

## ARC 119 STRUCTURAL DRAFTING

### COURSE DESCRIPTION:

Prerequisites: ARC 113 and MAT 121

Corequisites: None

This course introduces basic concepts associated with sizing and detailing structural assemblies. Topics include vocabulary, span-to-depth ratios, code requirements, shop drawings, and other related topics. Upon completion, students should be able to perform simple calculations and prepare shop drawings and preliminary structural plans. Course Hours Per Week: Class, 2. Lab, 2. Semester Hours Credit, 3.

### LEARNING OUTCOMES:

A student who successfully completes this course should be able to:

- a. Use drafting board and table.
- b. Use parallel bars, paper, cloth, mylar, and drafting or masking tape.
- c. Use architect's and engineer's scales.
- d. Use drafting leads and holders.
- e. Use triangles, French curves, and templates.
- f. Use lettering guides.
- g. Use dividers and compass.
- h. Use erasers and shields.
- i. Develop working sketches.
- j. Determine type and size of medium.
- k. Determine details to be shown (isometric auxiliary).
- l. Lay out drawings.
- m. Apply basic principles and practices to drafting specialty.
- n. Select and use appropriate line weights.
- o. Draw detail views.
- p. Apply dimensions and symbols.
- q. Use correct lettering techniques.
- r. Add nomenclature.
- s. Apply crosshatching (poche).
- t. Make assembly drawings (isometric).
- u. Make tracings.
- v. Check drawing for completeness and accuracy.
- w. Consult with peers, draftspersons and technicians, supervising personnel, subcontractors, and vendors.
- x. Provide verbal interpretation of drawings.
- y. Use professional publications.
- z. Ask clarifying questions.
- aa. Respond directly to questions.
- bb. Use standard terminology.
- cc. Exhibit professional attitudes.
- dd. Use architectural graphics standards.

- ee. Follow company standards.
- ff. Use manufacturers' drawings and specifications.
- gg. Read blueprints.
- hh. Use calculators.
- ii. Use basic mathematics, geometry, and basic principles of physics to create drawings and to solve drafting problems.
- jj. Develop written instructions or specifications.
- kk. Check accuracy of dimensions and scale.
- ll. Check revisions.
- mm. Check for completeness and line quality.
- nn. Verify compliance with standards (drafting and company).
- oo. Check understandability of notes.
- pp. Select type of reproduction.
- qq. Operate copy machines, blueprint machine, and reduction machine.
- rr. File masters and file media materials, and retrieve media and masters.
- ss. Maintain file of revisions and drawing log (notebook or index file).
- tt. Study trade publications and job-related books.
- uu. Visit job related industries.
- vv. Keep abreast of new technological developments.

## **OUTLINE OF INSTRUCTION:**

- I. Introduction to structural drafting
  - A. Areas of structural drafting
    - 1. Wood construction
    - 2. Structural steel drafting
    - 3. Structural steel shapes
    - 4. Specifications
    - 5. Riveting
    - 6. Welding
      - (a) Welding processes
      - (b) Terms and symbols
      - (c) Symbol application
    - 7. High strength bolting for structural joints
  - B. Suggestions in solving structural drafting problems
- II. Introduction to threads and fasteners
  - A. Areas of threads and fasteners
    - 1. Screw threads
    - 2. Definitions of terms
    - 3. Screw thread forms
    - 4. Fastener types
    - 5. Keys
  - B. Suggestions for solving thread and fastener problems
- III. Introduction to working drawings
  - A. Areas of working drawings

1. Detail drawings
  2. Title and record strip
  3. Drawing numbers
  4. Parts list
  5. Isometric pictorial
- B. Suggestions for solving working drawing problems

- IV. Truss design
- A. Types of truss
  - B. Parts of truss
  - C. Truss drawing and fastening methods

### **REQUIRED TEXTBOOKS AND MATERIALS:**

Textbook to be selected by instructor.

Drafting Kit  
Drafting Film, 12 sheets 11" X 17" (Mylar)  
Reservoir Pens (#4, 2, 0, 000)

### **SUGGESTED REFERENCES, PERIODICALS AND VISUAL AIDS:**

Ramsey, Charles G. and Harold R. Sleeper. Architectural Graphic Standards.  
Muller, Edward J. Reading Architectural Working Drawing. Prentice-Hall, Inc., 1971.

### **STATEMENT FOR STUDENTS WITH DISABILITIES:**

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.