AATA 101A: MAGNETIC PARTICLE TESTING LEVEL 1

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2023
Units:	1.5
Hours:	20 lecture per quarter (20 total per quarter)
Prerequisite:	This course is limited to students admitted to the Nondestructive Testing Technician Apprenticeship Program.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Pass/No Pass Only
Repeatability:	Not Repeatable

Description

Introduction to and theory of magnetism, including magnetic fields, material types, penetration variations, flux leakage, Fleming's Rule, and hysteresis curve. Methods of magnetism, including types of currents, field types and their advantages/disadvantages, and AC/DC field distribution. Equipment introduction, including equipment types, equipment uses, and accessories. Mediums for inspection, including different methods and their properties.

Course Objectives

The student will be able to:

a. Understand the physics of magnetism
b. Understand and work within the limitations of the method
c. Select equipment to conduct test

Course Content

a. Theory of magnetism
    i. Magnetic field, lines of force, flux density
    ii. Permeability, reluctance, retentivity, residual magnetism and coercive force
    iii. Diamagnetic, paramagnetic and ferromagnetic materials
    iv. Flux leakage
    v. Fleming's Right Hand and Left Hand Rule
    vi. Magnetic fields
    vii. Hysteresis curve
b. Methods of magnetization
    i. Faraday's Law
    ii. Types of current
    iii. Circular field
    iv. Circular field advantages/disadvantages
    v. Longitudinal field
    vi. Longitudinal field advantages/disadvantages
    vii. AC/DC field distribution
c. Equipment
    i. Equipment consideration
    ii. Wet, horizontal, mobile, and portable
    iii. Fluorescent testing and black light
    iv. Light meter and accessories

Lab Content

Not applicable.

Special Facilities and/or Equipment

When taught via Foothill Global Access, on-going access to computer with email software and hardware; email address.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Results of written test

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Discussion
Slideshow
Video
Demonstration

Representative Text(s) and Other Materials

American Society for Nondestructive Testing. Personnel Training Publications: Magnetic Particle Testing (MT), Classroom Training Book, 2nd ed.. 2015.

This text is still widely used within the industry and is the most current text used for training.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

a. Reading: Reach Chapter 3 - Magnetization
b. Writing: Complete Quiz 3 on page 57. Quiz results will be reviewed in class as a group

Discipline(s)

Industrial Maintenance