



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Control System Labs

MECHENG 7292

Credit Hours:

2.00 - 2.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture
Lab

Course Description:

Hands-on experience in designing, developing, implementing, and analyzing control systems for mechanical systems.

Prerequisites and Co-requisites:

Prereq: 5372 (672) or 674, or permission of instructor.

Course Goals / Objectives:

- Gain hands-on experience on designing, developing, and implementing control systems for mechanical systems
 - Use real-time prototyping control systems
 - Gain experience on analyzing experimental data for control systems in mechanical systems
 - Gain experience on preparing experimental reports
-

Course Topics:

- Introduction to programmable logic controllers
 - Introduction to dSPACE (a real-time control system)
 - Laboratory equipment familiarization
 - Temperature control using a microprocessor based PID controller
 - Analog control of motor speed using an electro-hydraulic servomechanism
 - Sampling and aliasing
 - System identification for a DC motor system
 - Compensator design for a DC motor system
 - Magnetic levitation stage demonstration
 - Direct discrete controller design
 - Control of a piezoelectric actuator
 - Disturbance rejection with an augmented state estimator
-

Designation:

Elective