

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Nondestructive Testing Technology Program
Revision Date: August 2025

I. CATALOG DESCRIPTION

Course Number: NDTT1164
Course Title: Blueprint Reading and CAD
Prerequisite(s): None
Catalog Description: Study of industrial language pertaining to print reading basics, math and measurement, plane geometry, welding fundamentals, types of welds, symbol usage, pictorial drawing (isometric and orthographic), and Computer Aided Design (CAD).
Credit Hours: 2
Class Hours: 15
Lab Hours: 45
Total Contact Hours: 60

II. COURSE OBJECTIVES: *Course will:*

- A. Define prints, working drawings, and specifications.
- B. Explain the meaning of views and lines and be able to draw them.
- C. Describe different sizes of objects according to fractional, decimal and angular dimensions.
- D. Perform calculations using addition, subtraction, multiplication & division.
- E. Explain the various components of a welding print format.
- F. Identify the various classifications for production prints and become familiar with their special features.
- G. Explain the meaning of the basic welding terms.
- H. Identify and explain the meaning of welding symbols.
- I. Provide realistic and current coverage of welding prints.
- J. Review standards of the American Welding Society and American National Standards Institute.
- K. Students shall use the AutoCAD software to take an idea from concept to final product. Topics covered include AutoCAD tools, 2D commands, Isometric drawing, and Orthographic projection.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to*
 - 1. Apply the principles and theory related to basic blueprint reading and drawing techniques utilized in industrial/manufacturing environments.
 - 2. Identify materials by specification as related to shape, size, and form/material type.
 - 3. Apply basic drawing and dimensioning techniques.
 - 4. Identify various symbols and terminology associated with fabrication and inspection.
 - 5. Apply basic CAD techniques.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #3: Critical Thinking & Problem Solving
Outcome 5: Acquire and integrate knowledge and construct relationships across disciplines.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. Prints – language of industry
- B. Review of measurement
- C. Review of fraction/decimals
- D. Alphabet of lines
- E. Understanding prints
- F. Types of prints
- G. Basic plane geometry
- H. Dimensioning welding prints
- I. Welding processes
- J. Threaded fasteners
- K. Structural metals
- L. Common types of joints and welds
- M. Welding symbols
- N. Fillet, groove, plug/slot, projection, surfacing, and flange & sheet welds
- O. Pipe welding
- P. Braised joints
- Q. Basic metalworking processes
- R. Examining and testing welds
- S. Basic CAD commands

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): Walker, John R., *Welding Print Reading* and *AWS D1.1/D1.1M: 2015*, *American Welding Society* (or latest edition)
- B. Other Recourses:
 - 1. Scientific calculator
 - 2. 6" steel rule
 - 3. Notebook and ¼" graph paper
 - 4. Drafting pencil
 - 5. Writing utensil (pencil or pen)
 - 6. 12 ft. tape measure
 - 7. French curves (set)
 - 8. No. 81 circle template
 - 9. Protractor

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lecturing
 - 2. Small and large group discussion
 - 3. Video presentations
 - 4. Project boards
 - 5. Handouts
 - 6. Observations
 - 7. Assigned lab projects
 - 8. Field trips

VII. METHODS OF EVALUATION (*course outline may provide more detailed information*)

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:

1. Homework
2. Quizzes
3. Tests

- VIII. SPECIFIC COURSE REQUIREMENTS:**
- A. Attendance
 - B. Examination
 - C. Homework
 - D. Lab Projects
 - E. Must earn a final grade of 70% (2.0) or higher.