



Western Technical College

10606218 Solid Model Use in Manufacturing 2 (CBE)

Course Outcome Summary

Course Information

Description	Requires the learner to create a SolidWorks assembly and a SolidWorks drawing from parts and assemblies.
Career Cluster	Manufacturing
Instructional Level	One-Year Technical Diploma
Total Credits	1
Total Hours	36

Textbooks

No textbook required.

Learner Supplies

Safety glasses with side eye protection that meet Z87 OSHA guidelines. **Vendor:** Campus Shop. Required.

Proper footwear - \$35.00-75.00. **Vendor:** To be discussed in class. Required.

Scientific calculator (recommend T1-36x Solar). **Vendor:** Campus Shop. Required.

Three-ring binder. **Vendor:** Campus Shop. Required.

Clipboard. **Vendor:** Campus Shop. Required.

Pens/Pencils/Black Sharpie Marker. **Vendor:** Campus Shop. Required.

Minimum 4GB USB Flash Drive. **Vendor:** Campus Shop. Required.

Success Abilities

1. Live Responsibly: Embrace Sustainability
2. Refine Professionalism: Participate Collaboratively

Program Outcomes

1. Interpret industrial/engineering drawings.

Course Competencies

1. Create a SolidWorks assembly.

Assessment Strategies

- 1.1. Demonstration

Criteria

You will know you are successful when

- 1.1. you explain the difference between bottom up and top down assemblies.
- 1.2. you produce an assembly of parts and/or sub-assemblies using correct Mates and procedures.
- 1.3. you produce a model within an assembly (top down).
- 1.4. you edit Mates.
- 1.5. you add standard components to an assembly from the Toolbox.

Learning Objectives

- 1.a. Differentiate between bottom up and top down assemblies.
- 1.b. Place component parts into an Assembly file.
- 1.c. Differentiate types of Mates and conditions.
- 1.d. Use Browser or Feature-Manager Tree to list and control parts and assemblies.
- 1.e. Place components together using assembly Mates and conditions.
- 1.f. Use advanced Mates (limit) and mechanical Mates (rack/pinion and hinge).
- 1.g. Edit Mates.
- 1.h. Control the visibility of a part.
- 1.i. Display or hide work features of the current part, work objects and parts of the assembly.
- 1.j. Differentiate between six degrees of freedom: translational and rotational.
- 1.k. Create a new part based on existing parts (top down assembly).
- 1.l. Check for interference.
- 1.m. Download component parts from the Intranet/Internet.
- 1.n. Simulate model motion.
- 1.o. Bring in standard parts from the Toolbox.

2. Acquire feature and dimensional information from a part model or assembly.

Assessment Strategies

- 2.1. Demonstration

Criteria

You will know you are successful when

- 2.1. you manipulate the model or assembly to gather information.
- 2.2. you create a 3D PDF that includes MBD.

Learning Objectives

- 2.a. Utilize MEASURE tools.
- 2.b. Evaluate the model or assembly using various commands and techniques.
- 2.c. Obtain the Mass Properties of a model.
- 2.d. Explore the options under the Command Manager's EVALUATE tab.
- 2.e. Examine model based definitions (MBD).

3. Differentiate between dimensioning and tolerancing methods.

Assessment Strategies

- 3.1. Demonstration

Criteria

You will know you are successful when

- 3.1. you compare and utilize different types of dimensioning and tolerancing methods.
- 3.2. you prepare correctly dimensioned drawings of part models.
- 3.3. you create a set of working drawings to ANSI Y14.5 standards.
- 3.4. you verify part or assembly is specified to the correct tolerance.

Learning Objectives

- 3.a. Interpret and use ANSI Y14.5 drafting standards and symbology on all drawing layouts.
- 3.b. Identify dimensioning terminology.
- 3.c. Evaluate dimensioning systems.
- 3.d. Dimension a series of working drawings based on a required engineering function of the part.
- 3.e. Differentiate between unilateral, bilateral tolerancing and limits.
- 3.f. Interpret tolerancing methods.

4. Create a SolidWorks drawing from parts and assemblies.

Assessment Strategies

- 4.1. Demonstration

Criteria

You will know you are successful when

- 4.1. you create all working drawings required in a project.
- 4.2. you include sufficient drawing views to fully define the part or assembly.
- 4.3. you apply correct dimensioning techniques to maintain the function of the part / assembly.
- 4.4. you Balloon and add a parts list (bill of materials) to an assembly drawing.
- 4.5. you add and complete a Title Block.
- 4.6. you add local and generalized Notes.

Learning Objectives

- 4.a. Set up a drawing layout for a sheet size and plotter device.
- 4.b. Identify types of views required to define part.
- 4.c. Insert standard views of a part model.
- 4.d. Create detail, exploded and section views.
- 4.e. Manipulate views (change, delete, move).
- 4.f. Hide and unhide drawing features.
- 4.g. Hide and move parametric dimensions.
- 4.h. Set up dimension styles.
- 4.i. Add reference dimensions.
- 4.j. Edit parametric and reference dimensions.
- 4.k. Use tolerance modeling.
- 4.l. Add titleblock, notes and other annotations.
- 4.m. Add centerlines.
- 4.n. Add symbols.
- 4.o. Add Balloons and insert a parts list.
- 4.p. Edit Balloons and parts list.
- 4.q. Create additional drawing sheets.

5. Revise and update working drawings.

Assessment Strategies

- 5.1. Demonstration

Criteria

You will know you are successful when

- 5.1. you revise drawings.
- 5.2. you update models.
- 5.3. you document revisions needed / made.

Learning Objectives

- 5.a. Check work for accuracy.
- 5.b. Study marked up prints.
- 5.c. Update models.
- 5.d. Record revisions made.
- 5.e. Update working drawings.
- 5.f. Print drawings.