

EASTERN ARIZONA COLLEGE

Parametric Solid Modeling

Course Design
2018-2019

Course Information

Division Industrial Technology Education
Course Number DRF 220
Title Parametric Solid Modeling
Credits 3
Developed by Doug Griffin
Lecture/Lab Ratio 1 Lecture/4 Lab

Transfer Status

ASU	NAU	UA
MET Dept Elective	CTE Departmental Elective	Non Transferable

Activity Course No
CIP Code 15.1300
Assessment Mode Pre/Post Test (30 Questions/30 Points)
Semester Taught Spring
GE Category None
Separate Lab No
Awareness Course No
Intensive Writing Course No
Diversity and Inclusion Course No

Prerequisites

None

Educational Value

This course introduces the universal language of communication between the engineer, technician, and consumer. The course is advanced training for the drafting major who is preparing to enter the job market with specific skills. This course also prepares participants to better understand manufacturing processes.

Description

This course uses the latest in parametric modeling technology (SolidWorks & Autodesk Inventor) in the study of mechanical drafting, threads and fasteners, detail and assembly drawings, section views, and basic dimensioning and tolerancing techniques. Parametric modeling simulates manufacturing processes, and completed solid models can be easily transferred to production tools such as 3D printers or CNC machines. All drawings will meet the ASME Y14.5M standard.

Supplies

None

Competencies and Performance Standards

1. Demonstrate the application of drafting standards for detail drawings.

Learning objectives

What you will learn as you master the competency:

- a. Identify current drawing standards.
- b. Identify how current drawing standards are used.

Performance Standards

You will demonstrate your competence:

- through written examination

Your performance will be successful when:

- learner correctly identifies a characteristic of a specific drawing standard

2. Demonstrate the use of correct dimensioning techniques in multi-view drawings.

Learning objectives

What you will learn as you master the competency:

- a. Identify size and location dimensions.
- b. Use correct line types and weights in dimensioning.
- c. Use good dimensioning technique.

Performance Standards

You will demonstrate your competence:

- on course drawings assignments

Your performance will be successful when:

- learner uses correct line types and weights for dimensioning
- learner places dimensions correctly on a drawing

3. Create and print parametric based 3D solid models using a CAD system.

Learning objectives

What you will learn as you master the competency:

- a. Create a 2D Sketch Plane.
- b. Create 2D Sketch Geometry.
- c. Constrain a 2D Sketch.
- d. Extrude a fully constrained sketch.
- e. Prepare and print a 3D solid model on a 3D printer.

Performance Standards

You will demonstrate your competence:

- on course drawing assignments

Your performance will be successful when:

- learner understands parametric based 3D solid models
- learner successfully completes all assigned drawings

4. Create 2D drawings from a 3D parametric solid model.

Learning objectives

What you will learn as you master the competency:

- a. Develop a multi-view drawing from a 3D parametric solid model.
- b. Dimension a multi-view drawing using correct technique.

Performance Standards

You will demonstrate your competence:

- o on course drawing assignments

Your performance will be successful when:

- o learner is able to create 2D drawings from a 3D parametric solid model
- o learner completes all assigned drawings

5. Apply screw threads callouts in mechanical drawings.

Learning objectives

What you will learn as you master the competency:

- a. Identify the parts of a thread callout.
- b. Create a thread callout.

Performance Standards

You will demonstrate your competence:

- o on course drawing assignments

Your performance will be successful when:

- o learner uses correct application of screw threads callouts in mechanical drawings

6. Draw screw thread representations, i.e. detailed, schematic, and simplified.

Learning objectives

What you will learn as you master the competency:

- a. Draw a detailed thread representation.
- b. Draw a simplified thread representation.

Performance Standards

You will demonstrate your competence:

- o on course drawing assignments

Your performance will be successful when:

- o learner draws correct representations

Types of Instruction

Classroom

Lab

Grading Information**Grading Rationale**

Each instructor has the flexibility to develop evaluative procedures within the following parameters.

1. The Post Test will represent 10% of the course grade.
2. Course learning activities shall represent 90% of the course grade.

Grading Scale

A	90%-100%
B	80%-89%
C	70%-79%
D	60%-69%
F	Below 60%