

THREE-DIMENSIONAL SOLID MODEL DESIGN I - COURSE SYLLABUS – 2017-2018

COURSE OUTLINE AND COURSE GOALS

Unit 1 - Orientation

1. Relate the importance of drafting design technology in today's technological work force.

Essential Question: Why is it important to communicate in a language that transcends spoken words and barriers?

- Identify careers related to drafting
- Recognize advantages and disadvantages of entrepreneurship
- Explain how to prepare for a drafting career
- Demonstrate skills & techniques for applying for a job
- Demonstrate workplace skills
- Describe appropriate techniques for finding a job
- Explain typical uses of board and CAD techniques

Unit 2 - Safety

2. Demonstrate the safe handling of drafting design tools according to classroom and environmental practices, procedures, and regulations.

Essential Question: What is the important of complying with safety rules, regulations and procedures?

- Follow general safety procedures.
- Adjust equipment for maximum comfort and usability.
- Describe ergonomic considerations.

Unit 3 – Solid Model Commands

3. Identify three-dimensional modeling commands necessary to complete a three-dimensional solid model design.
Examples: protrude command, revolved protrusion command

Essential Question: How does Three Dimensional Solid Modeling enhance Manufacturing and Construction related fields?

- Menu/Toolbars
- Working plane
- Profile creation/sketch
- Protrusions
- Revolved protrusions
- Dimensioning/measuring

Unit 4 - Three-Dimensional Planes

4. Identify three-dimensional working planes for part sketching and profile creation.

• Demonstrating how to attach additional working planes

Examples: parallel, inclined, perpendicular

Essential Question: What is the importance of working planes associated with three dimensional modeling?

- Demonstrate how to appropriately use:
 - Origin Plane (X,Y,Z Planes)
 - Working Planes
 - Parallel Plane
 - Inclined Plane
 - Perpendicular Plane

Unit 5 - Part Creation

5. Construct a three-dimensional model by selecting working planes, creating profiles for protrusion and extrusion, and utilizing rendering commands.

Essential Question: What is the importance of utilizing appropriate commands and procedures associated with Solid Modeling?

- Select working planes.
- Create profile/sketch.
- Apply constraints.
- Protrude, extrude, and revolve profiles.

Unit 6 - Part Features

6. Utilize commands to add features to three-dimensional models.

Examples: constructing holes, adding fillets and rounds, applying cutouts, chamfering edges

Essential Question: How do the added features commands differ from the part creation commands?

- Construct various hole types.
 - simple
 - threaded
 - counterbore
 - countersunk
- Add fillets and rounds.
- Apply cutouts.
- Chamfer edges.
- Apply rendering/shading.
- Create rectangular and circular patterns.

Unit 7 - File Transitions

7. Demonstrate operations needed for converting a three-dimensional model to a two-dimensional parts drawing, including all dimension notes and other relative information.

- Creating drawings that may incorporate primary views, sections views, and auxiliary views

Essential Question: How will the student demonstrate operations needed for converting Three Dimensional Geometry to a Two Dimensional Part Drawing?

- Specify sheet size.
- Create primary views.
- Create section views.
- Create auxiliary views.

Unit 8 - Two-Dimensional Part Drawing

8. Arrange primary views, including all dimensions, notes, and other relative information needed to complete a two-dimensional drawing for production.

Examples: specifying sheet size, editing drawing information, revising drawing

Essential Question: How is creating a two dimensional drawing from a three dimensional part different than standard two dimensional technical drawing creation?

- Add centerlines.
- Add dimensions.
- Add notes/symbols.
- Add title block information.

CULMINATING PRODUCT:

The previous lessons and activities will result in a final project consisting of a Three-Dimensional Model as selected by the instructor.