MECHANICAL ENGINEERING M.S.

All students must meet the Requirements for the Master’s Degree

OVERVIEW

The Mechanical Engineering Graduate Program offers a Master’s of Science (M.S.) 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 in mechanical engineering or a related field. Applicants with other backgrounds will be evaluated individually and must complete prescribed undergraduate technical course work. Part-time study leading to the M.S. degree is also possible for engineers who are employed in the vicinity. 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 Master of Science

An accredited bachelor’s degree in Mechanical Engineering or equivalent is the typical requirement; however, students holding a bachelor’s degree in a related engineering or scientific field may also qualify for admission. 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 Master of Science

The Mechanical Engineering Graduate Program offers both thesis and non-thesis options for the master’s degree. Both options require the completion of advanced courses in mechanical engineering, mathematics, and other approved courses and research (for thesis students) totaling at least thirty credits. Graduate students receiving financial support via teaching or research fellowships are required to select the thesis option. Part-time students typically select the non-thesis option but may choose the thesis option if they prefer. Students normally decide on which option they intend to pursue at the beginning of their program.

All students are required to complete:

- A prescribed set of nine core course credits which cover areas of advanced engineering, mathematics, continuum mechanics, and numerical methods
- Six course credits in the area of specialization for their degree

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.

Further details on the core course requirements and the areas of specialization can be obtained from the Mechanical Engineering Graduate Program website.

Option A (Thesis)

In addition to core courses, students selecting the thesis option must complete between six and nine thesis credits (ME 391) prior to the master’s thesis defense, with the expectation that the student’s research must culminate in an original piece of work publishable as a conference proceedings paper or a peer-reviewed journal article. Those opting for a six-credit thesis must complete an additional three credits of approved course work.

Option B (Non-thesis)

Students selecting the non-thesis option must complete an additional fifteen credits of course work beyond the core credits in lieu of a thesis. Of the additional course work, a minimum of nine credits must be in a chosen area of specialization.

Comprehensive Examination

The comprehensive examination for the thesis option is the oral defense of the thesis.

The comprehensive examination for the non-thesis option 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 is allowed to take no more than two comprehensive examinations. Comprehensive examinations are typically scheduled at the end of the Fall or Spring semesters.

Requirements for Advancement to Candidacy for the Degree of Master of Science

A cumulative grade point average of 3.00 or better.