

AEROSPACE QUALITY TECHNICIAN

Levels 1 - 3

Learners on this pathway focus on the testing of materials and systems used in aerospace and other industries. The pathway introduces the concepts of non-destructive examination (NDE) and the techniques to accomplish examination and testing. The pathway employs three levels covering five areas of expertise through 54 courses. Learners will take 72 hours to complete this pathway.

Level 1 introduces learners to the concepts and methods of NDE as applied to the aerospace industry, as well as career opportunities in the field. It also incorporates concepts and methods of visually examining aerospace manufacturing. Level 2 focuses on the concepts of magnetic particle testing, various techniques to employ and the tools used for its application. Level 3 covers NDE in general commercial use, focusing on materials and visual testing.

Among the objectives for this pathway, learners will be able to:

- define non-destructive examination (NDE)
- understand visual testing concepts and techniques
- understand particle testing concepts and techniques
- describe tools used for NDE
- describe material properties and testing methods

Total # of Modules: 54

Total Hours: 72



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Level 1

Introduction to Non-Destructive Examination Aerospace

- 1.1 What is NDE?
- 1.2 NDE Methods
- 1.3 Careers in NDE

Visual Testing Aerospace

- 1.4 Introduction to Visual Testing
- 1.5 Light and the Human Eye
- 1.6 Standard Inspection Techniques
- 1.7 Visual Testing Equipment
- 1.8 Manufacturing Produced Discontinuities
- 1.9 Standards and Procedures
- 1.10 Visual Testing of Castings
- 1.11 Visual Testing of Wrought Metal
- 1.12 Visual Testing of Welds
- 1.13 In-Service Visual Inspection

Level 2

Magnetic Particle Testing Aerospace

- 2.1 Magnetic Particle Examination
- 2.2 Magnetism
- 2.3 Magnetic Flux
- 2.4 Electricity and Magnetism
- 2.5 Electromagnets
- 2.6 Cast Ferromagnetic Metals
- 2.7 Wrought Ferromagnetic Metals
- 2.8 Secondary Metal Processing
- 2.9 Introduction to Magnetic Particle Examination Equipment and Materials
- 2.10 Non-Portable Magnetic Particle Examination Equipment
- 2.11 Portable Magnetic Particle Examination Equipment
- 2.12 Lighting Equipment
- 2.13 Magnetic Particle Materials
- 2.14 Field Testing Devices
- 2.15 Light Meters
- 2.16 Part Preparation
- 2.17 Technique Selection
- 2.18 Magnetizing Currents
- 2.19 Sample Examination #1
- 2.20 Sample Examination #2
- 2.21 Sample Examination #3
- 2.22 Sample Examination #4
- 2.23 Magnetic Particle Examination Standards

Level 3

Introduction to Non-Destructive Examination Commercial

- 3.1 What is Nondestructive Examination?
- 3.2 The NDE Process
- 3.3 Materials
- 3.4 Metals Manufacturing and Processes
- 3.5 Testing of Material Properties
- 3.6 Loads, Stresses, and Discontinuities
- 3.7 Fracture Mechanics
- 3.8 NDE Methods
- 3.9 Personnel Qualification

Visual Testing Commercial

- 3.10 Introduction to Visual Testing
- 3.11 Light
- 3.12 Standard Inspection Techniques
- 3.13 Visual Testing Equipment
- 3.14 Hierarchy of Product Standards
- 3.15 Visual Testing of Castings
- 3.16 Visual Testing of Rolled Products
- 3.17 Visual Testing of Welds
- 3.18 VT in Industrial Components