Non-Destructive Testing (NDT) Techniques Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Non-Destructive Testing (NDT) is a critical component of modern industrial inspection and quality assurance. This course provides comprehensive, hands-on training in advanced NDT techniques, enabling professionals to detect material flaws, ensure structural integrity, and enhance operational safety without causing damage to the components. Participants will gain expertise in ultrasonic, radiographic, magnetic particle, eddy current, and liquid penetrant testing methods, leveraging cutting-edge tools and industry-standard protocols. By integrating practical demonstrations with theoretical knowledge, this program equips learners with the skills to optimize inspection processes, mitigate risk, and comply with global safety standards.

Non-Destructive Testing (NDT) Techniques Training Course is designed for engineers, quality assurance specialists, and inspection professionals, this training emphasizes real-world applications and industry case studies to bridge the gap between theory and practice. Participants will explore trending advancements such as digital radiography, phased array ultrasonic testing, and AI-assisted defect detection. Emphasis is placed on precision, reliability, and adherence to ISO and ASNT standards. By the end of the program, attendees will possess the confidence to execute critical inspections, interpret results accurately, and contribute to safer, more efficient industrial operations across oil & gas, aerospace, manufacturing, and infrastructure sectors.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Master advanced ultrasonic testing (UT) techniques for flaw detection and thickness measurement.
2. Gain hands-on expertise in radiographic testing (RT) using digital and film-based methods.
3. Develop proficiency in magnetic particle testing (MT) for ferromagnetic materials.
4. Learn eddy current testing (ECT) for surface and subsurface defect identification.
5. Understand liquid penetrant testing (PT) procedures for detecting cracks and porosity.
6. Apply phased array ultrasonic testing (PAUT) for complex geometry inspection.
7. Implement automated NDT systems for efficiency and repeatability in industrial inspections.
8. Interpret NDT results using AI-assisted defect recognition and digital analysis tools.
9. Ensure compliance with ISO, ASTM, and ASNT standards in all inspection procedures.
10. Enhance risk assessment and safety protocols in industrial applications.
11. Integrate predictive maintenance techniques using NDT data for asset reliability.
12. Explore case studies in aerospace, oil & gas, and infrastructure for real-world problem solving.
13. Foster professional competency for NDT certification and career advancement.

Target Audience

1. Quality Assurance Engineers
2. Mechanical and Civil Engineers
3. NDT Inspectors and Technicians
4. Maintenance and Reliability Professionals
5. Welding and Fabrication Supervisors
6. Aerospace and Automotive Engineers
7. Oil & Gas Industry Professionals
8. Safety and Compliance Officers

Course Modules

Module 1: Introduction to NDT

- Overview of NDT techniques and applications
- History and evolution of NDT

- Key standards-ISO, ASTM, ASNT
- Safety protocols in NDT
- **Case Study:** Real-world failure detection in pipeline inspection

Module 2: Ultrasonic Testing (UT)

- Principles of sound waves and flaw detection
- Equipment selection and calibration
- Hands-on flaw detection exercises
- Interpretation of ultrasonic signals
- **Case Study:** Detection of internal defects in aerospace components

Module 3: Radiographic Testing (RT)

- Fundamentals of X-ray and gamma ray inspection
- Film vs digital radiography
- Image evaluation and defect identification
- Radiation safety and handling
- **Case Study:** Weld inspection in oil refinery pipelines

Module 4: Magnetic Particle Testing (MT)

- Magnetic field principles in flaw detection
- Wet vs dry particle methods
- Surface and near-surface defect identification
- Equipment operation and maintenance
- **Case Study:** Detection of cracks in heavy machinery components

Module 5: Liquid Penetrant Testing (PT)

- Dye penetrant vs fluorescent methods
- Surface preparation and inspection techniques
- Interpretation of results
- Safety and environmental considerations
- **Case Study:** Identification of porosity in castings

Module 6: Eddy Current Testing (ECT)

- Principles of electromagnetic induction
- Surface and subsurface flaw detection
- Calibration and signal analysis
- Applications in tubing, aircraft, and automotive industries
- **Case Study:** Crack detection in aircraft landing gear

Module 7: Advanced NDT Techniques

- Phased Array Ultrasonic Testing (PAUT)
- Time of Flight Diffraction (TOFD)
- Automated NDT systems
- AI-assisted defect detection
- **Case Study:** Inspection of complex aerospace structures

Module 8: NDT Data Interpretation & Reporting

- Analysis of inspection data
- Preparing professional NDT reports
- Predictive maintenance applications
- Compliance with international standards
- **Case Study:** Asset integrity management in oil & gas plants

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

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