



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Neuromuscular Biomechanics

MECHENG 8702

Credit Hours:

3.00 - 3.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

State-of-the-art assessment of upper and lower extremity dynamics, focusing on mechanical and neuromuscular control. Modeling and simulation of movement. Open-ended projects.

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
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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
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Designation:

Elective