

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

I. CATALOG DESCRIPTION

Course Number: NDTT1464
Course Title: Radiography I
Prerequisite(s): MATH1050 or Higher, NDTT1260 & NDTT1470
Catalog Description: Applications and radiographic inspection techniques. Technique requirements specified in selected codes, standards, and job specifications. Examination and reporting consistency. Methods for developing RT techniques in situations where limited information is available about a test object or where codes and standards do not exist.
Credit Hours: 4
Class Hours: 30
Lab Hours: 90
Total Contact Hours: 120

II. COURSE OBJECTIVES: *Course will:*

- A. This course is intended for individuals with some basic understanding of x-ray and radioisotope radiography fundamentals.
- B. Discusses the theory and establishes sound practices for examination of various product forms using the radiographic inspection method.
- C. Introduces students to the use of various industrial x-ray and isotope equipment as well as ancillary equipment necessary to perform industrial radiography in a safe manner.
- D. Addresses the techniques and practices for exposure of film and the development process along with industrial radiography sensitivity requirements.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Discuss the principles and theory which govern modern radiographic testing techniques and practices in an industrial/manufacturing environment.
 - 2. Become proficient in the use of radiographic test equipment for the purposes of establishment of radiographic techniques, conducting radiographic inspections on basic weldments and/or other product forms. In addition, the student will be able to conduct radiographic operations in a manner consistent with current state and federal safety regulations.
 - 3. Exhibit proficiency in his/her ability to conduct independent radiographic examinations in accordance with recognized codes, standards, specifications, and procedures and correctly report findings.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #3: Critical Thinking & Problem Solving
Outcome 3: Evaluate ideas presented in writing, medial, speech, or artistic presentations.

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

- A. Introduction to radiographic inspection
- B. X-ray equipment
- C. Gamma ray exposure equipment

- D. Establishing proper radiographic techniques
- E. Factors effecting film quality
- F. Film processing
- G. Codes and standards involving the radiographic process
- H. Basic radiation safety

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s):
 - 1. *American Society for Nondestructive Testing, Programmed Instruction Series: Radiographic Test (Vol. III, IV and V)*
 - 2. American Welding Society, *Structural Welding Code – D1.1* (Latest Edition)
 - 3. Nebraska Administrative Code, *Title 180- Regulations for Control of Radiation-Ionizing* (Latest Edition)
 - 4. DuPont NDT Systems, *Radiographer's Reference*
 - 5. Southeast Community College, *Operating and Emergency Procedure* (Latest edition)
- B. Supplies:
 - 1. Notebook
 - 2. Scientific calculator
 - 3. Safety glasses
 - 4. QSH Global Model 752 Radiographic exposure calculator
 - 5. 6" Steel rule
 - 6. Watch or stopwatch capable of measuring in units of seconds

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. Group projects
 - 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.