EASTERN ARIZONA COLLEGE
Structural Drafting
Course Design
2016-2017

Course Information

Division	Industrial Technology Education
Course Number	DRF 232
Title	Structural Drafting
Credits	2-3
Developed by	Doug Griffin
Lecture/Lab Ratio	2 Credits = 1 Lecture/2 Lab 3 Credits = 1 Lecture/4 Lab

Transfer Status

ASU	NAU	UA
GIT Dept Elective	CTE Departmental Elective	Non Transferable

Activity Course	No
CIP Code	15.1300
Assessment Mode	Pre/Post Test (20 Questions/20 Points)
Semester Taught	Spring
GE Category	None
Separate Lab	Yes
Awareness Course	No
Intensive Writing Course	No

Prerequisites

DRF 154

Educational Value

This course is targeted for students interested in preparing for job placement in the civil engineering or drafting field.

Description

A study of the basic elements of structural drafting including symbols, dimensioning, design, and detail drawing of steel and concrete structures. All drawings will meet the American Architectural Graphic Standards, the International Building Code, the International Residence Code, ADA, and any additional local building and zoning requirements.

Supplies

None

Competencies and Performance Standards

1. Demonstrate through written assignments, knowledge of employment possibilities, and the responsibilities of a draftsman.

Learning objectives

What you will learn as you master the competency:

a. List the most common employers of structural draftsmen.

b. Sketch an organizational chart for a typical structural drafting department.

c. Write a job description for an entry-level position in structural drafting.

d. List the primary duties of a junior draftsman, draftsman, senior draftsman, checker, and chief draftsman in a typical structural drafting department.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

o learner correctly completes the required assignments

2. Demonstrate proper drafting techniques in line work, lettering, and scale use in producing shop, fabrication, framed, seated, and connection drawings for steel and concrete structures.

Learning objectives

What you will learn as you master the competency:

a. Interpret map scales.

b. Identify map features.

c. Identify various kinds of maps.

d. Determine how land surveys are made.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

o learner correctly completes the required assignments

3. Demonstrate knowledge of various symbols used in structural drafting.

Learning objectives

What you will learn as you master the competency:

a. Define structural drafting.

b. Identify the different types of structural drawings.

c. List various symbols used in structural drafting and their meanings.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

o learner correctly completes the required assignments

4. Explain the product fabrication process for structural steel, precast concrete, and poured-in-place concrete.

Learning objectives

What you will learn as you master the competency:

a. Identify product fabrication processes for structural steel, precast concrete, and poured-in-place concrete.

b. Describe how structural steel and precast concrete products are shipped to the job site.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

o learner correctly completes the required assignments

5. Explain the applications of bolted, welded, riveted, split ring, and shear plate connections.

Learning objectives

What you will learn as you master the competency:

a. Explain the applications of bolted, welded, riveted, split ring, and shear plate connections in heavy construction.

b. Interpret common welding symbols.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

o learner correctly completes the required assignments

6. Draw steel framing plans according to design specifications, through the use of various manuals.

Learning objectives

What you will learn as you master the competency:

a. Distinguish the differences between engineering drawings and shop drawings.

b. Describe and illustrate the various structural steel products used in framing plans.

c. Use the American Institute of Steel Construction's Manual of Steel Construction for determining structural steel product designations and dimensions.

d. Construct structural steel framing plans according to engineering specifications.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

o learner correctly completes the required assignments

7. Prepare steel full, partial, and offset section drawings.

Learning objectives

What you will learn as you master the competency:

a. Define structural steel sections.

b. Assemble structural steel full, partial, and offset sections.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

○ learner correctly completes the required assignments

8. Produce drawings of precast concrete column framing, beam framing, floor/roof framing, and wall framing plans.

Learning objectives

What you will learn as you master the competency:

a. Assemble drawings of precast concrete column framing, beam framing, floor/roof framing, and wall framing plans.

Performance Standards

You will demonstrate your competence:

o through the use of lab facilities and software packages

Your performance will be successful when:

o learner correctly completes the required assignments

9. Prepare precast concrete full, partial, and offset sections, various precast concrete connection details, and fabrication details if precast concrete structures.

Learning objectives

What you will learn as you master the competency:

a. Explain how shop drawings fit into a set of precast concrete structures.

b. Explain how fabrication details fit into the shop drawings.

c. Prepare precast concrete full, partial, and offset sections.

d. Illustrate examples of structural section conventions.

e. Construct each of the following: precast concrete base plate connection details, precast concrete bolted beam-to-column connection details, precast concrete welded connections details and precast concrete haunch connection details.

f. Define shop drawings and fabrication details.

g. Construct fabrication details of precast concrete columns, beams, wall panels, floor/roof members, and metal connectors.

h. Assemble complete structural steel base, framed, and seated connections.

i. Define structural steel fabrication details.

j. Define precast sections.

k. Construct fabrication details for structural steel columns and beams.

Performance Standards

You will demonstrate your competence:

- o through the use of lab facilities and software packages

Your performance will be successful when:

- ○ learner correctly completes the required assignments

Types of Instruction

Classroom

Lab

Grading Information

Grading Rationale

Each instructor has the flexibility to develop evaluative procedures within the following parameters:
The Post Test will represent 10% of the course grade.
Course learning activities shall represent 90% of the course grade.

Grading Scale

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	59% and below