

# COMPETENCY PROFILE

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## MECHANICAL ENGINEERING /ENGINEERING TECHNOLOGY

### BTC: ENGT 122 – CAD I: BASICS (120 clock hours/6 credits)

An introduction to CAD (Computer Aided Drafting) using AutoCAD software. Students will learn basic command concepts and terminology, including basic drawing and editing techniques. Students will create and edit basic drawing elements using appropriate CAD commands.



Upon completion of this course, the student will be able to perform the following competencies:

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#### **Prior to entering ENGT 122, students are expected to have mastered computer fundamentals:**

- Identify components & terms of the computer
- Able to use Windows Explorer (directory structure, file management, etc.)
- Demonstrate knowledge of basic commands required to operate specific computer software programs (use of icons, keyboard commands & "pull down" menus)

#### **Demonstrate ability to produce drawings by using various computer/CAD commands:**

- Create basic drawing elements (lines, circles, arcs, rectangles, etc.) using CAD program
- Display commands, such as Zoom and Pan
- Create & edit text using CAD commands & options
- Edit or modify a drawing element (move, copy, trim, etc.) & its properties (color, line-type, scale, etc.)
- Open & edit existing (previously saved) drawings from diskette, hard drive or network

#### **Using appropriate CAD software, student will identify and demonstrate:**

- Understanding of X, Y, Z coordinate systems
- Application of drawing aids
- Understanding of object/entity selection
- Use of display management
- Ability to manage & apply dimensioning techniques/standards
- Application of layers & functional use of layer control (freeze/thaw, on/off, lock/unlock; move geometry from one layer to another layer)
- Ability to define areas & apply hatching attribute
- Ability to create, save & insert symbols or objects (blocks)
- Ability to communicate with electronic peripheral devices
- Able to create & maintain text, while using appropriate drafting techniques as defined by latest ANSI Standards

#### **Prepare basic computer-aided drawings:**

- Produce a border and title block
- Produce a simple multi-view drawing of an object (top, front, side)
- Produce a single multi-view drawing with a title block
- Use CAD output devices (printer, plotter) to produce drawings
- Select proper drawing scale, views & layout
- Prepare drawings containing horizontal & vertical surfaces
- Prepare drawings containing circles and/or arcs
- Prepare drawings containing inclined & oblique surfaces
- Prepare drawings containing full sections

**Culminating Project:** Student chooses a single part object & creates a multi-view drawing of moderate complexity with proper scaling, title block and border.

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#### **College Textbook Reference:**

AutoCAD 2004: A Problem Solving Approach, by Sham Tickoo

**Note:** instructors may use any version of AutoCAD to teach basic CAD skills