MET-123B: 2D AUTOCAD

Cuyahoga Community College

Viewing: MET-123B : 2D AutoCAD

Board of Trustees:
February 2019

Academic Term:
Fall 2019

Subject Code
MET - Mech Eng/Manuf Ind Eng Tech

Course Number:
123B

Title:
2D AutoCAD

Catalog Description:
Dimensioning standards and conventions as applied to detail and assembly drawings in manual drafting as well as use of CAD system to accomplish drafting tasks are emphasized. Includes overviews of computer terms and functions of the Windows Operating System. Covers special terms and definitions used in computer-assisted drafting and the roles technical drawings play in production, manufacturing and product design process.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
MATH-0955 Beginning Algebra or appropriate Math placement score to place into MATH-0965 Intermediate Algebra.

Outcomes
Course Outcome(s):
Use CAD software as a tool to draft and edit engineering drawings.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):
1. Discuss the applications of AutoCAD as related to technical drawing.
2. Apply the concepts of this drafting tool to a variety of technical drawing.
3. Identify the major components of the CAD workstation.
4. Identify the various operating systems needed to power up the computer, handle files, and implement the CAD programs.
5. Enter the necessary commands to implement instructions using a variety of input devices.
6. Have the ability to save, open, plot, and begin a new drawing file.
7. Implement edit commands to properly modify existing objects.
8. Select and utilize the proper formatting for a drawing.
9. Demonstrate an understanding of the use of layers and judiciously implement them in a drawing.
10. Use the hatch command and edit features.
11. Demonstrate the ability to develop, store and use a block.
12. Dimension a drawing following proper standards and practices with the application of dimensioning variables and various dimensioning options and edits.
13. Discuss the flexibility of utilizing various commands.

Course Outcome(s):
Communicate with other CAD operators, using the terms and definitions applicable to CAD.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):
1. Define CAD-specific terminology.
2. Use appropriate CAD-based vocabulary when discussing drawing projects.
3. Discuss the advantages and disadvantages of the CAD software.

Methods of Evaluation:
1. Quizzes and/or midterm examination
2. Final examination
3. Drawing assignments, Worksheets
4. Written Assignment
5. Oral Presentation

Course Content Outline:
1. Introduction to the computer and AutoCAD system
   a. Operations systems and platforms
   b. Hardware; loading the AutoCAD program
   c. Screen display arrangement
   d. Menu breakdown and selections
   e. Dialog boxes and tool bars
   f. Input device commands
      i. Mouse
      ii. Keyboard
      iii. Menus
      iv. Icons
2. Introduction to Drawing files
   a. Beginning and naming new files
   b. Saving files
   c. Printing and plotting files
   d. Opening existing files
   e. Drawing setup for units and limits.
3. Introductory Draw commands
   a. Line and point entry
   b. Coordinate systems
   c. Circles and arcs
   d. dtext/text commands and their justification
4. Drawing aids and display features
   a. Grid, snap and ORTHO command
   b. Object snaps
   c. Help
   d. Zoom, pan and view commands
5. Basic editing
   a. Erase command and selection options
   b. Fillets and chamfers
   c. Breaks, trims and extends
   d. Undo, u and redo
   e. Move and copy
   f. Mirror; offset
6. Intermediate Draw and Editing

     a. Polygons
     b. Polylines
     c. Solid
     d. Donut
     e. Hatching
     f. Multi lines
     g. Scale and rotate
     h. Divide and measure
     i. Change, DDEDIT, CHPROP, and DDMODIFY
     j. Lt scale

7. Special features
     a. Grips
     b. Layers
     c. P line and M line
     d. Blocks, attributes

8. Inquiry
     a. Distance
     b. List
     c. Id
     d. Area

9. Dimensioning
     a. Types of dimensions
     b. Special options
     c. Special editing
     d. Dimensioning variables

10. Proper format for a drawing
     a. Units
     b. Paper size
     c. Display
     d. Border
     e. Layers
     f. Template files

11. Communication
     a. Using proper terminology
     b. Working in a diverse environment
     c. Effective verbal communication techniques

Resources

Bethune, James. *Engineering Graphics with AutoCAD 2017*. Upper Saddle River, NJ, 2017.

Dix, Mark and Paul Riley. *Discovering AutoCAD 2017*. Upper Saddle River, NJ, 2017.

Fuller, Ashleigh and Antonio Ramirez. *technical Drawing 101 with AutoCAD*. 2nd ed. Prentice Hall: Upper Saddle River, NJ, 2017.

Giesecke, Frederick E. et al. *Technical Drawing with Engineering Graphics*. 14th ed. Upper Saddle River, NJ. Prentice Hall, 2016.

Hart, Hillary. *Introduction to Engineering Communication.* 2nd ED. Upper Saddle River, NJ. Prentice Hall, 2009.

Koser, Gary and Dean Zirwas. *Workplace skills for success with AutoCAD 2011 basics: a layered learning approach.*. Upper Saddle River, NJ, 2011.

Lehmann, K. F. *Journal of Mechanical Design.* 10-01-2007. American Society of Mechanical EngineersNew York, 2007.

Paul, Richard, Frank Puerta and Jim Fitzgerald. *Autocad 2010 in 2D and 3D: A Modern Approach*. Upper Saddle River, NJ, 2010.

Monthly Newton Massachusetts:Questex Media Group, Inc.,. "Questex" Monthly Newton Massachusetts:Questex Media Group, Inc., 2007-10-01. "www.Cadalyst.com."

Resources Other
- Assignment and Project handouts
- AutoCad software

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