MECHANICAL ENGINEERING (PHD)

The School of Mechanical, Aerospace and Manufacturing Engineering offers degree programs leading to Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees. Students in the M.S. and Ph.D. programs may elect to complete their degree with a concentration in Systems and Mechanics or Thermal and Fluid Sciences.

Location

- Storrs Campus

Modality

- In Person

Requirements

Ph.D. Degree Requirements

The Ph.D. is primarily a research degree and may be undertaken after the M.S. or following the B.S. Transfer credits (maximum six credits or two classes) and undergraduate credits (maximum three credits of University of Connecticut 3000-4000-level courses not used on the undergraduate degree plan of study and not open to sophomores) may be used on a Ph.D. plan of study if approved by the advisory committee, the Director of Graduate Studies, and the Executive Committee of the Graduate Council. The Ph.D. in Mechanical Engineering does not have a related area or foreign language requirement.

Ph.D. Following an M.S.

Requirements: Minimum of 15 credit hours of content coursework, of which at least nine credits must be in ME courses, and an additional 15 credits of GRAD 6950 Doctoral Dissertation Research.

- ME 5507 Engineering Analysis I (or a similar course in mathematics, computer science, engineering analysis, or statistics, approved by the advisory committee; waived if taken while an M.S. student at UConn)
- At most three credits in non-SEMS programs, which must be approved in advance by the student's advisory committee, can be taken to satisfy minimum coursework requirements.
- ME 6340 Graduate Seminar for at least three semesters enrolled in the Ph.D. program as a full-time student (part-time students must have attended and passed the ME 6340 Graduate Seminar course for a minimum of two semesters during their one-year residency period).
- Subject to advance approval by the student's major advisor, a student may take SEMS courses beyond the required minimum coursework credits. Non-SEMS courses beyond minimum coursework requirements must be approved in advance by the student's advisory.
- Courses specific to the Master of Engineering (MENG) program, including ENGR 5311 Professional Communication and Information Management, ENGR 5312 Engineering Project Planning and Management, and ENGR 5314 Advanced Engineering Mathematics, may not be used toward the Ph.D. degree.
- At most two independent study courses can be applied toward coursework requirements and only one independent study course can be taken with the student's major advisor as the instructor.
- See additional requirements for all Ph.D. students.

Ph.D. Following a B.S.

Requirements: Minimum of 30 credit hours of content coursework, of which at least 21 credits must be in ME courses, and an additional 15 credits of GRAD 6950 Doctoral Dissertation Research.

- ME 5507 Engineering Analysis I (or a similar course in mathematics, computer science, engineering analysis or statistics, approved by the advisory committee)
- Three additional graduate-level credits of a mathematics, computer science, engineering analysis or statistics course
- ME 6340 Graduate Seminar Graduate Seminar for at least four semesters enrolled in the Ph.D. program as a full-time student (part-time students must have attended and passed the ME 6340 Graduate Seminar course for a minimum of two semesters during their one-year residency period).
- At most six credits in non-SEMS programs, which must be approved in advance by the student's advisory committee, can be taken to satisfy minimum coursework requirements.
- Subject to advance approval by the student's major advisor, a student may take SEMS courses beyond the required minimum coursework credits. Non-SEMS courses beyond minimum coursework requirements must be approved in advance by the student's advisory.
- Courses that are specific to the Master of Engineering (MENG) program, including ENGR 5311 Professional Communication and Information Management, ENGR 5312 Engineering Project Planning and Management, and ENGR 5314 Advanced Engineering Mathematics, may not be used toward the Ph.D. degree.
- At most two independent study courses can be applied toward coursework requirements and only one independent study course can be taken with the student's major advisor as the instructor.
- See additional requirements for all Ph.D. students.

Requirements For All Ph.D. Students:

Qualifying Exams: The Mechanical Engineering Ph.D. general (also called qualifying) examination consists of an oral presentation and examination to the student's Ph.D. advisory committee. The student must take the Ph.D. general examination for the first time during or immediately after their second semester of working under the supervision of their ME major 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.

Dissertation: The most important part of the study for the Ph.D. degree is the dissertation. A dissertation must be an original and significant contribution to the field of engineering science. Before the Ph.D. dissertation is well underway, the student must file a prospectus (also known as dissertation proposal) of the proposed research. The student's advisory committee and the Mechanical Engineering Director of Graduate Studies must approve the prospectus. The dissertation must be defended

orally and made available to the advisory committee at least two weeks prior to the final examination.

The final examination, an oral examination often called the dissertation defense, deals mainly with the subject matter of the dissertation. At least five members of the faculty including all members of the advisory committee must be present for the final examination. The dissertation defense is open to the public. The decision as to whether the student passes the examination is based on a vote of the advisory committee.

Minimum Research 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 the Ph.D. 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 Mechanical Engineering Department.

Learning Objectives

1. Knowledge: Demonstrate appropriate breadth and depth of disciplinary knowledge and comprehension of the major topics, theories, and issues of the discipline, including demonstration of specialized knowledge of a sub-field sufficient to carry out substantive independent research.
2. Research/applied skills: Use disciplinary methods and techniques ethically and professionally to apply knowledge, critically analyze, and, as appropriate to the degree, create new knowledge.
3. Communication: Communicate proficiently and effectively to a specialist or non-specialist audience, verbally and in writing, a structured, coherent academic presentation that cogently summarizes their research relevant literature, and its significance at the level appropriate to discipline.