

Course Title: Applied Biomechanics

Course Number: BME 473

3 Hours Credit

3 Contact Hours/Week

Course Coordinator: Dr. Jeffrey A. Reinbolt

Text: Orthopaedic Biomechanics: Mechanics and Design in Musculoskeletal Systems, D.L. Bartel, D.T. Davy, and T.M. Keaveny, 2007

Course Description: Applications of biomechanics to the industrial and orthopedic area. Design of orthopedic implant devices; biomechanics of injury and protection.

Prerequisites: ME 321

Corequisites: None

Required Course in BME Curriculum

Outcomes of Instruction

- The student will be able to understand fundamental biological, mechanical, and neurological mechanisms by which muscles produce movement.
- The student will be able to identify and use engineering tools to study movement.
- The student will be able to write and solve equations of motion for simple models of human movement.
- The student will be able to apply biomechanics principles to “real-world” clinical and biomechanical research,

Criterion 3 Outcomes

k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

l) A demonstrated knowledge of biomechanics, the interface of engineering and biology and measurement of living systems

Topics Covered

- Introduction to Movement Biomechanics
- Locomotion
- Muscle Structure and Function
- Neuromuscular Overview
- Motion Tracking Techniques
- Inverse Dynamics
- Equations of Motion
- Advanced Biomechanics Techniques