

ECE 3557 (Proposed): Control Systems Laboratory

Course Description

Utilization of real-world plants for computer control; use of a commercially available software package (Matlab) for computer-aided analysis and design.

Prior Course Number: 557

Transcript Abbreviation: Control Laboratory

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad

Student Ranks: Junior, Senior

Course Offerings: Autumn, Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 1.0

Repeatable: No

Time Distribution: 3.0 hr Lab

Expected out-of-class hours per week: 0.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: Prereq or concur: 3551 (551), and enrollment in ECE or EngPhysics major.

Exclusions: Not open to students with credit for 557.

Cross-Listings:

Course Rationale: Existing course.

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.1001

Subsidy Level: Baccalaureate Course

Programs

Abbreviation	Description
CpE	Computer Engineering
EE	Electrical Engineering

Course Goals

Utilize real-world plants for computer control, and learn to use a commercially available software package (Matlab) for computer-aided analysis and design

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Instrumentation and software			3.0					
Analog simulation			3.0					
Gain compensation and feedback			6.0					
Lag compensation			6.0					
Lead compensation			6.0					
Compensation for sampled data systems			3.0					
Tuning an analog PID controller			6.0					
Tuning a digital PID controller			6.0					

Representative Assignments

Pre-lab assignment carried out prior to entering lab
Lab write-up focused on topics

Grades

Aspect	Percent
Pre-labs	15%
Individual lab write-ups	60%
Lab practical exam	25%

Representative Textbooks and Other Course Materials

Title	Author
<i>Control Systems Technology Lab</i>	Yurkovich and Abiakil

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
***	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
***	c	An ability to design a system, component, or process to meet desired needs.
***	d	An ability to function on multi-disciplinary teams.
***	e	An ability to identify, formulate, and solve engineering problems.
	f	An understanding of professional and ethical responsibility.
***	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
	i	A recognition of the need for, and an ability to engage in life-long learning.
	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Additional Notes or Comments

Updated prereqs, exclusions, goals and topics to match university format 3/20/12

update text info, 5/10/17, CED

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