MECHANICAL ENGINEERING

Mechanical Engineering

These programs have been designed to build upon a student's undergraduate background and provide additional depth and breadth in the challenging and versatile profession of Mechanical Engineering. The department offers two graduate path alternatives. The Master of Science in Mechanical Engineering (MSME) degree program is a traditional thesis-based approach whereby the student pursues both research and course work culminating in the preparation and oral defense of a written thesis. The Master of Mechanical Engineering (MME) degree is a course-based master's program, which requires additional coursework in lieu of a traditional thesis.

The objective of both programs, the Master of Mechanical Engineering and Master of Science in Mechanical Engineering, is to prepare graduates for early career advancement in the field of Mechanical Engineering by building upon their undergraduate training with advanced coursework and concentrated study of problems and topics relevant to the field.

Requirements

Master of Mechanical Engineering (p. 1)
Master of Science Mechanical Engineering (p. 1)

Master of Mechanical Engineering (MME)

Requirements

- 20 credits of core course work
- 8 credits of Mathematics course work
- 20 credits of elective course work

Core Coursework
(20 credits)

Choose from the following (other classes may be substituted for core requirements with the approval of the ME graduate study committee):

- Any 500-level Mechanical Engineering class.
- Any 500-level Engineering Mechanics class.
- CHE 502 Transport Phenomena.

Mathematics Course work
(8 credits)

Required: MA 538 Advanced Engineering Mathematics

Choose one other mathematics class from the list of Mathematics graduate studies approved courses. From the approved classes, we particularly recommend:

Code	Title	Hours
MA 439	Mathematical Methods of Image Processing	4
MA 485	Applied Linear Regression	4
MA 487	Design of Experiments	4
MA 431	Calculus of Variations [1]	4
MA 435	Finite Difference Methods [1]	4
MA 436	Introduction to Partial Differential Equations [1]	4
MA 444	Deterministic Models in Operations Research [1]	4

[1] Check with the instructor. Your background may be sufficient for these classes even if you do not currently satisfy the prerequisites.

Elective Course Work
(20 credits)

- Electives must be listed as ME, BE, BIO, BMTH, CE, CHE, CHEM, CSSE, ECE, EM, EMGT, EP, MA, or OE.
- Up to 8 credits of Mathematics graduate studies approved courses may be taken (in addition to the required 8 credits of Mathematics course work).
- Up to 8 credits of Engineering Management graduate studies approved courses.
- No more than 12 credits of 400-level coursework is allowed to count toward the degree requirements. Approved 400-level mathematics courses are excluded from this 12 hour limit.
- No courses below the 400-level may be applied to the Master's degree.

Exceptions to these rules may be granted by permission of the ME graduate study committee.

Master of Science Mechanical Engineering (MSME)

Requirements

- 36 credits of formal coursework
- 12 credits of thesis coursework

The 36 credits of formal coursework are broken down as follows:

Required

Code	Title	Hours
MA 538	Advanced Engineering Mathematics	4

Electives
(32 credits)

- Electives must be listed as ME, BE, BIO, BMTH, CE, CHE, CHEM, CSSE, ECE, EM, EMGT, EP, MA, or OE.
- Not less than 20 credits of approved Mechanical Engineering graduate studies approved courses.
- Up to 8 credits of Mathematics graduate studies approved courses may be taken (in addition to the required 4 credits of MA538).
- Up to 8 credits of approved Engineering Management graduate studies approved courses.
- No more than 12 credits of 400-level coursework is allowed to count toward the degree requirements. Approved 400-level mathematics courses are excluded from this 12 credit limit.
- No courses below the 400-level may be applied to the Master's degree.

Exceptions to these rules may be granted by permission of the ME graduate study committee.

Learning Outcomes

Master of Mechanical Engineering (MME)

By the end of their program, MME students should be able to:

1. Identify, formulate, and solve high-level mechanical engineering problems.
2. Demonstrate the ability to effectively communicate theories and methodologies related to mechanical engineering with technical audiences.
3. Demonstrate the ability to acquire and apply new high-level knowledge as needed, using appropriate learning strategies.

Master of Science Mechanical Engineering (MSME)

By the end of their program, MSME students should be able to:

1. Identify, formulate, and solve high-level mechanical engineering problems.
2. Demonstrate the ability to effectively communicate theories and methodologies related to mechanical engineering with technical audiences.
3. Evaluate and analyze relevant scientific literature to stay current in their field of study.
4. Conduct independent research and evaluate, interpret, and discuss research outcomes.