



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
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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:**

Attachments / Additional Notes or Comments

Attachments:

(N/A)

Additional Notes or Comments:

(N/A)