Welding Engineering and Inspection 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

Welding engineering and inspection play a pivotal role in ensuring the structural integrity, safety, and longevity of critical industrial components. With industries such as oil & gas, aerospace, construction, and manufacturing increasingly relying on advanced welding technologies, professionals must master both theoretical principles and practical inspection techniques. This comprehensive training program equips engineers, supervisors, and quality inspectors with in-depth knowledge of welding processes, codes, standards, and defect analysis.

The course combines state-of-the-art methodologies with hands-on workshops, empowering participants to optimize welding quality, minimize failures, and comply with international standards. By integrating real-world case studies, advanced non-destructive testing (NDT) methods, and quality management systems, participants gain actionable skills that directly translate into operational efficiency, safety, and regulatory compliance. Welding Engineering and Inspection Training Course ensures professionals stay ahead in a highly competitive and technologically evolving industry.

Programme Curriculum

Welding Engineering and Inspection Training Course

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Course Objectives

1. Understand the principles of welding metallurgy and material behavior.
2. Master welding processes including SMAW, GTAW, GMAW, and FCAW.
3. Develop expertise in welding codes, standards, and compliance
4. Identify and analyze welding defects and implement corrective measures.
5. Conduct advanced weld inspection techniques using NDT methods.
6. Apply quality assurance and quality control (QA/QC) in welding projects.
7. Improve welding process optimization for efficiency and cost-effectiveness.
8. Gain skills in failure analysis and root cause investigation.
9. Enhance knowledge of welding safety practices and hazard mitigation.
10. Utilize welding documentation and reporting tools effectively.
11. Integrate digital welding technologies and automated inspection systems.
12. Implement project-based learning through industrial case studies.
13. Prepare for certifications and professional development in welding engineering.

Target Audience

1. Welding Engineers
2. Quality Control/Assurance Inspectors
3. Fabrication Supervisors
4. Maintenance Engineers
5. Project Managers in Welding Industries
6. Mechanical Engineers
7. NDT Professionals
8. Industrial Safety Officers

Course Modules

Module 1: Fundamentals of Welding Engineering

- Principles of welding metallurgy and microstructure
- Types of welding processes and their applications
- Mechanical properties and heat-affected zones (HAZ)
- Welding symbols and blueprint reading
- **Case Study:** Failure analysis of a welded pressure vessel

Module 2: Welding Codes, Standards & Procedures

- ASME Section IX and AWS D1.1 standards
- ISO welding standards and international compliance

- Developing and qualifying welding procedures
- Understanding inspection and acceptance criteria
- **Case Study:** Inspection compliance in offshore oil & gas projects

Module 3: Welding Defects & Troubleshooting

- Common welding defects and causes
- Visual and dimensional inspection techniques
- Metallurgical and mechanical failure analysis
- Corrective and preventive measures in fabrication
- **Case Study:** Root cause analysis of pipeline cracking

Module 4: Non-Destructive Testing (NDT) Methods

- Ultrasonic Testing (UT) and Radiographic Testing (RT)
- Magnetic Particle Testing (MPT) and Dye Penetrant Testing (DPT)
- Eddy Current Testing (ECT) applications
- Inspection planning and reporting techniques
- **Case Study:** NDT application in aerospace component inspection

Module 5: Welding Quality Assurance & Control

- QA/QC processes in welding projects
- Inspection checklists and quality documentation
- Statistical Process Control (SPC) in welding
- Supplier and subcontractor quality management
- **Case Study:** Implementing QA/QC in a shipbuilding project

Module 6: Welding Safety & Risk Management

- Occupational safety in welding operations
- Fire and hazard prevention strategies
- Personal protective equipment (PPE) and compliance
- Emergency response planning
- **Case Study:** Safety audit in high-temperature welding workshops

Module 7: Welding Technology & Automation

- Advanced welding equipment and robotics
- Laser and friction stir welding technologies
- Automated welding and inspection systems
- Digital monitoring and process optimization
- **Case Study:** Automated welding in automotive manufacturing

Module 8: Industrial Case Studies & Project Work

- Analysis of real-world welding failures
- Cross-industry welding inspection scenarios
- Project-based hands-on workshops
- Reporting and presentation of findings
- **Case Study:** Weld inspection in LNG storage tank construction

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

Start Date	End Date	Location	Price
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

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com