INDEPENDENT TRAINING MANAGEMENT

Advances in Welding Technologies for Process Development

OVERVIEW

Advances in Welding Technologies for Process Development is a specialized technical training programme designed to equip engineers, welding professionals, production managers, and manufacturing technologists with in-depth knowledge of modern welding innovations and their application in industrial process optimization.

As industries move toward automation, high-performance materials, and stricter quality and sustainability requirements, welding processes have evolved significantly. This course explores the latest welding technologies, digital welding systems, advanced materials joining, process control methods, and quality assurance techniques that drive efficiency, consistency, and innovation in modern manufacturing environments.

LEARNING OUTCOMES

By the end of this course, participants will be able to:

- Understand the latest advancements in welding technologies and equipment
- Evaluate modern welding processes for different materials and applications
- Apply advanced welding techniques to improve process development and optimization
- Integrate automation, robotics, and digital monitoring into welding operations
- Improve weld quality, repeatability, and production efficiency
- Select appropriate welding methods for high-performance and emerging materials
- Implement best practices for quality control, inspection, and standards compliance
- Support sustainable and cost-effective welding process development

WHO SHOULD ATTEND

- Welding Managers
- Welding inspection personnel
- Welding supervisor personnel
- Project/Design Engineers
- Metallurgists
- Quality Control Technicians
- Quality Assurance Personnel
- Sales Professionals
- Purchasing Agents
- Project Managers/ Supervisors
- All personnel involved with welded fabrication

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Advances in Welding Technologies for Process Development

Overview of Modern Welding Technologies

- Evolution of welding processes
- Traditional vs advanced welding methods
- Role of welding in process development
- Industry trends and future directions

Advanced Arc Welding Processes

- Pulsed GMAW (MIG) and advanced waveform control
- Tandem and twin-wire welding
- Cold Metal Transfer (CMT) technology
- High-efficiency FCAW and SAW advancements

High-Precision and Solid-State Welding

- Friction Stir Welding (FSW)
- Laser Beam Welding (LBW)
- Electron Beam Welding (EBW)
- Hybrid laser-arc welding processes

Welding of Advanced and Emerging Materials

- High-strength low-alloy (HSLA) steels
- Stainless steels and duplex alloys
- Aluminium, magnesium, and titanium alloys
- Welding challenges in dissimilar materials
- Welding considerations for composites and coatings

Automation, Robotics, and Digital Welding

- Robotic welding systems and applications
- Adaptive welding and real-time process control
- Sensors, data acquisition, and weld monitoring
- Digital twins and smart welding technologies
- Integration with Industry 4.0 and smart factories

Welding Process Development & Optimization

- Process parameter selection and control
- Heat input management and distortion control
- Productivity improvement strategies
- Process validation and qualification
- Cost reduction through process optimization

Quality Assurance, Inspection, and Standards

- Welding procedure specifications (WPS) and qualifications
- Non-destructive testing (NDT) advancements
- Weld defect analysis and prevention
- Compliance with international welding standards (ISO, ASME, AWS)

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Live Online Training | 2 – 3 April 2026

R 8 999 PER DELEGATE

Booking Contact (Approving Official) Mr/Mrs/Ms

Full Names: _____

Company name: _____

Direct Tel No: _____ E-mail: _____ Fax: _____

VAT No: _____

Address: _____

Signature_____

Person Responsible for Finance: _____**Direct Tel No:** _____ **Date of Payment:**_____

BANKING DETAILS:

Independent Training Management Pty Ltd
Bank: FNB South Africa
Account Number: 62685879276
Branch Code: 251650
Branch: Randburg

THIS INVESTMENT INCLUDES:

THE FOLLOWING HEREBY CONFIRM ATTENDANCE TO THE WORKSHOP

Delegate1: Names_____

Position: _____ E-Mail: _____

Delegate 2: Names _____

Position: _____E-Mail: _____

Delegate 3: Names _____

Position: _____ E-Mail: _____

Delegate 4: Names _____

Position: _____ E-Mail: _____

Delegate 5: Names _____

Position: _____ E-Mail: _____

All fees are current at the time of going to print; however, we reserve the right to change them.

2. Additional Delegate Rates:

Additional delegate rates apply when bookings are made at the same time on the same course.

3. Confirmation Instructions:

On receipt of this submitted booking form and payment or purchase order you will receive a confirmation letter by email confirming your participation in the training event. This includes a location map with directions and venue details and starting times.

4. Attendance:

Please note that no learner will be permitted to attend any training course without proof of payment or an order no.

5. Delegate Substitution:

Substitutes can be made at any time without incurring a penalty. Please inform us in writing so we can make the necessary arrangements for the new learner.

6. Payment:

Payment can be made by cheque or by electronic transfer, and must be received 5 working days prior to the commencement of the course.

Please quote the reference number from your invoice and organisation name so that payments can be tracked. All cancellations must be done in writing and emailed directly to Independent Training. Management Inform us immediately if you have to re-schedule or cancel the booking so that we can inform the caterers and conference venue.

The following charges apply if you cancel:

- 11 - 30 days before a course = 10% of the course fee
- 6 – 10 days before a course = 20% of the course fee
- 4 – 6 days before a course= 30% of the course fee
- 1-3 days before a course = 50% of the course fee