Neuromuscular Biomechanics

MECHENG 8702

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:

Prerequisites and Co-requisites:
Prereq: 6700 or 687, or permission of instructor.

Course Goals / Objectives:
- Describe the biological, mechanical, and neurological aspects of how muscles and the nervous system produce and control movement
- Describe the major theories behind upper and lower limb mechanics and control
- Improve teaching and oral presentation skills
- Gain experience in defining a research project and writing a research proposal
- Describe, and gain experience with the following modeling concepts: scaling a generic model, inverse kinematics, inverse dynamics, forward dynamics, contact
- Gain experience with generating a biomechanical simulation from experimental data
**Course Topics:**
- Neuromuscular system physiology
- Experimental techniques
- Fundamentals of neural control
- Theories of control of locomotion
- Theories of upper extremity control
- Overview of modeling and simulation of movement
- Editing a generic model
- Kinematics
- Inverse dynamics
- Forward dynamics
- Contact modeling
- Student research presentations

**Designation:**
Elective