

Introduction to Non-Destructive Testing

Outline of Instruction

Course Information

Project Type	NDT Certification
Organization	Monroe County Community College, Applied Science and Engineering Technology
Developers	Ed Schultz and Roop Chandel
Development Date	1/31/2012
Course Number	NUET 102
Instructional Level	Certificate
Instructional Area	Nuclear Engineering Technology
Division	Industrial
Potential Hours of Instruction	45
Total Credits	3

Description

Non Destructive Testing (NDT) is a process that involves the inspection, testing, or evaluation of materials, components and assemblies for materials' discontinuities, properties and machine problems without further impairing or destroying the parts serviceability. This is an introductory course that will cover the basic concepts of the five major inspection methods studied through the Monroe County Community College NDT program; Visual Testing (VT), Liquid Penetrant Testing (PT), Magnetic Particle Testing (MT), Ultrasonic Testing (UT), and Radiographic Testing (RT). Through course progression, the student will become familiar with scope and limitations of each method, as well as develop a deeper understanding of how Non-Destructive Testing impacts the world in which we live.

Major Units

1. Visual Testing (VT)
2. Liquid Penetrant testing (PT)
3. Magnetic Particle testing (MT)
4. Radiographic Testing (RT)
5. Ultrasonic Testing (UT)
6. Codes and standards used in the NDT field
7. Ethics in Non-Destructive Testing
8. Site visit to NDT testing facility
9. NDT "portfolio" development

Target Population

NDT Certification is designed for two year career and technical education programs or for those with experience.

Students, Inspectors, Welders, CWI's, Technicians, Engineers and Electricians find that a career in nondestructive testing offers many opportunities, and there is a big demand for technicians and engineers trained in NDT. The NDT personnel work at various levels.

Level I technicians are only qualified to perform specific calibrations and tests, and acceptance or rejection determinations allow little or no deviation from the procedure. Level I technicians working at this

level are under close supervision, guidance and direction of a higher level tester, such as Level II or Level III. The Level I position is not the trainee level, but the first level a trainee reaches upon demonstrating ability in specific tests. They are usually trained to a specific procedure and can perform only certain types of inspections on a certain set of components.

Level II technicians are able to set up and calibrate equipment, conduct the inspection according to procedures, interpret, evaluate and document results in all the testing method(s) utilized by the certificate holder. The technician can provide on the job training for Level I and Level I Limited and act as a supervisor. The technician at this level can also organize and document the results of the inspection. They must be familiar with all applicable codes, standards, and other documents that control the NDT method being utilized.

Types of Instruction

Instruction Type

Classroom Presentation

Contact Hours

45

Credits

3

Textbooks

TBD.

Learner Supplies

Scientific Calculator.

3-Ring Binder.

Prerequisites

RDG 090 and/or ENGL-090

Exit Learning Outcomes

Program Outcomes

- A. Demonstrate problem solving skills
- B. Acquire a willingness to learn independently
- C. Recognize effective inspection techniques
- D. Demonstrate knowledge of equipment competency
- E. Apply technical writing skills

General Education Outcomes

- A. Communicate ideas in writing using the rules of standard English
- B. Use computer technology to communicate information
- C. Demonstrate an understanding of social science concepts
- D. Demonstrate an understanding of the process of scientific inquiry

External Standards

SNT-TC-1A, The American Society for Nondestructive Testing, Recommended Practice, Personnel Qualification and Certification in Nondestructive Testing

Course Outcomes

- 1. Perform inspection techniques and process variables unique to the five major inspection methods**
- 2. Apply principles of basic material types and forms applicable to NDT**
- 3. Recognize the advantages and limitations of each NDT method**
- 4. Practice safety methods for each inspection technique**
- 5. Identify unethical behavior**
- 6. Demonstrate proficiency of NDT standards recognized by ASNT SNT-TC-1A required examination(s)**
- 7. Assemble course portfolio**