

AATA 101B: MAGNETIC PARTICLE TESTING LEVEL 2

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2023
Units:	1
Hours:	15 lecture, 5 laboratory 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

Industry codes and standards; performing a test, including selecting equipment, steps to conduct a test, interpreting results, and writing test reports. Methods of applications and the different particles included in these.

Course Objectives

The student will be able to:

- Select appropriate equipment for the testing environment
- Perform a complete MT test
- Maintain a work station
- Read and understand code and standard

Course Content

- Mediums and preparation
 - Dry and wet method
 - Particles: Dry and wet
 - Properties of particles
 - Visibility of particles
 - Methods of application
 - Contamination of magnetic particles
 - Settling test procedure
 - Concentration for wet suspensions as per ASME Sec V Article 7
 - Bath maintenance
- Application
 - Residual and continuous method
 - Magnetic particle inspection of solid cylindrical parts, gears, multiple diameter articles, discs, hollow cylindrical articles
 - Selection of proper method of magnetization
 - Verification of magnetic fields
 - Checking the adequacy of field using the Pie Gauge, shims
 - Fluorescent inspection

- Black light warm up time
- Minimum intensity and light meter
- Visual adaptation
 - Visual inspection
 - Minimum light intensity and light meter
 - Magnetic rubber inspection
- Types of indications
 - Interpretation, including relevant, false, non-relevant indications
MODULE 8: CODES AND STANDARDS (specific training)
 - MT inspection procedures
- Codes and standards: Most recent codes and standards will be used
 - Example:
 - ASME Section V Article 7: Magnetic Particle Examination
 - ASME Section VIII (Accept/Reject Criteria)
 - ASTM E-709: Standard Guide for Magnetic Particle Testing
 - ASTM E-1444: Standard Practice for Magnetic Particle Testing
 - Other codes and standards can be discussed if pre-arranged with the instructor at the time of registration

Lab Content

- Magnetic yoke, dry visible, wet visible, wet fluorescent
- Central conductor
- Coil shot - longitudinal
- Ketos (Betz) Ring - depth of penetration
- Training on weld flaw samples

Special Facilities and/or Equipment

- Magnetic yoke, aerosol penetrant.
- 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
Results of practical test

Method(s) of Instruction

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

Discussion
Slideshow
Video
Demonstration
Hands-on training

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