MACH A152: INTRODUCTION TO SOLIDWORKS

Item	Value
Curriculum Committee Approval Date	12/02/2020
Top Code	095600 - Manufacturing and Industrial Technology
Units	3 Total Units
Hours	90 Total Hours (Lecture Hours 36; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

The fundamentals of computer-aided design and drafting using SolidWorks software. Application of SolidWorks in creating manufacturing models will be covered. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Use software to create orthographic drawing that will be used to produce and modify solid parts and assembles.

Course Objectives

- 1. Learn the basic menu structure and graphical user interface used within SolidWorks.
- 2. Achieve competency in creation of basic sketches.
- 3. Apply dimensions and constraints to sketches.
- 4. Gain competency in extruding, sweeping and revolving basic 2-D geometry.
- 5. Create features such as holes, shells, fillets, and chamfers.
- 6. Be able to create and modify solid parts.
- 7. Be able to create and modify solid assemblies.
- 8. Create basic engineering using models.

Lecture Content

A. Learn the basic menu structure and graphical user interface used within SolidWorks. 1. Demonstrate use of SolidWorks toolbars and menu. 2. Learn how to create a new file, save a file, and open an existing file. B. Achieve competency in creation of basic sketches. 1. Gain competency of sketch tools through basic exercises. 2. Work planes, work axis, and work points. 3. Create basic geometry using sketch tools. C. Apply dimensions and constraints to sketches. 1. Apply dimensions and constraints to basic geometries. 2. Learn how to modify and delete dimensions and constraints. D. Gain competency in extruding, sweeping and revolving basic 2-D geometry. 1. Extrude and revolve. 2. Sweep and loft. E. Create features such as holes, shells, fillets, and chamfers. 1. Holes and shells. 2. Fillets and chamfers. F. Be able to create and modify solid parts. 1. Adding overall dimensions and constraints. 2. Changing and deleting overall dimensions and constraints. G. Be able to create and modify solid assemblies. 1. Adding and deleting parts to assemblies. 2. Applying constraints to assemblies. H. Create basic engineering orthographic drawings using models 1. Standard orthographic drawing layout for detailed drawings. 2. Section and auxiliary views. 3. Assembly drawings using item balloons and parts lists. 4. Exploded assembly drawings

Lab Content

1. Students will learn the basic menu structure used within SolidWorks.2. Using SolidWorks software students will create basic sketches and apply dimensions to them.3. Create and modify solid parts and assemblies.4. Create orthographic drawings and auxiliary views.

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

Instructional Techniques

Lecture and visual aids Discussion of assigned reading Discussion and problem solving performed in class Quiz and examination review performed in class Homework and extended projects Laboratory experience which involve students in formal exercises of data collection and analysis

Reading Assignments

Reading from text and reference materials

Writing Assignments

In-class exercises and written reports.

Out-of-class Assignments

Projects, test preparation, research for written reports.

Demonstration of Critical Thinking

Apply dimensions and constraints to sketches; formal exercises of data collection and analysis.

Required Writing, Problem Solving, Skills Demonstration

Use software to create orthographic drawings, written reports; formal exercises of data collection and analysis.

Eligible Disciplines

Machine tool technology (tool and die making): Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Software Resources

1. SolidWorks. Dassault Systems, EDU 2014-2015 ed. SolidWorks Software

Other Resources

1. Instructor handouts