

MECHANICAL ENGINEERING PH.D.

All students must meet the Requirements for the Doctor of Philosophy Degree

OVERVIEW

The Mechanical Engineering Graduate Program offers a Doctor of Philosophy (Ph.D.) degree in mechanical engineering. Each student must meet the general requirements for admission as outlined under the regulations of the University of Vermont Graduate College. Typically, students entering the program have received a master's degree in mechanical engineering or a closely-related field. Applicants with other backgrounds will be evaluated individually and may be asked to complete prescribed undergraduate technical course work. Areas of research interest in the program currently include: Aerospace Engineering, Turbulence, Complex and Bio Fluids, Multiscale Mechanics, Micro Technology and Robotics, Nanomaterials & Composites, Energy Harvesting, System Control & Diagnostics, Biomechanics & Orthopedics, Biomaterials, and High-performance Computing.

SPECIFIC REQUIREMENTS

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

An accredited master's degree in mechanical engineering or closely related discipline is required. Completion of the general (aptitude) portion of the Graduate Record Examination is required.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

The degree of Doctor of Philosophy requires of candidates a minimum of 75 credits to be earned in course work and in dissertation research. The 75 credits must be distributed in such a way that at least 39 credits must be earned in courses and seminars and a minimum of 21 credits must be earned in dissertation research. At least 9 of the course credits must be 6000- or 7000-level. Students must complete at least 15 credits in graduate-level mechanical engineering course work at UVM from the different areas of specialization. This mechanical engineering coursework requirement can include M.S. course credits earned at UVM; however students must complete 15 credits of graded graduate coursework after matriculation into the doctoral program. Currently, the program offers areas of specialization in:

- Biomechanics and Biomaterials;
- Control and Design of Mechanical Systems;
- Materials Engineering and Nanomechanics;
- Thermodynamics, Fluids and Energy; and
- Computational Mechanics.

All Ph.D. candidates complete a doctoral dissertation consisting of original research and of sufficient quality to merit publication in an archival journal.

Comprehensive Examination

All Ph.D. candidates must pass the comprehensive examination. The comprehensive examination tests the proficiency of the students in 4 topics of the mechanical engineering curriculum or closely related fields. The candidate works with his/her advisor and the graduate program coordinator to form a committee of 4 graduate faculty, 1 of whom should hold an appointment outside of mechanical engineering (1 faculty member may test the student on two distinct topics). The first part of the comprehensive examination consists of a written part spanning no more than 4 hours (1 hour per topic). In the second part of the examination, the committee meets with the student to ask questions regarding the written exam and any follow up topics that may be necessary to establish the proficiency of the candidate in mechanical engineering. A candidate must pass the comprehensive examination in no more than 2 attempts. Comprehensive examinations are typically scheduled at the end of the Fall or Spring semesters. It is strongly advised that the Ph.D. candidate take the comprehensive examination at the completion of his/her second or third semester of studies.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of the Ph.D. comprehensive examination.