

Liquid Penetrant and Magnetic Particle Testing

Outline of Instruction

Course Information

Organization	Monroe County Community College, Industrial Technology Division
Developers	R.S.Chandel
Development Date	10/12/2008
Revised By	R.S.Chandel
Revised Date	1/5/2009
Course Number	NUET 103
Instructional Level	1XX
Instructional Area	Materials Technology
Division	Industrial Technology
Department	XXX
Potential Hours of Instruction	45
Total Credits	2

Description

This course is to train students to carry out liquid penetrant and magnetic particle testing of engineering components. The course is divided into two parts. In the first part students will learn the principles of liquid penetrant testing, classification of penetrant materials, testing methods and testing equipment. In the second part, the students will learn the principle of magnetic particle testing, performing magnetic particle test, and steps and sequence involved in magnetic particle testing will be learned in theory and practice. The types and characteristics of magnetic fields and magnetization processes will be studied. The measurement of magnetic fields and the instruments used to measure the magnetic field, classification of materials, process of demagnetization, and equipment for demagnetization will also be learned in theory and practice. Students will also learn the precautions to be observed during testing, interpretation and evaluation of indications formed by discontinuities, procedure and applicable codes for acceptance and rejection of discontinuities. The classroom lectures will be supplemented by a series of laboratory exercises to provide hands-on training in performing these tests.

Upon the successful completion of this course the learner will meet the Level I and Level II requirements of ASNT in these two areas.

Major Units:

1. Processing for liquid penetrants
2. Materials and methods of LP testing
3. Selection of LP testing method
4. Examination and evaluation of LP tests
5. Principles of magnetic particle testing
6. Magnetization and de-magnetization methods
7. MP test equipment and materials
8. Discontinuity indication, interpretation, and evaluation
9. Health and Safety

Types of Instruction

Instruction Type

Classroom Presentation

Contact Hours

60

Credits

3

Textbooks

TBD. McGraw-Hills 2004.

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 information in writing using the rules of standard English
- B. Demonstrate an understanding of the process of scientific inquiry
- C. Use computer technology to communicate information

External Standards

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

Course Outcomes

1. Describe basic principles of LPT and MPT
2. Select and employ most suitable precleaning method and materials for a given situation
3. Design the steps and sequences to carry out LPT and MPT for a given component
4. Demonstrate the ability to select the right equipment and procedure for a given test
5. Prepare reports describing test results
6. Demonstrate ability to identify various indications and attribute them to the causes.
7. Prepare for ANST LP AND MP Level I & II test battery examination