

Departmental Information

Department of Mechanical, Aerospace, and Biomedical Engineering

414 Dougherty Engineering Building

Knoxville, TN 37996-2210

Phone: 865-974-5115

Fax: 865-974-5274

E-mail: mabeinfo@utk.edu

Online: mabe.utk.edu



Admissions Information

Application forms are available from:

UT Office of Undergraduate Admissions

320 Student Services Building

Knoxville, TN 37996-0230

Phone: 865-974-2184

Toll free: 800-221-8657

Online: admissions.utk.edu/undergraduate

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DEPARTMENT OF
MECHANICAL, AEROSPACE &
BIOMEDICAL ENGINEERING

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THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

DEPARTMENT OF
MECHANICAL, AEROSPACE &
BIOMEDICAL ENGINEERING



GUIDE FOR PROSPECTIVE STUDENTS

mabe.utk.edu

MECHANICAL, AEROSPACE, AND BIOMEDICAL ENGINEERING

A Message from the Department Head

Thanks for your interest in the Department of Mechanical, Aerospace, and Biomedical Engineering (MABE). Our department offers three undergraduate degree programs: mechanical engineering (ME), aerospace engineering (AE), and biomedical engineering (BME). Each program is accredited by the ABET Engineering Accreditation Program. There is also a BS/MS program designed to allow students who qualify to obtain both a BS and an MS degree in just five years in any of the three programs.



To become a world-class engineer, a strong high-school background in mathematics and the basic sciences are very important, along with self-discipline and determination. Students in engineering can expect to work hard in school, but be rewarded with careers that are both exciting and have a real impact on society.

If you have any questions about the MABE department, please don't hesitate to call or come by and see us. We will be happy to assist you in any way we can.

Sincerely,

Dr. Matthew M. Mench, MABE Department Head

What Are Mechanical, Aerospace, and Biomedical Engineering?

Mechanical engineering is one of the most general engineering disciplines. It has its foundation in three basic areas:

- machine design — emphasizes machine concepts and their implementation, as in automotive design, advanced manufacturing, and structural integrity
- thermal-fluid systems — focuses on energy conversion and fluid handling, as in heating and cooling systems, power plants, and renewable energy storage and conversion
- mechanical systems — addresses the generation and control of motion and force as in robotics, system design, sensors and control

Because of their broad background, mechanical engineers are employed in nearly every industry in design, research, manufacturing and management.

Aerospace engineering focuses on the design, testing and manufacturing of aerospace vehicles including aircraft, spacecraft and missiles. It involves the concepts of:

- aerodynamics — the effects of air flowing over vehicle surfaces

- propulsion — the development and testing of jet and rocket engines
- orbital mechanics — the motion of vehicles in space
- stability/control — the design of aircraft or spacecraft guidance systems

Typical employers of aerospace engineers include the National Aeronautics Space Administration (NASA), the aircraft industry and both private and government organizations.

Biomedical engineering focuses on the design, and development of healthcare products that are used by both care providers and patients. This discipline involves the concepts of:

- biomechanics — understanding the musculoskeletal system in terms of motion and forces
- bioinstrumentation — measurements of human body parameters such as blood pressure
- biomaterials — the development and characterization of human-compatible materials
- biosensing and bioimaging — using ultrasound, x-rays, MRI and other tools to examine internal organs and tissues

Biomedical engineering career opportunities include work in the medical device industry and for research and development organizations. The BS BME degree is often used as preparation for medical school or graduate study in allied health fields.

For specific information on salaries and career opportunities, visit the UT Career Services website at www.career.utk.edu.

Department Resources

MABE's faculty consists of a diverse group of professionals who are nationally and internationally recognized experts in their fields. Located in the Dougherty Engineering Building, Perkins Hall, and the Science and Engineering Research Facility, the department has modern instructional and research facilities to prepare students to be world-class engineers.



Academic Advantages

The majority of UT freshman engineering students are automatically enrolled in the innovative Engage Engineering Fundamentals Program. Here you will learn basic engineering concepts and teamwork skills through a series of hands-on projects and activities. www.engr.utk.edu/efd

The Office of Professional Practice offers opportunities for you to gain hands-on experience in business and industry through paid positions and internships. www.coop.utk.edu

The College of Engineering also participates in the University Honors Program, which is designed to give academically outstanding students a unique undergraduate experience consisting of special courses, seminars, mentoring, and research projects. honors.utk.edu

The UT Center for International Education collaborates with the College of Engineering to create opportunities for engineering studies in other countries. web.utk.edu/~global

Financial Support

The HOPE Scholarship Program provides financial support to qualified high school students from Tennessee who wish to attend an in-state university. www.tn.gov/collegepays

The MABE department offers a generous undergraduate scholarship program. www.engr.utk.edu/mabe

The college and the university also offer a number of scholarship opportunities. onestop.utk.edu/your-money and www.engr.utk.edu/futurestudents/aid.html

The college provides special scholarships and support programs to minority students:

- Office of Engineering Diversity Scholarships www.engr.utk.edu/diversity/scholarships.html
- The Office of Engineering Diversity Programs (EDP) www.engr.utk.edu/diversity
- The Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP) tlsamp.utk.edu/