

Introduction to AutoCAD**CAD 120****I. COURSE DESCRIPTION:**

This course will introduce the student to the fundamentals of computer assisted drafting using AutoCAD. Practical exercises will help the student develop a basic knowledge of AutoCAD. The student will understand the concepts of computer drafting applications related to engineering drawing.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course the student will demonstrate the ability to:

1) Identify the micro computer components comprising a CAD system

Potential Elements of the Performance:

- Identify and operate various input and output devices and methods
- Understand and follow computer lab methods and procedures
- Employ drawing planning procedures and file management methods
- Know and follow the rules of hygiene in computer facilities
- Start the AutoCAD program
- Describe screen layout and menu structure

2) Set up a drawing in AutoCAD and use Drawing Aids

Potential Elements of the Performance:

- Use the file menu to start a new drawing
- Calculate and set limits and assign drawing units
- Demonstrate use of grid and snap tools
- Use the Ortho command to control cursor movement
- Access drawing aids through pull down menus and status bar
- Create prototype drawings

3) Create and save a drawing using appropriate commands

Potential Elements of the Performance:

- Locate and use the save, end and quit commands
- Use the cancel command to stop a command sequence
- Use the status command to review drawing settings
- Access help files and use help index as well as transparent help
- Define and use absolute, relative, and polar coordinates

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

(continued)

- Use direct distance entry
- Change coordinate status display
- Use the line and erase commands

4) **Locate and employ basic drawing commands and tools**

Potential Elements of the Performance:

- Configure and use the polyline group of commands, including pline, spline and donut
- Configure and use the mline command
- Draw rectangles, arcs, circles, ellipses and polygons
- Use object snap (osnap) and running osnap
- Customize drawing display with preferences settings
- Draw points and set point display variables
- Use the point, divide and measure commands
- Use the command line calculator
- Understand and employ the @ input function
- Create patterns and fill using bhatch and solid commands

5) **Locate and use basic editing commands**

Potential Elements of the Performance:

- Reposition entities using the move and copy commands
- Create symmetrical images of objects using the mirror command
- Configure and use the chamfer and fillet commands
- Modify entities using the break, extend and trim commands
- Use the change properties command to modify entities
- Move and reconfigure objects using the scale and rotate commands
- Create parallel copies of objects using the offset command

6) **Locate and use advanced editing commands**

Potential Elements of the Performance:

- Enable and use grips to perform entity editing
- Select objects using last, all, window, crossing and fence methods
- Use the stretch command
- Perform repetitive editing functions using the multiple option

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:
(continued)

- Make multiple polar and rectangular copy arrangements using the array command
- Use advanced features of the change properties feature

7) **Create and use layers to organize drawing data and entities**

Potential Elements of the Performance:

- Understand and use the layer command dialogue box to create layers
- Set layer properties and characteristics
- Assign layer names, linetypes and colours
- Load linetypes
- Control viewing of information by using freeze, thaw, on and off options
- Change entity layer using ddmodify and change properties commands
- Use the purge command to remove unused layers and linetypes

8) **Create and place text on drawings**

Potential Elements of the Performance:

- Distinguish between and use the text, dtext, mtext and qtext functions
- Create, save and set text styles
- Use special symbols
- Revise text using dedit and modify properties functions
- Insert text into drawings from other applications
- Check text spelling using the spell check function

9) **Configure drawing display options**

Potential Elements of the Performance:

- Use the redraw, regen, pan and blipmode commands
- Use the zoom command, including zoom all, extents, and window
- Use dynamic zoom and aerial zoom functions
- Create and save drawing views
- Use transparent zoom function
- Set up and create tiled viewports in model space using vports command

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:
(continued)**

10) Configure and apply basic dimension to drawings

Potential Elements of the Performance:

- Place horizontal and vertical dimensions on a drawing
- Use the continuous dimensioning function
- Use angular, aligned and rotated dimensions
- Manipulate dimension text placement, arrow type and extension line variables

11) Configure advanced dimensioning variables

Potential Elements of the Performance:

- Manipulate dimension variables using dimension settings dialogue box
- Set and apply tolerancing to dimensions
- Customize the colour of dimension line, text, extension lines and symbols
- Change dimension text using tedit, newtext and modify commands
- Change style of dimensions using update feature
- Create and save dimension styles, including parent and child styles

12) Create and insert blocks and assign attributes

Potential Elements of the Performance:

- Use the block and wblock commands to create and save symbols
- Link and bind drawings using the xref and bind commands
- Assign attributes to a block
- Extract attribute data to a text file
- Reduce a block to its constituent entities using the explode command

13) Prepare drawings for plotting and create plots

Potential Elements of the Performance:

- Prepare a drawing for plotting using the plot dialogue box
- Set plot scale, position, and assign line weights to pen numbers
- Plot to a printer
- Describe setup procedures for a pen plotter
- Insert a title block into paper space and create a viewport for plotting
- Assign zoom scale to a floating viewport

14) Create basic 3D drawing and manipulate 3D views

Potential Elements of the Performance:

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- Create entities with assigned elevation and thickness
- Define and manipulate the User Coordinate System (UCS)
- Create isometric and paraline views of objects using viewpoint commands

III. TOPICS:

- 1) Introduction and starting AutoCAD
- 2) Drawing set up and drawing aids
- 3) Saving files, using help and line drawing
- 4) Drawing entities and object snap
- 5) Basic editing commands
- 6) Advanced editing commands
- 7) Layers and linetypes
- 8) Placing text in drawings
- 9) Display options and viewports
- 10) Basic dimensioning
- 11) Advanced dimensioning
- 12) Blocks and attributes
- 13) Printing and plotting
- 14) Drawing and viewing objects in 3 dimensions

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:AutoCAD and its Applications R14

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The Goodheart-Wilcox Company Inc.

Latest Edition

The student will also require a minimum of three 3.5" floppy disks, for saving work and submitting assignments.

V. EVALUATION PROCESS/GRADING SYSTEM

Each student will be assigned a final grade on successful completion of assignments and tests, weighted as follows:

Assignments	40%
<u>Three tests</u>	<u>60%</u>
TOTAL	100%

Each assignment carries equal weight. Each test also carries equal weight. Late submittals will receive a maximum grade of 60%. Assignments handed in more than one week late will receive a grade of zero. An average of 60% on assignments and 60% on tests is required for successful completion of this course. The following letter grades will be assigned to students in postsecondary courses:

Grade	Percentage(%)	Grade Point Equivalent
A+	90-100	4.00
A	80-89	3.75
B	70-79	3.00
C	60-69	2.00
R (Repeat)	59 or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (See Policies and Procedures Manual - Deferred Grades and Make-up.)	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when for extenuating circumstances, it has been impossible for the faculty member to report grades.	

VI. SPECIAL NOTES:

- **Special Needs**

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, 491 so that support services can be arranged for you.

- **Retention of Course Outlines**

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other post-secondary institutions. Substitute Course Information is available at the Registrar's Office

The professor reserves the right to change the information contained in the course outline depending on the needs of the learner and the availability of resources.

- **Plagiarism**

Students should refer to the definition of academic dishonesty in the *Students Rights and Responsibilities* handbook. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or other such penalty, up to and including expulsion from the course as may be decided by the professor. In order to protect students from inadvertent plagiarism, to protect the copyright of the material

referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

- **Testing Absence**

If a student is unable to write a test on the date assigned, the following procedure must be followed:

1. The student shall provide the professor with advance notice, preferably in writing of his/her need to miss the test.
2. The student may be required to document the absence at the discretion of the professor
3. All decisions regarding whether tests shall be rescheduled will be at the discretion of the professor.
4. The student is responsible for making arrangements with the professor, immediately upon return to the College, with respect to make-up of the missed test prior to the next scheduled class for the course in question.
5. In the event of an emergency on the day of the test, the student may be required to produce documentation to support the absence and must telephone the College to identify the absence. The college has a 24 hour electronic voice messaging system at 759-2554.

VII. PRIOR LEARNING ASSESSMENT

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following:

VIII. DIRECT CREDIT TRANSFERS

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer for from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.