

DFT 119 Basic CAD

COURSE DESCRIPTION:

Prerequisites: None Corequisites: None

This course introduces computer-aided drafting software for specific technologies to non-drafting majors. Emphasis is placed on understanding the software command structure and drafting standards for specific technical fields. Upon completion, students should be able to create and plot basic drawings.

Course Hours per Week: Class, 3. Semester Hours Credit, 2.

LEARNING OUTCOMES:

Upon completion of this course, the student will be able to:

- a. Demonstrate the basic layout of the Autodesk Inventor programming software (how to navigate your way around the screen).
- b. Draw simple geometric forms.
- c. Extrude sketches into 3D.
- d. Draw and extrude geometry on cylinders.
- e. Create cutaways in order to draw and rotate geometry around a circumference.
- f. Make assemblies from previously drawn parts or stock parts from the Autodesk Inventor content center.
- g. Assemble a finished object.
- h. Create a finished drawing (blueprint) of a part that can be printed out and used for the production of that part.

OUTLINE OF INSTRUCTION:

- I. Autodesk Inventor Screen Layout
 - a. Application menu
 - b. Quick access toolbar
 - c. Ribbon tabs
 - d. Online help panel
 - e. 2D sketch toolbar
 - f. Graphics window, Cursor or Crosshairs
 - g. Message and Status bar
 - h. Mouse buttons
 - i. Cancelling commands [Esc]
 - j. Autodesk Inventor Help System
 - k. Set up of a new Inventor Project
 - l. Leaving Autodesk Inventor
- II. Parametric Modeling Fundamentals
 - a. Creating Rough Sketches
 - b. Graphic Cursors

- c. Geometric Constraint Symbols
- d. Dynamic viewing functions-zoom and pan
- e. Modifying the dimensions of the sketch
- f. Isometric view
- g. Dynamic rotation of the 3D block
- h. Orthographic versus Perspective
- i. Adding an Extruded Feature
- j. Adding a Cut Feature
- k. Saving the Model

III. Geometric Construction Tools

- a. Modeling Strategy
- b. Creating a 2D Sketch
- c. Editing the Sketch by dragging the Sketched Entities
- d. Using the Trim and Extends commands
- e. Creating Fillets and Completing the Sketch

IV. Part Drawings and Associative Functionality

- a. Drawing Mode-2D Paper Space
- b. Drawing Sheet Format
- c. Using the Pre-Defined drawing sheet formats
- d. Deleting, Activating, and Editing a Drawing sheet
- e. Adding a Base View
- f. Creating Projected Views
- g. Displaying Feature Dimensions
- h. Adding center marks and center lines
- i. Completing the drawing sheet
- j. Associative Functionality-Modifying Feature Dimensions
- k. 3D Annotations in Isometric Views

V. Assembly Modeling- Putting It All Together

- a. Assembly Modeling Methodology
- b. Placing the first component
- c. Placing the second component
- d. Degrees of freedom and constraints
- e. Assembly constraints
- f. Placing the third component
- g. Exploded view of the assembly
- h. Setup a Drawing of the Assembly Model
- i. Creating a parts list
- j. Completing the Assembly Drawing
- k. Printing the Completed Drawings and Assembly

REQUIRED TEXTBOOK AND MATERIAL:

No textbook is required for this course. The Instructor uses visual aids and handouts as well as stock parts from the Autodesk Inventor software content center.

Students will need a portable storage device (flash drive) minimum 2GB, and a calculator.