

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

I. CATALOG DESCRIPTION

Course Number: NDTT1121
Course Title: Visual Inspection Methods
Prerequisite(s): None
Catalog Description: Study of concepts and applications of visual inspection as it relates to NDT disciplines. Employ the use of optical devices, precision measurement tools and gauges, as well as various tools in laboratory and field situations.

Credit Hours: 4
Class Hours: 30
Lab Hours: 90
Total Contact Hours: 120

II. COURSE OBJECTIVES: *Course will:*

- A.** Introduces students to the basic principles of visual examination. Various discontinuities generated by materials processing are also addressed.
- B.** Examine various optical and mechanical aids used to perform visual inspections and provide a brief overview of the other primary methods of non-destructive testing.
- C.** Provide a solid grounding in the principles of non-destructive examination and help students develop the skills needed to perform this most widely used non-destructive testing method.

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 visual inspection methods commonly employed in industrial applications of weld examination, wrought and material examinations, and product examinations in accordance with various codes, standards, and specifications.
 - 2.** Identify/select appropriate tools and gauges associated with specific applications.
 - 3.** Identify deficiencies common in various manufacturing/fabrication related concepts in accordance with various codes, standards, and specifications.
- B.** General Learning Outcomes (GELOs)
 - 1.** GELO #3: Critical Thinking & Problem Solving
Outcome 1: Collect, identify, interpret and analyze data.

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

- A.** Introduction to Visual Testing
- B.** Physics and Fundamentals of Visual Testing
- C.** Visual Testing Techniques
- D.** Basic Visual Testing Equipment
- E.** Visual Testing of welds
- F.** Visual Testing of Casting and Wrought Products
- G.** Visual Testing Procedures
- H.** Elements of Vision
- I.** Elements of Lighting
- J.** Optics
- K.** Advanced Visual Testing Equipment

- L. Service Induced Discontinuities
- M. Evaluation
- N. Codes, Standards and specifications

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s):
 - 1. *Personnel Training Publications: Visual Testing (VT)*, Classroom Training Book
 - 2. *AWS D1.1/D1.1M: 20120*, American Welding Society (or latest edition)
- B. Supplies:
 - 1. Scientific calculator
 - 2. Pocket pen light (with batteries)/flashlight
 - 3. 0 – 1 in OD Micrometer (with Vernier scale)
 - 4. Fillet gauge
 - 5. V-WAC gauge
 - 6. 6” steel rule
 - 7. Notebook and ¼” graph paper

 - 8. Vis-à-vis water markers (pkg. of 4)
 - 9. Writing utensil (pencil and pen)
 - 10. 8” pliers
 - 11. 12 ft. tape measure
 - 12. French curves (set)
 - 13. No. 81 circle template
 - 14. Stop watch
 - 15. PPE (safety glasses, denim/flannel shirt, protractor and leather work boots)

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. Demonstrations
 - 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 instructor, traditionally includes a combination of the following:
 - 1. Homework
 - 2. Quizzes
 - 3. Tests
 - 4. Lab grades
 - 5. Attendance/class conduct

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