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 bachelor’s degree and/or a master’s degree in mechanical engineering or a related field. Applicants with other backgrounds will be evaluated individually and must complete prescribed undergraduate technical course work. Areas of research interest in the program currently include: Smart Structures, Aerospace Engineering, Turbulence, Complex Fluids, Multiscale Mechanics, Micro and Nano Engineering, Nanomaterials, Energy Harvesting, Conversion and Storage, Control Systems, Microorganisms and Cells, Biomaterials, and Theory and Simulation using High-performance Computing.

SPECIFIC REQUIREMENTS

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

An accredited bachelor’s and/or 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 only for those students who are applying for a Graduate Teaching or Research Assistantship.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

The degree of Doctor of Philosophy requires of candidates a minimum of seventy-five credits to be earned in course work and in dissertation research. The seventy-five credits must be distributed in such a way that at least thirty-nine credits must be earned in courses and seminars and a minimum of twenty-one credits must be earned in dissertation research. Students must complete at least fifteen 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:

- Bioengineering and Biomechanics;
- Control Theory and Mechanical Systems;
- Solid Mechanics and Materials; and
- Thermal Sciences and Fluids.

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 four 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 three to four graduate faculty, one of whom should hold an appointment outside of mechanical engineering (one 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 eight hours (two hours 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 two 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 in his/her first year of studies.

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

Successful completion of the Ph.D. comprehensive examination.