

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

**I. CATALOG DESCRIPTION**

Course Number: NDTT1458  
Course Title: Magnetic Particle  
Prerequisite(s): MATH1050 or Higher and NDTT1260  
Catalog Description: Study of magnetic particle testing techniques and applications. Control of inspection variables in all forms of magnetic particle inspection. Study of codes, standards, and job specifications as they relate to magnetic particle inspection.  
Credit Hours: 2  
Class Hours: 15  
Lab Hours: 45  
Total Contact Hours: 60

**II. COURSE OBJECTIVES:** *Course will:*

- A. Discusses theory and establishes sound practices for inspection with the magnetic particle method as it applies to ferrous materials.
- B. Introduces students to advanced theory and use of magnetic particle inspection techniques for inspecting various applicable product forms.
- C. Addresses techniques and practices for performing various quality control measures, magnetizing force calculations and different types of magnetic media.

**III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:**

- A. Student Learning Outcomes: *Student will be able to:*
  - 1. Access the principles and theory which govern modern magnetic particle testing techniques and practices in an industrial/manufacturing environment.
  - 2. Become proficient in the use of magnetic particle test equipment for the purposes of establishing adequate magnetic particle inspection techniques, conducting basic weld and/or other product form evaluations on ferrous materials.
  - 3. Exhibit proficiency in his/her ability to conduct independent magnetic particle 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 5: Utilize active and critical listening behaviors.

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

- A. Characteristics of magnetic fields
- B. Equipment used for establishing magnetic fields
- C. Methods of magnetization
- D. Field strength and distribution
- E. Magnetic particle media
- F. Application of dry method
- G. Application of wet method
- H. Demagnetization principles and methods

- I. Interpretation of indications
- J. Inspection standards and codes utilizing magnetic particle inspection

**V. INSTRUCTIONAL MATERIALS**

- A. Required Text(s): *ASNT Level III Study Guide- Magnetic Particle Testing Method*, American Society for Nondestructive Testing (2015 Edition)
- B. Supplies:
  - 1. Notebook
  - 2. Scientific calculator
  - 3. Safety glasses
  - 4. 6" Steel rule
  - 5. Tape measure
  - 6. Flashlight

**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. Examinations/Quizzes
- C. Homework
- D. Lab Projects
- E. Must earn a final grade of 70% (2.0) or higher.