

MECHANICAL ENGINEERING, MS

While pursuing a Master of Science in Mechanical Engineering (MSME), the student will take graduate-level courses and may conduct research with a faculty advisor and observe how these studies will lead to key engineering innovations and societal impacts in the field of mechanical engineering. Equipped with complementary and state-of-the-art computational and experimental facilities, the Mechanical Engineering Department has active research programs in the following three disciplinary groups; Dynamic Systems & Control (DSC), ThermoFluids Science (TFS), and Materials Processing & Manufacturing (MPM). Faculty teach graduate-level courses and conduct research in cross-disciplinary thrust areas that include: automotive systems, robotics and human systems, automation and mechatronic systems, energy and building efficiency, internal combustion engines, manufacturing systems, additive manufacturing, and materials processing and modeling. Graduate courses in these areas, in addition to the general core graduate courses, provide the foundation for earning an MSME degree. In addition to offering a thesis and non-thesis master's degree for the traditional on-campus student, the non-thesis master's degree is available as a distance degree through Bama By Distance.

Students and faculty in the Department of Mechanical Engineering have access to state-of-the-art computational facilities and capabilities. On-campus assets include numerous commercially available computational modeling software packages. In addition, high performance computing capabilities are accessible through the University of Alabama's Office of Information Technology.

Many full-time thesis students seek some form of financial assistance in the form of a graduate assistantship or fellowship. Assistantships generally include a monthly stipend, tuition, and health insurance. Graduate Research Assistantships (GRAs) are awarded by individual professors with funded research. Applicants should communicate directly with a faculty member in the applicant's area of study interest concerning the availability of GRA positions and a potential match. The ME Department offers Graduate Teaching Assistantships (GTAs) for students assisting faculty members with undergraduate and/or graduate courses and laboratories. GTA awards are assigned to faculty members based on their eligibility and determined by the ME Department Head, with preference being given to PhD students. There are a very limited number of GTA positions each semester. Similar to GRAs, applicants should communicate directly with a faculty member in the applicant's area of study interest concerning the availability of GTA position given to that individual faculty. There are also both internal and external fellowship opportunities available to applicants such as Graduate Council Fellowships (GCF).

Qualified students in the Mechanical Engineering undergraduate program at The University of Alabama are eligible for early admission into the MSME program through the Accelerated Master's Program (AMP). This program allows students to double-count up to 9 hours of graduate credit toward their undergraduate degree.

Admission Requirements

MSME (On campus and Distance): For unconditional admission to the MSME Program, a prospective graduate student should have:

- a Bachelor's degree in mechanical engineering or related field,
- a grade point average of at least 3.0 on a 4.0 scale, and
- a combined verbal and quantitative GRE requirement of 300 or greater.

There is no minimum score on the writing section of the GRE for admission to the MSME Program. A short Statement of Purpose describing possible research/study interests and a Resume are also required. Applicants should submit three letters of recommendation.

Applicants with 5 or more years of field-related work experience may contact the ME Graduate Program Director to inquire about a GRE waiver request.

Applicants in related areas such as science and mathematics are encouraged to apply; however, prerequisite undergraduate courses will be required that will not apply for graduate credit.

International applicants whose first language is not English may be required to submit TOEFL scores of 92 or higher.

Accelerated Masters Program (AMP)

Current Mechanical Engineering (ME) and Aerospace Engineering and Mechanics (AEM) undergraduate students at The University of Alabama with a 3.3 or higher GPA and 90 or more hours of undergraduate course credit are eligible to apply for the Accelerated Masters Program (AMP).

AMP allows undergraduate students to simultaneously count up to 9 hours of graduate coursework toward both the undergraduate and graduate degrees. The **GRE test requirements are automatically waived for AMP applicants**. AMP is also available to distance students currently enrolled in our undergraduate program.

Dual MSME/MBA Program

Students interested in the Dual MSME/MBA Program must apply to each degree program separately and the two applications are reviewed for admission separately by each respective program. Please contact the Mechanical Engineering Department for more information on the Dual MSME/MBA Program.

Application Deadlines

There are no formal deadlines for graduate applications. Once an application is complete, the internal review process typically only takes a few days. However, **international applicants** should consider the time required to obtain any necessary travel documents. Only after the student has been accepted and the University has provided the appropriate paperwork can an applicant apply for appropriate travel documents. This process can take between two and six months, depending on the country of origin. Students must complete this process and arrive on campus prior to the first day of class. All of these steps should be considered by international students when planning to apply.

Degree Requirements

Graduate School Degree Requirements and College of Engineering MS degree requirements are detailed below. Also refer to the online Graduate Handbook on the departmental homepage.

Master's Degree Requirements

Plan I

Thesis Option (Plan 1): 30 Credit Hours

The thesis option is the standard master's degree for mechanical engineering.

- Graduates complete 24 hours of graduate course work (500-level and above), at least six hours of ME 599 Thesis Research, and a thesis. All

students on teaching or research assistantships in the department must pursue this degree option.

- A student's curriculum and thesis must be approved by the student's graduate advisory committee. The student must pass a final comprehensive examination, which is typically a presentation and defense of the thesis.
- A minimum of 12 semester course hours in the major area at or above the 500 level is required. Major area courses are ME and ME cross-listed courses. Three hours of approved coursework in a closely allied area may be used as a major area course, with additional hours requiring advisor approval and notification of the graduate registrar.
- A minimum of 6 hours of mathematics is required. Note that some engineering courses may satisfy this requirement.
- A minimum of 6 hours of elective courses is required.
- A minimum of 6 hours of ME 599 Thesis Research hours and an approved thesis are required. The forms for the approved committee and thesis are available on the graduate school web site.
- The student must provide a course portfolio to the thesis committee and Graduate Assessment Forms must be completed by the student's thesis committee and submitted to the ME department. Consult the department for additional details.

Non-Thesis Option (Plan II): 30 Credit Hours (On-Campus and Distance):

The non-thesis option is intended primarily for students who are employed in government or industry as well as those completing the program through Bama By Distance.

- Graduates complete 30 hours of graduate course work at the 500 level or above and pass a comprehensive exam. (Credit for ME 599 Thesis Research may not be used to satisfy hour requirements for this degree or The University's 75% rule.)
- A minimum of 18 semester hours in the major area at or above the 500 level is required. Major area courses are ME and ME cross-listed courses. Six hours of approved coursework in a closely allied area may be used as a major area course, with additional hours requiring advisor approval and notification of the graduate registrar.
- A minimum of 6 hours of mathematics is required. Note that some engineering courses may satisfy this requirement.
- A minimum of 6 hours of elective courses is required.
- The student must pass a comprehensive exam, typically taken during the final semester of study. The form for the Master's Exam is available on the graduate school web site.
- The student must provide a course portfolio to the comprehensive exam committee and the Graduate Assessment Forms must be completed and submitted to the ME department. Consult the department for additional details.

See the online Graduate Catalog for details on Plan of Study, Admission to Candidacy, and all other Degree Requirements.

Faculty

Professors

Jalili, Nader, Department Head

Agrawal, Ajay K.

Balasubramanian, Bharat

Daniewicz, Steve

Shen, Xiangrong

Shepard Jr., W. Steve

Woodbury, Keith A.

Associate professors

Allison, Paul G.

Amini, Shahriar (Sean)

Ashford, Marcus D.

Bittle, Joshua A.

Fonseca, Daniel J.

Jordon, J. Brian

Khandelwal, Bhupendra

Krishnan, Sundar Rajan

Mahmoodi, S. Nima

Momeni, Kasra

Puzinauskas, Paulius V.

Srinivasan, Kalyan Kumar

Todd, Beth Ann

Volkov, Alexey N.

Williams, Keith A.

Yoon, Hwan-Sik

Assistant professors

Cousin, Christian A.

Davami, Keivan

Kasemer, Matthew

Kim, Hyun Jin

MacPhee, David W.

Martelli, Dario

Uddi, Mruthunjaya (Jay)

Vikas, Vishesh

Wang, Xuefeng

Instructors

Carpenter, Joseph P.

Newman, Frank

Adjunct assistant professor

Rasoulzadeh, Mojdeh