Principles of Precision Engineering

ISE 5550

Credit Hours: 3.00 - 3.00

Course Coordinator:

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

Representative Textbooks and Other Course Materials:

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course readings</td>
<td>Various</td>
<td></td>
</tr>
</tbody>
</table>

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

Prerequisites and Co-requisites:

Designation:
Elective

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
Course Topics:
- Metrology
- Interferometry
- Error mapping, error budget and error correction
- Machine tool metrology
- Precision machine design
- Machine tool control
- Kinematics and work holding
- Temperature control
- Sensors
- Optical fabrication
- Micromachining
- Ultraprecision machining
- Replication processes
- Lithography