



Fundamentals of Tool Engineering

ISE 5530

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate

Course Components:

Lecture

Course Description:

Basic form, function, mechanical elements, common materials, thermal considerations and economic analysis in the design of workholding fixtures and jigs, dies/molds, and cutting tools.

Prerequisites and Co-requisites:

Prereq: MechEng 2010 and 2020, or 2040, or Grad standing.

Course Goals / Objectives:

- Provide a basic understanding of fixturing and workholding during machining processes.
 - Provide an understanding of the metallurgy, processing, and types of tool steels, including heat treatment.
 - Provide an introduction to dies and molds for forming processes in both the liquid and solid states.
 - Provide a basic understanding of the economics of tooling: break even analysis, number of mold or die cavities, comparison of production processes based on production run.
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Course Topics:

- Introduction to workholding principles; fixture and jig design
 - Fundamentals of tool steels; properties and heat treatment
 - Introduction to dies and molds; function and design issues.
 - Cutting tool materials
 - Economics of tooling; break-even analysis; number of die/mold cavities
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Designation:

Elective