

COMPETENCY PROFILE

MECHANICAL ENGINEERING/ENGINEERING TECHNOLOGY

BTC: ENGT 126 – CAD II: Intermediate Applications (132 clock hours/7 credits)

Course is a continuation of CAD I utilizing CAD drawing, editing and dimensioning tools to draw and completely describe two-dimensional parts for manufacture. Engineering applications using specific CAD functions will be the course focus. Coursework includes implementation of ANSI drawing standards, prototype drawing set up and plotting techniques.



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

Able to dimension models using AutoCAD, while maintaining appropriate drafting techniques as defined by the latest ANSI standards:

- Linear dimensioning (horizontal, vertical, aligned)
- Dimensioning: angular, diametric & radial
- Baseline dimensioning
- Continuous dimensioning
- Center-marks and centerlines
- Dimension mode
- Leaders

Able to modify or edit previously dimensioned parts/models:

- Edit using STRETCH
- Edit using grips
- Edit dimension text using DIMEDIT
- Edit dimension text using DIMTEDIT
- Edit dimension using shortcut menus
- Edit dimensions using PROPERTIES

Create various dimension styles to accommodate English and Metric drawing scales and to comply with varying industry standards (ie: manufacturing, architectural standards):

- Use Dimension Style Manager (fit box, primary units, alternate units, tolerances, etc.)
- Update dimensions using new style
- Use Dimension Style over-ride

Create attributed title-blocks that prompt for user input:

- Understand attributes and assign to Blocks
- Edit attribute Tag names
- Insert blocks with attributes & assign values
- Extract attributes from inserted blocks
- Control attribute visibility
- Edit attributes globally & individually

Prepare pictorial drawings using isometric drawing techniques:

- Understand principle projection types
 - Multi-view
 - Axonometric (isometric)
 - Oblique
 - Perspective
- Use AutoCAD – Isometric Grid & Snap
- Use AutoCAD – Isoplanes, Crosshairs, Orthomode
- Apply techniques for isometric drawings (boxing-in, & off set coordinate transfer)
- Create isometric arcs (offset coordinates, and AutoCAD-Isocircle ellipse option)

Create and use Viewports in Model & Paper Space:

- Create & use Tiled Viewports in Model Space for 2-D objects
- Create & use Floating Viewports in Paper Space – Layout Creation
- Apply scaling in Paper Space (model, text, linetypes, dimensions)

Use Paper Space to layout & print/plot properly oriented, scaled drawings with appropriate line-types & line-weights:

- Lay out a drawing for plotting
- Plot operations in Paper Space

College Textbook Reference:

AutoCAD 2004: A Problem Solving Approach, by Sham Tickoo

Note: instructors may use any version of AutoCAD. Focus of course is dimensioning using AutoCAD software; all 2-D objects.