PRINCIPLES OF CAD DESIGN II
Course Syllabus

Course Number: TTC-0445B  OHLAP Credit: No
OCAS Code: None
Course Length: 75 Hours
Career Cluster: Architecture and Construction, Manufacturing
Career Pathway: Design/Pre-Construction, Manufacturing Production Process Development
Career Major(s): Advanced CAD Drafter-Architectural Emphasis

Pre-requisite(s):

Course Description: This is the second half of the basic CAD software course. Three view drawings, dimensioning, orthographic drawings skills, plus intermediate and advanced math, draw commands and operations will be taught and applied to production projects.

Textbooks:
AutoCAD and Its Applications, Basic, Shumaker/Madsen, Goodheart-Wilcox Company, Inc., 2011

Course Objectives:

A. Demonstrate three view drawings.
   1. Describe the Theory of Multiview Projections.
   2. Identify the three basic views in orthographic drawings.
   3. Identify the six major orthographic views.
   4. Label the six major orthographic views.
   5. Locate width, height, and depth on all six major views.
   6. Locate part, name, material, drawing number and tolerance block on an orthographic view.
   7. Locate and point out all holes and radii.
   8. Center and draw an elementary three view drawing.

B. Demonstrate Multiview Projection.
   1. Describe the spacing of a 6-view orthographic drawing.
   2. Center and draw an elementary six view drawings.

C. Demonstrate Dimensioning Rules.
   1. Explain the basic dimensioning rules.
   2. List the ten most important rules.
   3. Review arrowheads, leader lines, extensions and dimension lines.

D. Demonstrate the Application of Orthographic Drawings Skills.
   1. Dimension a basic three view drawing.
   2. Reproduce the correct lineweights for dimension-extension and leader lines.
   3. Dimension various assigned drawings.

E. Solve Math Problems Involving Area.
   1. Explain area conversions.
   2. Explain area of a circle.
   3. Solve circle problems.
   4. Explain area of a sector.
   5. Find area of a sector.
   6. Explain area of a right triangle.
7. Solve right triangle problems.
8. Explain area of a non-right triangle.
9. Solve non-right triangle problems.
10. Explain a composite area problem.
11. Solve a composite area problem.

F. Solve Math Problems Involving Volume.
1. Explain volume conversions.
2. Explain volume of a cylinder.
4. Explain volume of a cube.
5. Solve cube problems.
7. Solve cone problems.
8. Explain volume of a sphere.
10. Explain composite volume problems.
11. Solve composite volume problems.
12. Explain weight charts.
13. Find volume and weight of parts.

G. Use Advanced Dimensioning.
1. Manipulate the variables used to control the look and function of AUTOCAD’s dimensions.
2. List in writing the dimensioning utility commands.
3. Demonstrate the ability of saving and restoring styles with different dimension variables.

H. Use Intermediate Draw Commands.
1. Demonstrate the ELLIPSE and DONUT command.
2. Construct new objects from existing ones with INSERT and MINSERT.
3. Use symbol libraries.

I. Demonstrate Knowledge of Intermediate Edit Commands.
1. Change properties of existing objects.
2. Use the ARRAY command.
3. Edit existing objects by rotating and scaling.

J. Use Intermediate Operations.
1. Build and place objects in layers.
2. Control the layering and coloring of objects.
3. Store and retrieve drawing views and images.
4. Remove layers, blocks, styles, and other unwanted objects from drawings.

K. Use Advanced Operations.
1. Manipulate the construction, editing and special features of polylines.
2. Demonstrate the different types of spline curves.
3. Produce special output files from AUTOCAD.
4. Using external references.

L. Apply Skills to Production.
1. Discuss the cutting plane lines.
2. Discuss section lines.
3. Explain the types of section views.
4. Explain the spacing of section views.
5. Draw the assigned section problems.
6. Explain profile dimensioning.
7. Discuss the proper placement of dimensioning.
8. Apply dimensions to drawings.

M. Apply Advanced Skills to Production.
1. Discuss auxiliary views.
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2. Explain reference lines.
3. Discuss true-size views.
4. Explain primary and secondary auxiliary views.
5. Discuss the use of break lines.
6. Draw the assigned auxiliary views.
7. Dimension assigned auxiliary views.

objectives are TTC instructor developed

Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and shop practice and performance.
2. Each course must be passed with seventy (70%) percent or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/College Credit: The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility: The student must maintain a grade point average of 2.0 or better.