Course Number: TTC-0884  
OHLAP Credit: No  
OCAS Code: None  
Course Length: 60 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): This course will introduce students to the skills required in CAD Civil. The majority of this course will be projects based and requires lab work to practice these skills.


Course Objectives:

A. Describe the scale on the civil engineers scale.
B. Use a civil engineers scale on assigned projects.
C. Use Reference Material.
   1. Describe the purpose of the American Institute of Steel Construction (AISC) Manual of Steel Construction.
   2. Identify fourteen different structural steel shapes and their letter symbols.
   3. Interpret standard shape designations of structural steel.
   4. Utilize AISC Manual of Steel Construction to determine shape sizes and dimensions, including weight per foot, for detailing or designing.
   5. Utilize AISC Manual of Steel Construction to determine proper structural connection applications.
   6. Denote proper notation in reference to single view drawings achieving result of multi view drawings.
D. Apply Mathematics Skills.
   1. Perform basic operations of addition, subtraction, multiplication, and division using a standard electronic pocket calculator.
   2. Utilize Pythagorean Theorem solve right triangles.
   3. Utilize the trigonometric sine function to solve right triangles.
   4. Utilize the trigonometric cosine function to solve right triangles.
   5. Utilize the trigonometric tangent function to solve right triangles.
   6. Discuss inverse trigonometric functions cotangent, secant, and cosecant.
   7. Utilize the Law on Sines to solve non-right triangles.
   8. Discuss and apply the parallel tables of slopes and rises from Smoley's Handboce
E. Review the following Structural Steel Drafting Details.
   1. Proper selection of principal view to show majority of detail fittings.
   2. Proper selection of sectional views to show or dimension an interior detail which not visible in a usual principal view.
   3. Proper selection of auxiliary views to present a true and undistorted appearance a sloping surface.
   4. Proper use of "break lines".
   5. Proper use of "center lines".
6. Proper use of "match lines".
7. Dimensioning standards and gauge lines peculiar to structural detailing.

F. **Review Basic Structural Details.**
1. Discuss and illustrate five types of welded connections.
2. Discuss and illustrate bolted or riveted framed beam connections.
3. Discuss and illustrate bolted or riveted seated beam connections.
4. Discuss and illustrate welded framed and seated beam connections.
5. Discuss and illustrate five types of special bolted or riveted beam connections.
6. Discuss and illustrate four types of skewed, sloped and canted beam connections.
7. Discuss and illustrate three types of wide flange column splices.

G. **Demonstrate Drawing Studies of Industrial Drawing Sets.**
1. Explain the purpose of the Occupational Safety and Health Administration (OSHA).
2. Determine specifications of OSHA approved ladders and identify on industrial drawing set.
3. Determine specifications of OSHA approved handrails and identify on industrial drawing set.
4. Determine specifications of OSHA approved stairs and identify on industrial drawing set.
5. Determine specifications of OSHA approved platforms and identify on industrial drawing set.
6. Describe three types of protective coatings which may be applied to ladders, stairways, platforms, etc.

H. **Complete Drawing Exercises.**
1. Students will complete structural related drawings as assigned by the instructor.

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1 ODCTE Objective
All unmarked 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.