ENGINEERING STAFF COLLEGE OF INDIA

Autonomous Organ of The Institution of Engineers (India)
(IMS [ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO 45001:2018],
ISO/IEC 17025:2017 Certified, AICTE & CEA Recognized Institution)
Old Bombay Road, Gachibowli, Hyderabad – 500 032. Telangana, India

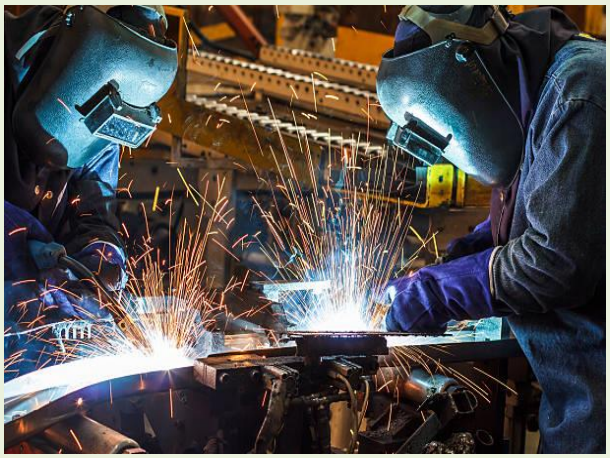
Management and Technology Division

Hybrid (Offline & Online) Continuing Professional Development Programme on

Advancements in Welding Techniques with Practical Understanding of Codes and WPS

Dates: 20 – 24 July 2026

at ESCI Campus, Hyderabad



INTRODUCTION

Welding remains a foundational process in modern manufacturing, construction, energy, and heavy engineering industries. With rapid advancements in materials, automation, and quality assurance systems, welding practices are continuously evolving to meet higher standards of safety, efficiency, and reliability. This Programme is designed to bridge the gap between theoretical knowledge and industrial application. The program focuses on both modern welding technologies and the critical role of welding standards and codes in ensuring structural integrity and compliance.

Participants will be introduced to advanced welding processes, including improvements in conventional arc welding, mechanized and automated welding systems, and emerging trends in high-precision welding applications. Alongside technical advancements, equal emphasis is placed on understanding internationally recognized welding codes such as ASME, AWS, and ISO standards, and how they govern real-world fabrication practices.

A key component of the training is hands-on exposure to **Welding Procedure Specifications (WPS)**, Procedure Qualification Records (PQR), and their interpretation and application in shop and field environments. Participants will learn how to read, implement, and evaluate WPS documents to ensure proper welding quality, defect control, and compliance with engineering requirements.

By the end of the program, participants will gain practical insight into modern welding techniques, enhanced awareness of quality assurance systems, and the ability to confidently apply welding codes and WPS in industrial scenarios.

OBJECTIVES

The main objective of the programme is to:

- To develop a strong understanding of advanced welding techniques and their industrial applications across modern manufacturing sectors.
- To familiarize participants with major welding codes and standards such as ASME, AWS, and ISO, and their practical significance in fabrication and inspection.
- To enable participants to interpret, understand, and effectively apply Welding Procedure Specifications (WPS) and related documents such as PQR and WPQ.
- To enhance practical skills in selecting appropriate welding processes, parameters, and consumables for different materials and joint configurations.
- To strengthen awareness of quality control, defect prevention, and compliance requirements to ensure safe, reliable, and code-compliant welds.

COURSE COVERAGE

The following course content will be detailed during the training programme:

1. Welding Processes and Advancements
Overview of conventional welding methods and recent technological developments, including mechanized and automated welding systems.

2. Welding Metallurgy
Fundamentals of metallurgical behaviour in welding, including heat-affected zones, phase transformations, and their effect on weld quality.

3. Welding Codes and Standards
Study of major codes such as ASME Section IX, AWS D1.1, and ISO standards with emphasis on their practical industrial applications.

4. Welding Procedure Specification (WPS)
Structure, preparation, interpretation, and implementation of WPS in fabrication and production environments.

5. Procedure Qualification and Welder Qualification
Understanding PQR and WPQ, including qualification requirements, testing methods, and documentation.

6. Selection of Welding Parameters
Guidelines for selecting appropriate welding processes, consumables, shielding gases, and parameters based on material and application.

7. Joint Design and Distortion Control
Principles of joint preparation, fit-up techniques, and methods to minimize welding distortion and residual stresses.

8. Weld Defects and Inspection Techniques
Identification of common weld defects, their causes, prevention methods, and introduction to NDT techniques.

9. Quality Control and Assurance in Welding
Overview of inspection stages, documentation practices, and compliance with quality requirements.

10. Practical Demonstrations and Case Studies
Hands-on exposure to welding practices and real-world industrial case studies for better understanding of applications.

METHODOLOGY

Methodology of the programme includes class room Sessions with Lecture/discussion with audio visual aid, benched marked practices if any, video shows, Chalk & Talk sessions, group discussions, case studies, debates, sharing of experiences, etc. All the sessions will be interactive demanding active participation from all the members.

TARGET PARTICIPANTS

Engineering Executives, Scientists, Technical officers, Technicians from various Defence Labs, Engineering managers, supervisors working in production, welding, R&D units, process planning, designs, maintenance and Quality Control / Quality Assurance in manufacturing and process industries like heavy equipment fabrication sectors, automobile, defence, aeronautical, electronics, power sectors (Generation–Thermal, Nuclear, Gas) medical products & precision instruments, petrochemicals, fertilizers, ordnance factories, public & private sectors enterprises will be highly benefited by attending the programme.

BENEFITS TO THE PARTICIPANTS

- Improved competency in advanced welding techniques and industrial applications
- Strong practical understanding of WPS, PQR, and WPQ documentation
- Ability to interpret and apply major welding codes (ASME, AWS, ISO)
- Enhanced skills in selecting correct welding processes and parameters
- Better identification and prevention of weld defects
- Increased awareness of quality control and inspection practices (including NDT basics)
- Improved capability to ensure code compliance in fabrication work
- Greater career readiness for roles in welding, QA/QC, and inspection domains

EXPERT FACULTY

The faculty for the programme consists of Eminent Experts from various Research and Manufacturing organisations besides the core faculty from ESCI.

PROGRAMME DIRECTOR

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PROGRAMME COORDINATOR

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PROGRAMME DATES & TIMINGS

Dates: 20 – 24 July 2026

Timings : On the first day Registration will commence at **09:00 Hrs**. On all other days the programme timings will be from **09:45-17:15 Hrs** with breaks in between for tea and lunch.

COURSE FEE: **Rs.27,500/- (Rupees Twenty Seven Thousand & Five Hundred only)** per Participant + GST@18% Extra. Fee includes, course material, course kit, twin-sharing/single AC accommodation as per availability, breakfast, lunch, dinner, tea / coffee and snacks during the actual days of training programme.

Online: WebEx platform

Rs. 17,500 /- (Rupees Seventeen Thousand & Five Hundred only) per participant + GST@18% Extra. Fee includes, course material, course kit & Institute overheads.

DISCOUNTS

- **Non-Residential Fee:** 10% discount on course fee is allowed for non-residential participants.
- **Group Discount:** Additional 10% discount for three or more participants if sponsored by the same organization.

PAN Card No AAATT3439Q; GST No. 36AAATT3439Q1ZV. **H.S. No. 999293** (Under commercial training or coaching services – clause 65(105) (ZZC) of Finance act – 1994).

Programme fee is to be paid in in favor of **"THE INSTITUTION OF ENGINEERS (INDIA) – ENGINEERING STAFF COLLEGE OF INDIA"** in the form of demand draft payable at Hyderabad. Alternatively, the payment may be made by Electronic Fund Transfer (EFT) to ESCI - **SB A/c No.0432104000039631 with The IDBI Bank Ltd., Gachibowli Branch, Plot No. 2-53/2, JNIBF, IIIT Junction, Gachibowli, Hyderabad-500032 by RTG's/ NIFT / IFSC Code No: IBKL0000432.** While using EFT method of payment, please ensure to communicate us your company name, our Invoice reference and programme title.

CERTIFICATION

A Certificate of participation will be awarded to each participant on conclusion of the programme.

GENERAL INSTRUCTIONS

- ESCI encourages participants to present case studies from their respective organizations.
- ESCI provides complimentary accommodation and boarding to the participants one day before commencement (Check-in 1200 h) and one day after conclusion (Check-out 1200 h) of the programme duration. Overstay charges will be applicable as per ESCI rules (subject to availability of accommodation).
- Well-developed Information Centre and Internet facilities are available to the participants free of cost.