BME 408: Rehabilitation Engineering and Assistive Technologies
Units: 2
Fall 2025, Monday, 4:00 to 5:50 PM

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Catalog Course Description
Introduction to technologies used for rehabilitation and improved function, including limb and spinal orthoses and prostheses, gait analysis, and sensory aids and augmentation.

Expanded Course Description
This course is meant to act as an introduction to various rehabilitation and assistive technologies with a wide range of applications, focusing on current/cutting-edge procedures and devices as well as practical issues that need to be considered. The goal of this course is to allow students to see real-world applications of the theoretical material they learn in their other biomedical engineering classes. An expanded list of potential topics discussed includes devices used to regain function after limb amputation or paralysis, software used to motivate patients during rehabilitation, retinal implants for restoring sight in the blind, and wheelchair designs for optimal performance and/or ergonomics.

Prerequisite(s): N/A
Co-Requisite(s): N/A
Concurrent Enrollment: N/A
Recommended Preparation: Basic background in statics and dynamics but we revisit the fundamentals as part of the course material

Previous Guest Lecturers Include
- Tishya Wren, Ph.D., *Motion Analysis: Clinical Applications*
- Charles Liu, M.D., Ph.D.: *Inflection Points in Human Neurorestoration*
- Andy Lin, M.S., A.T.P., *Assistive Technologies & 3D Printing*
- Vasileios Christopoulos, Ph.D., *Revolutionizing Functional Ultrasound Imaging (fUSI): A New Era in Neurological Research*
- Francisco Valero-Cuevas, Ph.D., *Rehabilitation Engineering: from Idea to Commercial Medical Devices*
- Jeffery Rankin, Ph.D.: *Wheelchair Concerns, Analysis, & Enhancements*
- Tasha Poppa, Ph.D.: *Functional Neuroanatomy & Applications of Auricular Neuromodulation*

Syllabus available upon request ☺