

DOCTOR OF PHILOSOPHY WITH A MAJOR IN MECHANICAL ENGINEERING

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ME: Graduate Website

All PhD programs must incorporate a standard set of Requirements for the Doctoral Degree.

OVERVIEW

The doctoral program is designed with great latitude to capitalize on variations in experiences and interests of individual students. The PhD degree recognizes proficiency and high achievements in research. The degree requires 42 semester hours of course work beyond the BS degree. Candidates are required to pass the PhD. Qualifying Exam, propose and defend a thesis. Candidates for the Doctor of Philosophy degree must earn and maintain a graduate grade-point average of at least 3.3.

REQUIREMENTS

Program of Study

A Ph.D. Program of Study form must be submitted for approval by your faculty advisor and the Woodruff School Graduate Committee before the end of your first semester of doctoral study.

Upon preliminary approval, the Ph.D. Program of Study will be forwarded to the Woodruff School Graduate Committee for final approval. In preparing your program of study, students should be aware that graduate courses are usually offered only once a year and, in some cases, even less frequently.

Any deviation from your proposed program of study should be approved in advance of taking the new course work by submitting a revised program of study. These revisions may be submitted at any time, except the semester in which you are graduating. Revisions during the semester in which you are graduating must be made on or before the first day of classes. This will allow time for the review and approval process prior to the close of registration for classes.

The Doctor of Philosophy (Ph.D.) degree recognizes proficiency and high achievement in research. The items below are mandatory for all Ph.D. students.

The doctoral degree in Mechanical Engineering requires 42 semester hours of coursework (on a letter-grade basis) beyond the bachelor's degree or its equivalent. Course grades must be C or higher to satisfy PhD degree requirements.

Code	Title	Credit Hours
Major Area ¹		24
Minor Area ^{2,4}		12
Electives/Other ^{3,4}		6

¹ Must be in a coherent subject area appropriate to ME, or related combinations. If you completed a master's thesis in this area, it may count for nine semester hours toward this requirement (a copy of the M.S. thesis abstract must be attached to the Ph.D. program of study form). ME 6753, ME 6789, and ME 6799 do not meet this requirement.

² Must be distinctly different from the major area. The minor is intended to provide depth in an area not directly needed for Ph.D. research or related to the area of the principal expertise of the student.

³ May be different than the major or minor, or could be applied to either the major or minor area.

⁴ CETL classes taken will only satisfy the Minor and Elective Areas.

Qualifying Exam

The objective of the Ph.D. Qualifying Examination is to assess your general knowledge of mechanical engineering or nuclear and radiological engineering.

Grade Point Average Requirement

Must be registered for the semester in which you take the Ph.D. Qualifying Examination and have full graduate standing. A minimum GPA of 3.3 is required to take the qualifying examination.

Examination Schedule

If a student already has a master's degree and matriculate as a Ph.D. student, the student must take the Ph.D. Qualifying Examination within the first year of your initial enrollment date in the Woodruff School graduate program. Those who matriculate with a bachelor's degree must take the qualifying examination within the two year period of your initial enrollment date in the Woodruff School graduate program.

For example, if enrollment were Fall 2019, a student with master's degree and matriculated as a Ph.D. student should have taken the qualifying exams by Spring 2020. If enrollment were Spring 2020, exam would be taken by Fall 2020.

For example, if enrollment were Fall 2019, a student with bachelor's degree and matriculated as a Ph.D. student should have taken the qualifying exams Spring 2021. If enrollment were Spring 2020, exam would be taken by Fall 2021.

Examination Format:

The Exam will consist of one oral exam of the student's subject knowledge, lasting a maximum of one hour, based on three (3) technical publications selected by the exam committee based on the student's research field. The semester before taking the qualifying exam, the student will prepare a one-page summary of his/her research project. The written summary will be used to identify the student's research area and describe the various disciplines and sub-disciplines of relevance to the research.

During the exam, the exam committee members ask the student questions about the papers that can cover the papers' technical contents, the research methods used, and other aspects as indicated in the

evaluation rubric. A standard rubric will be used for evaluating the exam. The rubric will be readily available to students and faculty (e.g., included in the Graduate Handbook). Assessment criteria include proficiency in summarizing, understanding, and evaluating research literature. Each criterion will be evaluated as Proficient, Satisfactory, or Unsatisfactory, with the rubric describing the performance characteristics for each rating. The exam may be retaken one time, within a specified period of time.

RCR Training

Responsible Conduct of Research (RCR) (1 course, 1 hour, pass/fail). Georgia Tech requires that all PhD students complete an RCR requirement that consists of an online component and in-person training. The online component is completed during the student's first semester enrolled at Georgia Tech. The in-person training is satisfied by taking PHIL 6000 or their associated academic program's in-house RCR course.

Seminar Requirement

All Ph.D. students must register for Seminar **8014** (2 credit hours- no letter grade- attend at least 22 seminars).

The course is offered on a pass/fail basis and therefore is **not** included in the 42 semester-hours degree requirement. Attendance at a minimum of 22 seminars per credit hour is necessary to pass, with the attendance record being cumulative from semester to semester. Registration for these credits occurs after you attend the requisite number of seminars.

Teaching Practicum Requirement

All Woodruff School Ph.D. students are required to complete three semester hours of Teaching Practicum (ME 7757/NRE 7757) during the course of their doctoral studies.

Students enrolled in the teaching practicum will work closely with a Woodruff School faculty member in all aspects of teaching a course, including the preparation and delivery of a limited number of lectures (usually in the presence of the course professor) tutorials, evaluation of homework, laboratories, and examinations. The faculty member of record will maintain full responsibility for the course. In addition to the mentored teaching component, students enrolled in the practicum must attend weekly lecture discussions focused on engineering pedagogy, ethics, professional development and leadership. **You must do the teaching component and the classwork in the same term.**

Students may **not** register for this course during the semester in which you expect to receive the Ph.D. ME 7757/NRE 7757 is offered on a pass/fail basis and **cannot** be used to satisfy the 42 semester-hours course work requirement. Students are not allowed to perform GTA responsibilities in the course for which they are participating in the Teaching Practicum.

Proposal Presentation

The objective of the Ph.D. Proposal is to allow an early assessment of your chosen topic of research for the satisfactory completion of the doctoral degree. The proposal should delineate your specific area of research by stating the purpose, scope, methodology, overall organization, and limitations of the proposed study area. The proposal should include a review of the relevant literature and indicate the expected contribution of the research. An oral presentation of the proposal must be undertaken open to public.

Dissertation Presentation

The defense must be at least six (6) months after your proposal presentation.

After adequate preparation, you must complete an original and authoritative investigation in your chosen field that culminates in a written dissertation describing that investigation. An oral defense of the dissertation must be undertaken open to public.

Georgia tech/seoul national university joint degree

The Georgia Tech/Seoul National University Joint doctoral degree in Mechanical Engineering was established for the purpose of a research and teaching partnership with one of the finest universities in the world – number one in Korea. This program provide global opportunities for our students and provide potential for faculty and student exchanges between two campuses.

Program Requirements:

1. The PhD student in the joint program is co-supervised by both co-advisors during his/her stays at both GT and SNU. It should be true collaboration in the spirit of a joint degree program and should be reflected in jointly authored papers, joint conference presentations, etc.
2. Program of study has to be filled and approved during the first semester in the program. It should satisfy the coursework requirements of the home institution. The only additional requirement - a student is required to take at least one graduate level course while in residence at the host institution, which would result in the minimal exposure to the curriculum of each of the host institutions, both in terms of content and delivery style. This course could be counted towards the total credit hour requirement for the PhD degree.
3. The qualifying exams will have to be taken only at the home (originating) institution based on its "local" rules and requirements (the other partner institution will honor the results).
4. Prior to proposal presentation, the GT ME Graduate Committee will have to approve the thesis reading committee, which should be chaired by 2 co-advisors from SNU and GT and must consist of no fewer than 5 members with at least 2 members from each institution.
5. The proposal announcement rules of GT/SNU must be followed and the proposal presentation/defense is strongly preferred to be conducted jointly by the full reading committee (i.e., at the same time, via a video link or by committee members traveling to the same location – either GT or SNU). Under the special circumstances, two separate presentations at each institution can be conducted with the faculty feedback formally exchanged among the reading committee members between the presentation events. This should be coordinated by the co-advisors and approved by the Associate Chair for Graduate Studies, and only a single pass/fail decision must be reached independent of whether one joint or two separate presentations are conducted.
6. There is a GT ME requirement of at least 6 months passing between the proposal presentation and the thesis defense data. It must be adhered regardless of the rules at SNU and whether a student comes to the joint program from GT or SNU.
7. The PhD thesis defense must be conducted jointly, be announced 2 weeks in advance and be open to public, with an entire reading committee present either in person (preferred) or via a video link.

8. The GT ME has two additional requirements of seminars and the teaching practicum. For students entering the joint program from GT as a home institution, these requirements must be met before graduation. For students "originating" from SNU, the teaching practicum requirement could be waived by the GT ME Graduate Committee under certain circumstances due to logistic challenges (it must be petitioned by the student with justification). The seminar requirement must be satisfied via seminars or equivalent events attended either at GT or SNU. The record of attendance must be kept and supplied to GT ME Graduate Office upon completion. 9. The standard GT ME forms need to be used in submitting all requirement documentations that accompany steps 1-8.