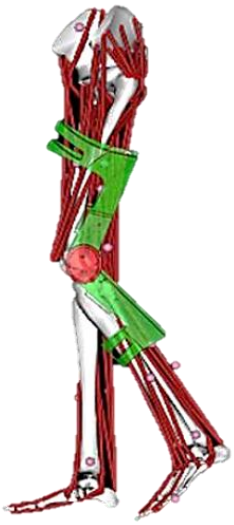
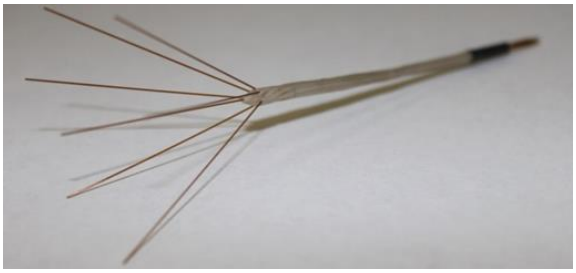
MECHANCIAL ENGINEERING CGE TECHNICAL TRACK:

BIOMECHANICAL & BIOMEDICAL ENGINEERING





The ME-BME technical track involves the application of Mechanical Engineering knowledge, skills, and principles to the conception, design, development, analysis and operation of biomechanical systems, including: artificial organs and prostheses; bioinstrumentation and measurements; bioheat transfer; biomaterials; biomechanics; bioprocess engineering; cellular mechanics; design and control of biological systems; and physiological systems.

Faculty Mentors:
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Approved Coursework

- M E 354, Introduction to Biomechanical Engineering
- M E 354M, Biomechanics of Human Movement
- ME 372D, Medical Device Design and Manufacturing
- M E 350R, Robotics Mechanism Design
- ME 377K, Projects in Mechanical Engineering (recommended for students interested in graduate school), subject to faculty research advisor and undergraduate faculty advisor approval
- Other relevant coursework outside ME such as BME, ASE, EE, ChE, subject to mentor and instructor approval

The University of Texas at Austin
Walker Department of Mechanical Engineering
Cockrell School of Engineering

Industry Applicability

This track is appropriate to prepare mechanical engineers for jobs in industry that deal with one or more of the following:

- Biofluid Systems
- Bioheat Transfer
- Bioinstrumentation
- Biomaterials
- Biomechanics
- Biomedical Optics
- Biosignal Analysis
- Cellular Biomechanics
- Computational Modeling
- Medical Robotics
- Rehabilitation
- Ultrasonics

Selected Examples

Biomechanics: This sub-field deals with the body's movements. Engineers who specialize in biomechanics focus on designing and developing products that aid with motion within the body. Examples include sports biomechanics such as determining optimal training conditions for athletes, prosthetics and gait analysis for footwear design.

Orthopedic Bioengineering: Orthopedic bioengineers design and develop products that deal with the bones, muscles, joints, and ligaments. These products mainly comprise of implants that assist with movement. The implants may work in conjunction with the surrounding tissues, or they may completely replace certain bones, muscles, joints, or ligaments.

Medical Devices and Bioinstrumentation: This sub-field involves designing and developing tools and equipment that are used to diagnose and treat diseases. Some of these devices are simple and low-cost disposable devices such as syringes and band-aids. On the other extreme, some of these technologies are advanced electronic devices that function cooperatively with a computer such as implantable cardiac pace makers and surgical robots.

Organizations and Societies

ASME, SB3C, Biomedical Engineering Society (BMES)