DET2140 - Design for Manufacturing

Credits:	4 (2/2/0)
Description:	This course prepares students to work in manufacturing-related industries as jig, fixture and tool designers. The course expands students' knowledge of modern manufacturing practices and machine processes while learning concepts behind designing quality control, prototyping and production run tooling.
Prerequisites:	• DET1210 • DET1230
Corequisites:	• DET2110
Pre/Corequisites*:	
Competencies:	1. Analyze tooling design objectives and designer responsibilities. 2. Calculate part costs and labor expenses using manufacturing-specific variables and formulas. 3. Calculate tool costs relative to design criteria for jigs and fixtures based on their use and application. 4. Apply design economics to various production scenarios using a comparative analysis matrix. 5. Design, detail and document the design specifications for a leaf jig and fixture. 6. Design, detail and document the design specifications for a box jig and fixture. 7. Post process and generate files for three-dimensional prototypes based on design geometry. 8. Analyze and explain the use of expendable and permanent molds for various casting processes. 9. Analyze and explain hot forming, cold forming and molding processes for plastics. 10. Analyze and explain hot forming and cold forming techniques for metals. 11. Differentiate between, and explain separating techniques for, turning, milling and related operations. 12. Differentiate between, and explain assembly techniques for, welding, adhesive bonding and fastening of plastics, metals and ceramic materials.
MnTC goal areas:	None

**Can be taking as a Prerequisite or Corequisite.*