit Request Form and email it to Degree Audit at degreeaudit@uconn.edu.

14.8 Mail

Students may have physical mail related to University business sent to the school's office (PWB 465). When the mail arrives, students will receive an email notification and they can pick it up from the office.

14.9 Photocopying

Graduate Assistants may use the designated photocopier in the SoMAM office. Please ask the office staff for directions and credentials to use this machine. When making photocopies, students must bring a printed copy of the document they need to copy. Please note all photocopying must be done within the school's office hours. Please plan on arriving no later than half an hour between the closing time of the office to allow for sufficient time to complete the copying.

14.10 Laboratories and Computing Facilities

In addition to the laboratory facilities of research faculty advisors, the College of Engineering offers a multitude of services available to graduate students, including computing laboratories with engineering workstations and printers, poster printing, and the Innovation Shop, which houses a variety of fabrication equipment and has staff dedicated to fabrication and machining. To access these services, students should contact Engineering Technical Services.

One of the computer laboratories available to SoMAM graduate students is the Mechanical Engineering Computation Laboratory, located at Engineering II - 202. This laboratory is equipped with computers that run a variety of simulation and productivity software, and it also has printing and scanning capabilities. Additional software necessary for research or educational purposes may be installed as needed. To place a request to install software in this laboratory, students must create a Help Desk ticket.

Students also have access to the University's High Performance Computing facilities for computationally and/or data-intensive applications. The Storrs HPC Cluster has over tens of thousands of state-of-the-art cpu cores, over one hundred GPUs, and high-speed, parallel, scratch and persistent storage. The cluster runs under a condo model, whereby all compute resources are available to all users. Individual faculty may purchase priority compute nodes, which gives them (and their graduate students) priority access to a logical set of resources. To use the HPC system at Storrs, students must submit an Account Application, which must be approved by their research advisors. Support requests related to the Storr's HPC system must be submitted via a ticket or by email at hpc@uconn.edu.

14.11 Information Services

In addition to software available to all University of Connecticut Students, the College of Engineering also provides and supports a host of engineering software packages. The University and the College of Engineering also provide remote access to specific applications through UConn AnyWare. AnyWare can be run from a web browser and, more efficiently, by installing the Citrix Workspace app in the remote machine. Engineering-specific software is available through the Engineering Desktop within AnyWare.

Requests pertaining computer hardware maintenance and troubleshooting, accounts, and software installation requests associated with *computing resources within the School and the College of Engineering* must be made to the College's Help Desk. The preferred mechanism to initiate a request is to submit a Help Desk ticket, or email the College of Engineering Help Desk at engr-help@uconn.edu.

All other information-services requests, including University of Connecticut accounts and access, email, calendar, and network support (for networks not in the College of Engineering), must be made to the Technology Support Center of the University's Information Technology Services.

14.12 Travel

All graduate assistants must apply for a travel card or pay out of pocket for all university-related travel. If paying out of pocket, once the travel is complete, a request for reimbursement can be submitted through the Concur system. Prior to booking any travel, a request for travel must be submitted and fully approved prior to booking any travel segments. Additional travel resources can be found at https://travel.uconn.edu/

14.13 Orders

All orders must be submitted through the ME Order System in Kuali Build and contain one vendor per order. The University purchasing system, HuskyBuy, contains preferred vendors and could have discounted pricing on particular items. Please be aware all purchases over $4,999.00 must be purchased through HuskyBuy, as well as all computers, tablets, and monitors. When placing orders please allow ample time for order approvals and processing.