



COURSE OUTLINE

DRA190
Course Number

**INTRODUCTION TO COMPUTER
DRAFTING - AUTOCAD**
Course Title

2
Credits

1/2
Hours:
Lecture/Lab/Other

ENT116 or ABT120
(or Instructor Approval)
Prerequisites

January 2008
Implementation
sem/year

Catalog description (2006-2009 Catalog):

Introduction to the use of the computer as a drafting tool involves concepts, terminology, and the basic commands necessary to prepare several drawings using AutoCAD software. Requires basic knowledge of the computer keyboard.

Required texts/other materials:

AutoCad and Its Applications – Basics
Authors: Shumaker and Madsen
Publisher – Goodheart/Wilcox

Last revised: April 2008

Course coordinator: John V. Santosuosso, 609-570-3462
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Information resources: N/A

Other learning resources: N/A

I. Course Competencies/Goals

Students will be able to...

- Become proficient in the use of the AutoCad 2-D commands.
- Produce elementary and moderately complex drawings on IBM compatible personal computers.

II. Course-Specific General Education Knowledge Goals and Core Skills.

General Education Knowledge Goals

Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Goal 9. Ethical Reasoning and Action. Students will understand ethical issues and situations.

MCCC Core Skills

Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.

Goal C. Ethical Decision-Making. Students will recognize, analyze and assess ethical issues and situations.

Goal E. Computer Literacy. Students will use computers to access, analyze or present information, solve problems, and communicate with others.

Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.

III. Specific Objectives

Units of Study in Detail.

Unit I: Introduction

The student should be able to...

- Identify the tools (equipment) used in computer-aided drafting.
- Explain the value of planning and system management
- Follow the basic rules of hygiene for a computer lab.

Unit II: Starting AutoCAD

The student should be able to...

- Begin the AutoCAD program from the Windows Desktop.
- Describe the AutoCAD screen layouts and menu structure.
- Operate the input device to select commands.
- Use the keyboard keys and input device buttons to select commands, enter text, and pick location on the screen.
- Format a floppy diskette.

Unit III: Drawing Set-Up

The student should be able to...

- Use the Main Menu selections to begin a new drawing.
- Enter a drawing name.
- Set up the LIMITS and UNITS in a prototype drawing.

Unit IV: Introduction to Drawing and Drawing Aids

The student should be able to...

- Set up the drawing aids in a prototype drawing including LIMITS, UNITS, GRID, and SNAP.
- Use the LINE command to draw several different geometric shapes.
- Experiment with SNAP ON and SNAP OFF.

Unit V: Saving Drawings and Getting Help

The student should be able to...

- Identify how to save a drawing and change the drawing name.
- End a drawing session, saving all previous work with the current drawing name.
- Quit a drawing, discarding all work done since the last time the drawing was saved.
- Get help from AutoCAD.
- Identify at least four ways to cancel a command.
- Explain the difference between the SAVE, END, and QUIT commands.
- Specify how often work should be saved.
- Give two ways to go from the alphanumeric screen to the drawing editor.

Unit VI: Drawing and Erasing

The student should be able to...

- Use the absolute, relative, and polar coordinate point entry systems.
- Use the screen cursor for point entry.
- Use the Ortho mode and coordinate display.
- Select the LINE command to draw given objects.
- Draw given objects using the POLYLINE command.
- Use the PLINE command to draw given objects.
- Make revisions to objects using the ERASE command.
- Observe the results of using FILL ON and OFF and REDRAW.

Unit VII: Drawing Basic Shapes

The student should be able to...

- Use DRAGMODE to observe an object drag into place.
- Draw circles using the CIRCLE command options.
- Identify and use the “@” symbol function.
- Draw arcs using the ARC command options.
- Draw an arc extending from a previously drawn arc.
- Draw an arc extending from a previously drawn line.
- Draw Donuts--Fill Off - Fill On.
- Draw polygons from given information.

Unit VIII: Geometric Construction and OSNAP (Object Snaps)

The student should be able to...

- Select the OSNAP command to set running object snaps.
- Use the OSNAP override.
- Identify three ways to discontinue a running OSNAP.
- List three ways to access the object snap modes.
- Use the object snap interrupt and running modes to make several geometric constructions.
- Adjust the aperture box size.
- Use the OFFSET command to draw parallel lines and curves.
- Divide existing objects into equal parts using the DIVIDE command.
- Use the MEASURE command to set designated increments on an existing object.
- Set point sizes and options to draw points.

Unit IX: Drawing Display Options

The student should be able to...

- Magnify a small part of a drawing to work on details.
- Move the drawing around on the screen to display portions outside the boundaries of the monitor.
- Create named views that can be recalled instantly.
- Incorporate transparent zooms.

Unit X: Placing Text on a Drawing

The student should be able to...

- Change text styles using the STYLE command.
- Use the DTEXT command to display text on the screen while typing.
- Draw special symbols using the proper control characters.
- Underscore and overscore text.
- Explain the purpose of the quick text mode and use the QTEXT command.
- Identify and use the pull-down menus for creating and drawing text.
- Design prototype drawings with titleblocks for A and B size drawings.
- Draw objects with associated text.

Unit XI: Basic Editing Commands

The student should be able to...

- Use the MOVE command to relocate existing objects.
- Make single and multiple copies of existing objects using the COPY command.
- Draw a mirror image of an existing object.
- Draw chamfers on an object.
- Use the FILLET command to draw fillets, rounds, or other rounded corners.
- Change the angle of an object using ROTATE command.
- Enlarge and reduce the size of an object using the SCALE command.
- Use the TRIM and EXTEND commands to edit an object.
- Change the length and height of an object using the STRETCH command.
- Remove a portion out of a line, circle, or arc using the BREAK command.
- Define terms related to the TRIM and EXTEND commands.
- Use the PROPERTIES command to revise an existing drawing (colors and linetypes)

Unit XII: Creating Multiple Entities with Array

The student should be able to...

- Create an arrangement of objects in rectangular pattern.
- Create an arrangement of any objects in a circular pattern.

Unit XIII: Obtaining Information about the Drawing

The student should be able to...

- Determine the area of an object by adding and subtracting entities.
- List data related to a single point, entity, group of entities, or an entire drawing.
- Discover the amount of time spent in a drawing session.

Unit XIV: Drawing and Editing Polyines

The student should be able to...

- Use the PLINE command to draw given polyines.
- Use the PEDIT command to make changes to existing polyines.
- Identify the PEDIT options.
- Use the EXPLODE command to remove all polyline characteristics.

Unit XV: Multi-view Drawings and Layers

The student should be able to...

- Draw multi-views from given sketches.
- Properly draw object lines, hidden lines, and centerlines.
- Use the LINETYPE or PROPERTIES command or pull-down menus to change linetypes.
- Change line color using the COLOR command.
- Use the LAYER command to create layers for drawing items on separate layers.
- Identify guidelines for selecting the front view.
- Draw multiviews of an object and identify considerations for selecting the front view.
- Use the Pull Down menu to edit layers.
- Use the PROPERTIES command to change properties.

Unit XVI: Basic Dimensioning

The student should be able to...

- Draw basic dimensions for horizontal, vertical, aligned, circular and angular objects.
- Identify and set several variables that affect the appearance of dimensions.
- Use CONTINUE and UPDATE dimensioning commands.
- Change the dimensioning system using the Dimensioning Style Dialog Box.

Unit XVII: Drawing Sectional Views and Graphic Patterns

The student should be able to...

- Draw sectional materials using the HATCH and SOLID commands.

Unit XVIII: Blocks

The student should be able...

- Create and save blocks (BLOCK command).
- Insert blocks into a drawing (INSERT command).
- Edit a block and update it in a drawing.
- Create, or write, blocks that are saved independent of the drawing (WBLOCK command).
- Construct and use a symbol library of blocks.

In addition to the above objectives, ***the students will be able to...***

- Print and plot drawings to various scales.
- Prepare a title block and border prototype drawing and insert it into the project drawing.
- Become basically familiar with the Windows XP environment.

IV. Evaluation of Student Learning / Course Grading

While the exact procedures for course grading will be left up to the individual instructor, the following guidelines will apply:

- **Assignments**: All assignments will be graded on an A to F basis. Late assignments will be subject to grade reductions of one letter grade per class session. Assignments not turned in will be recorded as a zero grade. (30% of final grade)
- **Quizzes**: Quizzes may be given at any time during the class. They may be written or performance based, and students may or may not be given prior notice. Quizzes missed because of student absence may not be made up and will be recorded as a zero. (30% of final grade)
- **Final Plots**: Several comprehensive drawings will be constructed, annotated, and plotted. These projects will be due during the last class. No late final plots will be accepted. (40% of final grade)
- **Final Grade Calculation**: Your final grade will be calculated by averaging all of your grades and weighing them as indicated above.
- **Final Examination**: Because this course requires the cumulative mastery of previously taught skills for the completion of each successive assignment, a comprehensive final examination is not required to measure the attainment of course objectives. However, the individual instructor may wish to require a comprehensive final examination. Notice of intention to administer a final examination must be given to the students involved, in writing, no later than the fifth (5th) week of the semester. Under no circumstances will the final examination comprise more than twenty-five percent (25%) of the final grade for the course.

V. Academic Integrity Statement:

Students are expected to comply with the college-wide requirements for academic integrity. Mercer County Community College is committed to Academic Integrity—the honest, fair, and continuing pursuit of knowledge, free from fraud or deception. This implies that students are expected to be responsible for their own work. Presenting another individual's work as one's own and receiving excessive help from another individual will qualify as a violation of Academic Integrity. The entire policy on Academic Integrity is located in the Student handbook and is found on the college website (http://www.mccc.edu/admissions_policies_integrity.shtml).

VI. Special Needs Students Statement

Any student in this class who has special needs because of a disability is entitled to receive accommodations. Eligible students at Mercer County Community College are assured services under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. If you believe you are eligible for services, please contact Arlene Stinson, the Director of Academic Support Services. Ms. Stinson's office is LB221, and she can be reached at (609) 570-3525.