

TOOL AND DIE DESIGN (617)

617-112 - CAD 3-D, Creo Parametric

Introduces parametric-based solid modeling using Creo Parametric software. Emphasis is placed on solid modeling concepts, including development, modifying and editing models. Additional concepts include the creation of drawings and assemblies. Recommended: Previous drafting experience or course; previous work on computers (Microsoft products such as Word, Excel, etc.).

3 Credit hours

36 Lecture hours

36 Lab hours

617-114 - CAD 3-D SolidWorks

Introduces SolidWorks parametric-based solid modeling techniques. Exercises will include creating and editing solid parts, assemblies and drawings. Top-down and bottom-up designing techniques will be applied to product design, sheet metal and mold tooling exercises. Exploded views, Bill of Materials, animations, finite element analysis and configurations will be created. File conversions will be explored to and from Creo/Pro-Engineer, Mastercam and AutoCAD software. Recommended: Previous drafting experience or course; previous work on computers (Microsoft products such as Word, Excel, etc.)

3 Credit hours

36 Lecture hours

36 Lab hours

617-115 - Jig and Fixture Design

Students continue to develop their CAD skills utilizing SolidWorks design software by creating solid models and producing detail and assembly drawings of jigs and fixtures suitable for manufacturing production of parts and assemblies. Students develop the skills necessary to process information and design the tools, methods and techniques in order to improve manufacturing efficiency and productivity. Emphasizes further development of dimensioning techniques and applying tolerances for functionality and manufacturability. (Prerequisite: Completion of or concurrent enrollment in 617-123 CAD 3-D, Advanced SolidWorks)

3 Credit hours

18 Lecture hours

72 Lab hours

617-123 - CAD 3-D, Advanced SolidWorks

Applies previously developed SolidWorks skills to advanced functionalities using multibody construction, sheet metal design, 3D sketches for weldments, surfacing, and mold splitting techniques. Preparation for SolidWorks certification will be completed prior to taking a certification exam of your choice. (Prerequisite: 617-114 CAD 3-D, SolidWorks)

3 Credit hours

36 Lecture hours

36 Lab hours

617-149 - Tool Design

Fundamental stamping die and mold design principles are used to transform part drawings into completed metal stamping die and injection mold designs. Students calculate blanking and stripping forces to select appropriate sized punch press. Parting lines will be determined with core and cavities extracted for a variety of molded parts. One core and cavity will be 3D printed and run in our 90 ton injection molding machine to produce prototype parts. A 3D scanner will be used to reverse engineer a part. (Prerequisite: 606-107 Component Design)

4 Credit hours

18 Lecture hours

108 Lab hours