

Introduction to AutoCAD

Course Design

2005-2006

Course Information

Organization	Eastern Arizona College
Division	Industrial Technical Education
Course Number	DRF 261
Title	Introduction to AutoCAD
Credits	2
Developed by	Doug Griffin
Lecture/Lab Ratio	One hour lecture and 2 hours lab per week
Transfer Status	NT to ASU, DEC (CM) to NAU, Elective to UofA
Activity Course	No
CIP Code	15.1300
Assessment Mode	Pre-Post Test Assessment; 25 questions, 25 points.
Semester Taught	Fall and Spring Semesters
GE Category	None
Separate Lab	No
Awareness Course	No
Intensive Writing Course	No

Prerequisites

None

Educational Value

Associate degree students in the Drafting field.

Individuals from local industry or the community seeking instruction in the use of the latest in drafting software and hardware, focusing on AutoCAD Release 13 & Release 14 software.

Description

Students will gain hands-on experience using AutoCAD computer drafting software. Emphasis is placed on the integration of 3D solid modeling and 2D drafting output.

Textbooks

Giesecke, et. al.. *Engineering Graphics*. Edition: Latest. Publisher: Prentice Hall. Not Required

Supplies

None

Competencies and Performance Standards

1. Operate the CAD workstation hardware components.

Learning objectives

What you will learn as you master the competency:

- a. Access the Windows LogOn and LogOff screens.
- b. Utilize the mouse and keyboard to provide input for computer logon.

Performance Standards

Competence will be demonstrated:

- o learner logs on to system
- o learner logs off of system

Criteria - Performance will be satisfactory when:

- o learner demonstrates the ability to log on to workstation with Windows NT.
- o learner demonstrates the ability to log off workstation with Windows NT.

2. Operate the AutoCAD software

Learning objectives

What you will learn as you master the competency:

- a. Load the AutoCAD Software.
- b. Create a new drawing file.
- c. Create basic 2D geometry such as lines, circles, polylines, etc.
- d. Modify existing 2D geometry by moving, copying, erasing, etc.
- e. Save a drawing file to disk.
- f. Load a drawing file from disk.
- g. Close the AutoCAD software.

Performance Standards

Competence will be demonstrated:

- o given a computer configured for Windows NT, the AutoCAD software, and a printer

Criteria - Performance will be satisfactory when:

- o learner completes a minimum of 12 lab assignments
- o drawings are a minimum of 95% accurate
- o drawings are developed using available CAD commands

- o drawing file is recalled from disk and edited
- o drawings are printed with correct scale, line weights, and line types

3. Identify advantages and disadvantages associated with the commands of a CAD system.

Learning objectives

What you will learn as you master the competency:

- a. Identify the application of various CAD commands and their advantages.
- b. Identify the disadvantages of using various CAD commands in different scenarios.
- c. Identify the three things that can be done on computer systems (create, modify, view).

Performance Standards

Competence will be demonstrated:

- o on a written exam
- o by the end of the semester

Criteria - Performance will be satisfactory when:

- o learner identifies correct applications of AutoCAD commands
- o with 80% proficiency

4. Create 3D solid models.

Learning objectives

What you will learn as you master the competency:

- a. Create 3D solid primitives (box, cylinder, sphere, etc.).
- b. Create complex 3D solid primitives.
- c. Join 3D solid primitives.
- d. Subtract one 3D solid primitive from another.

Performance Standards

Competence will be demonstrated:

- o given a computer configured for Windows NT, the AutoCAD software, and a printer

Criteria - Performance will be satisfactory when:

- o drawings are a minimum of 95% accurate
- o drawings use 3D solid primitives

5. Create 2D drawings from 3D solid model geometry.

Learning objectives

What you will learn as you master the competency:

- a. Create (or insert) an appropriate format (title block) in a drawing file.
- b. Create principle 2D views of a 3D solid model.
- c. Create auxiliary views from a 3D solid model.
- d. Utilize the software dimensioning capabilities to dimension the different views of the object.

Performance Standards

Competence will be demonstrated:

- o given a computer configured for Windows NT, the AutoCAD software, and a printer

Criteria - Performance will be satisfactory when:

- o Drawings are a minimum of 95% accurate.
- o Drawing shows principle and auxiliary views in PAPER SPACE.
- o Drawing shows all views of a multi-view drawing properly aligned.
- o Drawing shows all feature, part and section geometry correctly represented.
- o Drawing shows proper line weight for all center lines, hidden lines, cutting plane lines, and object lines.
- o Drawing uses correct line types for center lines, object lines, and hidden features.
- o Drawing shows all features fully dimensioned with system default text, using uniform spacing.
- o Drawing contains no double dimensioning.
- o Drawing shows correct tolerance values for all part features or geometry.
- o Drawing shows leading zero's only with metric dimensions less than 1mm.
- o Drawing title block information is complete.

6. Manage AutoCAD and related files using the software and operating system.

Learning objectives

What you will learn as you master the competency:

- a. Copy a drawing file from one disk to another.
- b. Delete a drawing or backup file from disk.
- c. Rename a backup or autosave file to a drawing file.

Performance Standards

Competence will be demonstrated:

- o by the end of the semester
- o given a computer configured for Windows NT, the AutoCAD software, and a printer

Criteria - Performance will be satisfactory when:

- o Drawing files are backed up on floppy disk.
- o Unneeded drawing and support files are removed.
- o Backup and autosave files are renamed to DWG files.
- o Drawing file is purged of unneeded blocks, line types, and layers.

7. Develop a working drawing of a mechanical part with the use of 2D & 3D CAD commands.

Learning objectives

What you will learn as you master the competency:

- a. Draw 2D geometry using AutoCAD commands.
- b. Create 3D objects using appropriate AutoCAD commands.

- c. Modify 2D geometry & 3D objects using appropriate AutoCAD commands.
- d. Convert 3D objects into 2D drawing layout using Paper Space/Model Space.
- e. Dimension 2D layout meeting ANSI Y14.5M standards

Performance Standards

Competence will be demonstrated:

- o given a computer configured for Windows NT, the AutoCAD software, and a printer

Criteria - Performance will be satisfactory when:

- o Drawings are a minimum of 95% accurate
- o Drawing meets ANSI Y14.5M dimensioning standards
- o Drawing is printed to scale with correct title block and line types.

8. Print drawings to an output source using a plotter or laser printer.

Learning objectives

What you will learn as you master the competency:

- a. Set up printer profiles using preferences in a CAD program to print to proper printing device.
- b. Print an orthographic drawing with an isometric insert on A size paper using a laser printer.
- c. Print a balloon assembly drawing with a titleblock on B or C size paper using plotter.

Performance Standards

Competence will be demonstrated:

- o given a computer configured for Windows NT, the AutoCAD software and a printer.

Criteria - Performance will be satisfactory when:

- o drawings are configured to correct plotter/printer and printed.

Types of Instruction

Classroom Presentation

Laboratory

Grading Information

Grading Scale

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	59% or lower