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

5-Day Hybrid (Offline & Online) Continuing Professional Development Programme on

Integrated Foundry Technologies and Heat Treatment Practices for Quality Metal Components

Dates: 18 - 22 May 2026

at ESCI Campus, Hyderabad

INTRODUCTION

The 5-Day Professional Training Programme on Integrated Foundry Technologies and Heat Treatment Practices for Quality Metal Components is designed to equip professionals with comprehensive knowledge of modern casting processes and advanced heat treatment techniques. In today's competitive manufacturing environment, achieving superior quality, consistency, and performance of metal components requires a strong integration of foundry operations with appropriate thermal processing methods. This programme provides a structured understanding of key processes such as moulding, melting, solidification, and heat treatment, along with their direct impact on material properties and product reliability.

The programme also focuses on practical challenges faced in industrial environments, including defect analysis, process optimization, and quality assurance. Through expert sessions, case studies, and interactive discussions, participants will gain insights into improving productivity, reducing costs, and adopting best practices in foundry and heat treatment operations. Emphasis is also placed on safety, sustainability, and emerging technologies such as automation and Industry 4.0, enabling participants to align their practices with current industry standards and future trends.

OBJECTIVES:

The Major objectives of this training programmes are

- To provide a comprehensive understanding of modern foundry technologies and their role in producing high-quality metal components.
- To enhance participants' understanding of heat treatment processes
- To enable participants to identify, analyze, and minimize casting and heat treatment defects through systematic approaches.
- To integrate foundry operations with appropriate heat treatment practices for achieving desired mechanical and metallurgical properties.
- To provide insights into process optimization, cost reduction, and productivity improvement in foundry and heat treatment operations.

COURSE COVERAGE

The following topics will be deliberated during the training programme:

Fundamentals of Foundry Technology

- Introduction to Foundry Industry & Applications
- Types of Casting Processes (Sand, Die, Investment, etc.)
- Pattern Making & Moulding Techniques
- Gating & Risering System Design

Melting, Pouring & Solidification

- Melting Furnaces (Induction, Cupola, Electric Arc)
- Metal Melting Practices & Temperature Control

- Pouring Techniques & Safety Measures
- Common Casting Defects: Causes & Remedies

Heat Treatment Fundamentals

- Phase Diagrams & Metallurgical Transformations
- Annealing, Normalizing, Hardening & Tempering
- Furnaces & Temperature Control Systems
- Heat Treatment Defects and Prevention

Advanced Heat Treatment & Integration with Foundry

- Surface Hardening Techniques (Carburizing, Nitriding, Induction Hardening)
- Alloy Steel & Special Materials Heat Treatment
- Integration of Casting and Heat Treatment Processes

Quality Assurance and Industry Practices

- Quality Management Systems in Foundry (ISO Standards)
- Environmental & Safety Practices in Foundry Operations

METHODOLOGY

Our core curriculum of knowledge facilitation includes workshop sessions with lecture/discussion with audio visual aids, demonstration and practice, bench 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

The program is extremely useful for Scientists, Engineers, Managers, Planners & Schedulers, Stores Supervisor, Maintenance Engineers and Reliability Engineers who are dealing with castings and heat treatment and working in Mining, Manufacturing, Cement, Power Plants, Paper Mills, Oil Refineries, Dockyards, Indian Ports, Pharma, Shipbuilding Industries, Automobile, Aeronautical, and R&D establishments, which include public and private sector organizations.

COURSE OUTCOME:

By the end of the programme, participants will be able to:

- Understand and apply modern foundry techniques for producing high-quality metal castings with improved consistency and performance.
- Analyze casting processes including moulding, melting, pouring, and solidification, and identify areas for improvement.
- Select appropriate heat treatment processes based on material composition and desired mechanical properties.
- Identify and troubleshoot casting and heat treatment defects using systematic problem-solving approaches.
- Apply safety and environmental best practices in day-to-day industrial operations.

EXPERT FACULTY

The faculty also consists of Eminent Experts from Process Industry, Manufacturers, and Service providers beside core faculty from ESCI.

PROGRAMME DIRECTOR

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PROGRAMME COORDINATOR

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PROGRAMME DATES & TIMINGS

Dates: 18 – 22 May 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 and 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 and Five Hundred only) per participant + GST@18% Extra.

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.