SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: MECH-160 Department: Mechanical Engineering Technology

Course Title: Engineering Graphics with Solid Works Semester: Spring Year: 2012

Objectives/Competencies

Course Objective	Competencies
1. Understand how to sketch, refine, and add parametric dimensions and relationships to profiles using Solid Works.	• Discuss the difference between world and user coordinate systems. • Discuss the menu structure in Solid Works. • Discuss the use of the Browser. • Create the outline of a part feature. • Place appropriate parametric dimensions. • Establish appropriate geometric relationships. • Understand the difference between dimensions and relationships.
2. Manipulate the view of the part.	• Perform real time zoom and pan. • Rotate the view. • Create shaded and wire frame representations. • Create a plan view to the sketch plane.
3. Create part features for a 3D solid model.	• Explain the term "feature". • Perform Boolean operations (Join, Cut, and Intersect) • Create extruded solids. • Create revolved solids. • Create fillets and chamfers as solid entities. • Create holes in a 3D model: Drilled, Counterbored, Countersunk, and tapped. • Create polar and rectangular arrays of solid features. • Understand how the browser is used for editing features.

4. Create 3D workplanes.	• Recognize the three orthogonal workplanes. • Establish an existing face as a sketch plane. • Recognize when a 3D workplane is required. • Create a work axis. • Create 3D workplanes using Edge, offset, parallel, normal, tangent, and angled options. • Establish a 3D workplane as a sketch plane. • Create a work point.
5. Edit part features.	• Perform a feature edit. • Perform a sketch edit. • Add and delete dimensions and relationships. • Add and delete geometry. • Update the model.
6. Create fully associative assemblies.	• Discuss top down assemblies. • Create bottom up assemblies. • Create part occurrences. • Define the grounded part. • Explain the six degrees of freedom. • Constrain parts together using assembly constraints. • Edit assembly constraints.
7. Create a 2D orthogonal drawing from a solid model in accordance with ASME Y14.3 and Y14.5.	• Create a base view. • Create orthogonal views. • Create isometric • Place dimensions. • Understand and use centerlines. • Apply the standards from ASME Y14.5-1994 to dimensions for both English and Metric drawings. • Plot drawings using line weights.

8. Prepare for the Certified SolidWorks Exam (CSWA)	• Discuss tips about taking the exam. • Discuss the part and assembly portion of the exam. • Discuss strategies for part alignment to the default axis system. • Select material and view mass properties.