Principles of Precision Engineering

ISE 5550

Description / Conditions

Transcript Abbreviation:
Precision Eng

Course Description:
Principles of precision engineering with focus on design and performance of precision machinery, machine tool metrology and precision manufacturing processes.

Course Levels:
Undergraduate (1000-5000 level)
Graduate

Designation:
Elective

General Education Course
(N/A)

Cross-Listings
(N/A)

Course Detail

Credit Hours (Minimum if "Range"selected):
3.00

Max Credit Hours:
3.00

Select if Repeatable:
Off

Maximum Repeatable Credits:
3.00

Total Completions Allowed
(N/A)

Allow Multiple Enrollments in Term:
No

Course Length:
14 weeks (autumn or spring)
12 weeks (summer only)

Off Campus:
Never

Campus Location:
Columbus

Instruction Modes:
In Person (75-100% campus; 0-24% online)

Prerequisites and Co-requisites:
Prereq: MechEng 2010 and MechEng 2020; or MechEng 2040.

Electronically Enforced:
No

Exclusions:
Not open to students with credit for 752.01.

Course Goals and Learning Objectives

Course Goals / Objectives:
- Learn the fundamentals of precision engineering
- Study the basics of machine tool elements and structure, sources of errors and different machining processes
- Learn precision metrology with focus on actuators and fixture design and fabrication of precision components

Check if concurrence sought:
No

Contact Hours

Contact Hours:

Contact Hours For Each Topic.

Topic	LEC	REC	LAB	LAB Inst
Metrology	2.0	0.0	0.0	0
Interferometry	2.0	0.0	3.0	0
Error mapping, error budget and error correction	4.0	0.0	0.0	0
Machine tool metrology	3.0	0.0	3.0	0
Precision machine design	3.0	0.0	0.0	0
Machine tool control	4.0	0.0	0.0	0
Kinematics and work holding	2.0	0.0	3.0	0
Temperature control	2.0	0.0	0.0	0
Sensors	2.0	0.0	0.0	0
Optical fabrication	3.0	0.0	0.0	0
Micromachining	2.0	0.0	0.0	0
Ultraprecision machining	2.0	0.0	2.0	0
Replication processes	2.0	0.0	0.0	0
Lithography	2.0	0.0	3.0	0
Total	**35**	**0**	**14**	**0**

Grading and Texts

Grading Plan:
Letter Grade

Course Components:
Lecture
Lab

Grade Roster Component:
Lecture

Credit by Exam (EM):
No

Grades Breakdown:

Grades Breakdown

Aspect	Percent
Exam	35%
Term project	35%
Lab reports and participation	30%

Representative Textbooks and Other Course Materials:

Title	Author	Year
Course readings	Various	

ABET Student Learning Outcomes

ABET-CAC Criterion 3 Outcomes
(N/A)

ABET-ETAC Criterion 3 Outcomes
(N/A)

ABET-EAC Criterion 3 Outcomes
(N/A)

Embedded Literacies (UG courses only)

Embedded Literacies Info
(N/A)

Attachments / Additional Notes or Comments

Attachments

(N/A)

Additional Notes or Comments

(N/A)