

# Nondestructive Testing

## Nondestructive Testing (NDT) Classes

### NDT110G : Introduction to Nondestructive Testing

This course covers an introduction to the fundamental principles of non-destructive testing, the processes of examining materials without damaging them. Content will include an overview of career opportunities, training requirements, and certification programs for the NDT profession. Manufacturing processes, materials, and equipment will be covered as they relate to potential product flaws. Students will be introduced to various testing methods, including the benefits, limitations, and applications of each. Labs will include introduction to the NDT lab equipment, safety in the lab, visual inspection, interpretation of results, and reporting. Applied math will be included in this course. In addition to scheduled classes, students will be required to attend field trips organized by instructors.

**Credits** 3

**Theory Hours** 2

**Lab Hours** 2

**Prerequisites**

Accuplacer level testing into college reading or permission of department chair

### NDT205G : Visual Testing

Visual Testing (VT), often the first method used during an NDT inspection, includes direct examination with the eyes as well as the use of mechanical or optical tools to locate discontinuities and potential defects. This course will cover material required for the classroom training portion for level 1 and 2 certification of NDT personnel in the visual testing methods and will cover ASNT SNT- TC-1a requirements and the AWS B5.1 requirements (required for Visual Weld Inspectors). The following topics will be included: applications, equipment, principles and theory of optics, and environmental factors. Final exams will be given for each level, and students with an individual test score of 70% or greater will receive a course certificate verifying successful completion of theory training for that level.

**Credits** 3

**Theory Hours** 3

**Lab Hours** 0

**Prerequisites**

[NDT110G](#) with a grade of C or better or approval of Department Chair

### NDT210G : Liquid Penetrant Testing

Penetrant Testing (PT), used for detecting cracks and other surface defects on nonporous solid materials, is one of the most commonly used nondestructive testing methods. This course covers theory and principles as well as procedures and techniques using a range of materials. Applied mathematics will be included. Labs will focus on water-removable penetrants with a variety of developers. Quality control will be stressed.

**Credits** 2

**Theory Hours** 1

**Lab Hours** 2

**Prerequisites**

[NDT110G](#) with a grade of C or higher; Accuplacer level testing of QAS 241 or higher in math and college level reading or permission of department chair

## NDT211G : Magnetic Particle Testing

Magnetic particle testing (MT) allows an inspector to locate discontinuities in ferromagnetic materials. This course will cover material required for the classroom training portion for level 1 and 2 certification of NDT personnel in the magnetic particle testing method. The following topics will be included: principles of magnetism, testing equipment, types of discontinuities, quality control, and evaluation techniques. Final exams will be given for each level, and students with an individual test score of 70% or greater will receive a course certificate verifying successful completion of theory training for that level.

**Credits** 2

**Theory Hours** 2

**Lab Hours** 0

**Prerequisites**

[NDT110G](#) with a grade of C or better or approval of Department Chair

## NDT212G : Ultrasonic Inspection

Ultrasound, a term used to describe mechanical vibrations above the audible range, is commonly used in nondestructive testing of metals and nonmetal materials to measure thickness or to examine the internal structure. Abnormalities such as cracks, boundaries, or inclusions can be detected as sound waves are scattered or reflected. In this class, students will learn the physics of sound, the use of sound waves for measurement, and technical aspects of ultrasonic testing. This course will cover math, including basic trigonometry, to help the student understand ultrasound principles in terms of velocity, distance and angles.

**Credits** 4

**Theory Hours** 3

**Lab Hours** 2

**Prerequisites**

[NDT110G](#) with a grade of C or better; Accuplacer level testing of QAS 241 or higher in math and college level reading or permission of department chair

## NDT214G : Radiographic Testing

Radiographic inspection is based on the principles of physics that x-ray and gamma ray absorption indicates thickness and density of matter to examine material for internal discontinuities. Radiography is one of the most common and effective methods of inspecting products without damaging them (nondestructive testing or NDT). This course will cover material required for the classroom training portion for level 1 and II certification of NDT personnel in the radiographic testing method. This includes radiography testing principles, equipment, safety considerations, and the interpretation and evaluation of results. Applied math will include basic algebra and geometry.

**Credits** 4

**Theory Hours** 3

**Lab Hours** 2

**Prerequisites**

[NDT110G](#) with grade of C or better; Accuplacer level testing of QAS 241 or higher in math and college level reading or permission of department chair

## NDT215G : Digital Radiographic Testing

Radioscopic digital imaging, related to radioscopy, uses digitization of analog electronic data. This course will meet the requirements for non-film radiography per NAS-410 and ASNT SNT-TC-1a, and will include an introduction to the theory of computed radiography (CR) as well as digital detector array systems (DDA or DR). Topics will also include a review of radiology physics and radiation safety. Final exams will be given for levels 1 and 2, and students with an individual test score of 70% or greater will receive a course certificate verifying successful completion of theory training for that level.

**Credits** 3

**Theory Hours** 3

**Lab Hours** 0

**Prerequisites**

[NDT214G](#), Radiographic Testing with a C or better, successful completion of an RT level 1 course, or currently certified as an RT level 1

**Semester Offered**

Fall semester

## NDT220G : Eddy Current Testing

Eddy current testing (ET), the most widely used sub method of electromagnetic testing, is used to detect discontinuities and measurements on parts made of materials with significant electrical conductivity. This course will cover content required for the classroom-training portion for level 1 and 2 certification of NDT personnel in the eddy current testing method, including electromagnetic theory, basic physics principles, techniques, and applications. Final exams will be given for each level, and students with an individual test score of 70% or greater will receive a course certificate verifying successful completion of theory training for that level.

**Credits** 4

**Theory Hours** 3

**Lab Hours** 2

**Prerequisites**

[NDT110G](#) with a grade of C or better or approval of Department Chair