

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The undergraduate curriculum in mechanical engineering (ME) is very broad and flexible. The curriculum comprises a ME core of fundamental concepts, plus a design/professional-practice stem, plus 15 credit hours of free electives. The program prepares students to be problem solvers and to contribute to a wide range of industries and businesses, or to go on for further study in graduate school. There is a strong emphasis in the ME program on design, creativity, and hands-on learning. Due to the wide range of career choices open to MEs, the program incorporates courses in electronics, materials science, computer programming, and manufacturing. The large number of free elective hours allows students to pursue minors and certificates throughout the Institute, or to specialize in areas within ME. The flexibility also helps students to pursue a variety of special programs including co-op, internships, study abroad, and undergraduate research.

Program Educational Objectives

The faculty of the Woodruff School strives to continuously improve our undergraduate programs in mechanical engineering. The educational objectives reflect the needs, and have been reviewed by, among others, the Advisory Board of the Woodruff School, the faculty, and the students.

- Our graduates will be recognized leaders in ME-related fields or other career paths, including industry, academe, government, and non-governmental organizations.
- Our graduates will be global collaborators, leading and participating in culturally diverse teams, fostering inclusive environments, and acting ethically to discover and apply new knowledge and engineering practices
- Our graduates will continue to grow professionally and will strive to acquire new skills and new knowledge throughout their careers.
- Our graduates will be entrepreneurially minded innovators who have a positive economic, social, and environmental impact on their communities, the nation, and society as a whole.

The Woodruff School of Mechanical Engineering has established concentration areas in sub-fields of Mechanical Engineering. Concentrations are optional for the students; they are not required. The Concentrations are each fifteen hours of classes, and will satisfy the Design Elective, the ME Elective and nine hours of Free Electives. The current Concentrations are:

- General
- Automotive
- Automation and Robotic System
- Design
- Manufacturing
- Mechanics of Materials
- Micro- and Nano-Engineering
- Nuclear and Radiological Engineering
- Thermal, Fluid and Energy Systems

International Plan

Mechanical Engineering majors may choose to participate in the Georgia Tech International Plan. Students who complete the requirements of the

International Plan have the degree designation noted on their transcripts and on their diploma. The International Plan has specific requirements which must be completed including:

1. a minimum of 26 weeks abroad in educational, research, or work internships,
2. a language requirement,
3. courses specifically designated for global economics, international affairs, and global competency, and
4. a capstone project, typically one which is based on the student's ME capstone design experience.

Complete requirements may be found at <http://oie.gatech.edu/content/international-plan>.

Cooperative Plan

Since 1912, Georgia Tech has offered an Undergraduate Cooperative Program to those students who wish to combine career-related experience with classroom studies. Students alternate between industrial assignments and classroom studies until they complete three semesters of work. Co-op students with mechanical engineering majors complete the same coursework on campus that is completed by non-co-op students. Most co-op students begin the program as sophomores or juniors and are classified as full-time students regardless of whether they are attending classes on campus or are full-time at an employer's location. Co-op employment opportunities exist across the USA, and even in foreign countries. Depending on the chosen country, proficiency in a foreign language is usually necessary. Mechanical engineering students have worked in countries such as Germany, China, and Japan.

Students who participate in the co-op program have the opportunity to develop career interests, become more confident in their career choices, and develop human relation skills through their work experience. Graduates of the program receive a bachelor's degree with a Cooperative Plan Designation. For more information about the Cooperative Program, go to www.coop.gatech.edu.

For more information about all of the programs in the Center for Career Discovery and Development, visit www.careerdiscovery.gatech.edu.

Research Option

The School of Mechanical Engineering offers the 'Research Option' (RO) under the BSME degree program. In order to graduate with a BSME (RO) degree, students must:

- Complete at least nine units of supervised research over at least two (preferably three) terms. The research must either be for pay (ME 4698) or credit (ME 4699). Up to six hours of research for credit may be used towards the BSME free elective requirements.
- Write an undergraduate thesis or other substantial, written report showing results of the research. This is usually done during the graduating term.
- Take both LMC 4701 (typically during the first or second semester of research) and LMC 4702 (during the thesis-writing semester).

At least six of the nine required credit hours of research should be on the same topic. A research proposal must be approved by a faculty advisor and one other faculty member. This proposal will be written in LMC 4701 which serves as a pre-requisite for LMC 4702. Completion of the Research Option is noted on students' transcripts.

The BS/MS Program

The Woodruff School offers a BS/MS program for those students who demonstrate an interest in and ability for additional education beyond the BS degree. Mechanical engineering students are eligible to apply to the program after the completion of 30 semester credit hours at Georgia Tech and appropriate progress in their degree program. One of the advantages of the program is that it allows students to use 6 hours of free-elective credit to be counted towards both the BS and the MS degree. Therefore, students should apply to the program at least three semesters prior to graduation in order to take full advantage of the Graduate Course Option. Students must have a Georgia Tech GPA of 3.5 or higher for admission into the BS/MS Program. Further information, rules, and restrictions may be found at the Woodruff School site.

Participants in the BS/MS Program in the Woodruff School can obtain a master's degree in mechanical engineering, nuclear engineering, medical physics, or in Georgia Tech's interdisciplinary bioengineering graduate program. There are two options to consider:

Non-Thesis Option

The Non-Thesis Option is completed by taking 10 classes according to the MS degree requirements. With proper planning, most MS non-thesis degrees could be completed within three semesters beyond the BS degree.

Thesis Option

The Thesis Option involves working with a faculty member on a project in a wide range of research topics being investigated by Woodruff School faculty members. This will give the student hands-on experience in working with a faculty mentor; the opportunity to work in a laboratory or a research environment; and the chance to perform cutting edge theoretical and experimental work. These efforts will foster the student's career interests and expand their job prospects with certain employers. In some cases, a student will receive a graduate research assistantship, which includes a stipend and a tuition waiver.

BS/MS Information