

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

I. CATALOG DESCRIPTION

Course Number: NDTT1356
Course Title: Liquid Penetrant
Prerequisite(s): NDTT1260
Catalog Description: Study of proper penetrant testing techniques and applications. Process control for the solvent removable, post emulsifiable, and water wash penetrant techniques. Study of codes, standards, and job specifications for liquid penetrant inspection.
Credit Hours: 2
Class Hours: 15
Lab Hours: 45
Total Contact Hours: 60

II. COURSE OBJECTIVES: *Course will:*

- A. Discusses the theory and establishes sound practices in the use of the three primary liquid penetrant testing techniques.
- B. Introduces students to the primary considerations for selecting various liquid penetrant materials relative to inspection applications and conditions.
- C. Addresses specific techniques and practices in performing the various liquid penetrant inspection processes.
- D. Addresses specification compliance and requirements.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Interpret the principles and theory which govern modern liquid penetrant testing techniques and practices in an industrial/manufacturing environment.
 - 2. Become proficient in the use of liquid penetrant test equipment for the purposes of leak detection, maintenance inspection, basic weld and/or other product form evaluations.
 - 3. Exhibit proficiency in his/her ability to conduct independent liquid penetrant examinations in accordance with recognized codes, standards, specifications, and procedures and correctly report findings.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #1: Oral Communication
Outcome 4: Competently communicate messages – both verbally and nonverbally-to a variety of audience types and in a variety of situations.

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

- A. Introduction of liquid penetrant testing
- B. Inspection specimen contaminants
- C. Precleaning methods and techniques
- D. Properties and application techniques of water wash fluorescent penetrants
- E. Properties and application techniques of post emulsifiable penetrants
- F. Properties and application techniques of color contrast penetrants
- G. Properties and application techniques of developers

- H. Penetrant procedures
- I. Black light requirements
- J. Leak detection using penetrants
- K. Interpretation of test results
- L. Quality control of penetrant materials and ancillary equipment

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): PTP, *Liquid Penetrant Testing*, Classroom training, and *Certification Document for NDT Personnel*, ASNT, SNT-TC-1A Latest Edition
- B. Other Recourses:
 - 1. Instructor handouts
 - 2. Notebook
 - 3. Calculator
 - 4. 6" steel rule
 - 5. Tape measure
 - 6. VWAC gauge

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

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
 - 4. Lab grades
 - 5. Attendance/class conduct

VIII. SPECIFIC COURSE REQUIREMENTS:

- A. Attendance
- B. Examination/Quizzes
- C. Homework
- D. Lab Projects
- E. Must earn a final grade of 70% (2.0) or higher.