

COURSE OUTLINE

Revision: Loc Nguyen – March, 2009

DEPARTMENT:	Engineering & Engineering Technology
CURRICULUM:	Computer-Aided Drafting/Design Technology
COURSE TITLE:	Basic CAD 3-D
COURSE NUMBER:	TDR 230
TYPE OF COURSE:	Vocational Preparatory
COURSE LENGTH:	1 quarter
CREDIT HOURS:	3
LECTURE HOURS:	11
LAB HOURS:	44
CLASS SIZE:	18
PREREQUISITES:	TDR 131 (Intro. to CAD)

COURSE DESCRIPTION:

This course introduces the capabilities of the AutoCAD software to produce both 2-D isometric and basic 3-D graphics with many industry applications. The topics covered include a review of absolute and relative point coordinate and polar coordinate data entry, isometric setup, isometric planes, circles and arcs, and translation of nonisometric objects. The course then proceeds to true 3-D basic constructions using wireframe, line and region extrusions, 3-D surfaces and 3-D viewing options. Constructions include the use of X, Y, Z filters, and the user defined coordinate system (UCS).

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Computation – Apply basic math and trigonometric operations to construct technical drawings.
2. Critical thinking and Problem Solving – Identify problems and evaluate alternative solutions, and apply appropriate analytical methods to develop optional solutions.
3. Technology – Demonstrate basic understanding of computer systems and use of AutoCAD software to create engineering drawings.
4. Information Literacy – Access and use information from a variety of resources and data.

5. Personal Responsibility – Take pride and value in one's own work.

PROGRAM OUTCOMES ADDRESSED

- 1 Ability to apply knowledge of mathematics and scientific principles to technical engineering/drafting problems.
- 2 Ability to analyze and interpret data.
- 3 Ability to think critically in evaluating information, solving problems, and making decisions.
- 5 Ability to access and evaluate information from a variety of sources, including the Internet.
- 6 Understand professional and ethical responsibility.
- 7 Ability to communicate effectively with written, oral, and visual means.
- 8 Recognize the need for and ability to engage in life-long learning.
- 9 Ability to use modern technical engineering techniques, skills, and technology, including computing tools necessary for technical engineering/drafting practice.

GENERAL COURSE OBJECTIVES:

At the successful completion of the course the student will be able to:

1. Decide the appropriate use of isometrics to communicate three-dimensional design.
2. Define and manipulate user-defined coordinate systems to aid in the construction of true 3-D objects.
3. Utilize the 3-D modeling techniques and capabilities of the software to design in wireframe, extrusion, and various types of surface generations, and describe the applications for which the methods were suited.
4. Create two-dimensional orthographic views from three-dimensional models.
5. Understand and apply the concepts of model space and paper space to produce drawing prints as would be required in industry.

TOPICAL OUTLINE:	APPROX. HOURS
I. An introduction to AutoCAD isometrics	05
II. Basic isometric setup and drawing aids	06
I. Isometric construction	06
II. Introduction to true 3-D	06
III. Basic wire frame construction	06
IV. Define and utilize the user coordinate system	06
V. Use of viewing commands to aid 3-D modeling	06
VI. Surface generation – various types & applications	07
VII. Plotting 2-D views of three dimensional models	06
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	Total
	55

REVISED BY: Loc Nguyen
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