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

Corrosion Engineering, Advanced Materials for Corrosion Resistance Coatings and Emerging Applications

Dates: 21 – 24 July 2025

at ESCI Campus, Hyderabad

INTRODUCTION

Minerals are converted to metals in order to benefit from their useful properties. The properties are further enhanced by alloying, working and heat treating. However, all these steps involve a heavy expenditure of resources and energy in various metallurgical operations. The cost to environment is also significant. Unfortunately, over a period, through the process of corrosion, the metal tends to get back to the combined form, which is more stable. Corrosion has been termed **"Cancer of industry".**

The cost of loss due to corrosion is estimated to be 3 to 5% of GDP. Any attempt to slow down this process of material degradation will mean huge savings in resources and lesser burdening of the environment. Corrosion Control is more economical than loss of materials. It also enhances safety, for example, by preventing collapse of corroded bridges and fall from corroded ladders. The cost of corrosion and the consequent failures can be reduced substantially, if the mechanism of corrosion and its mitigation is understood.

An understanding of the underlying principles of corrosion science and engineering and knowledge of the multitude of techniques that have been developed to combat corrosion greatly aid the engineer in prevention or at least retardation of corrosion. The corrosion control methods, e.g., the cathodic protection, proper materials selection, using the inhibitors, and the proper designing, are very essential to be understood in order to reduce the cost of corrosion.

Surface engineering involves altering the properties of the Surface Phase in order to reduce the degradation over time. This is accomplished by making the surface robust to the environment in which it will be used. The subject of Surface engineering provides strategies towards minimal corrosion.

OBJECTIVES

The objectives of the programme are:-

- To understand the basic principles of corrosion and its consequences
- To understand the fundamentals of materials selection for mitigating the corrosion problems.
- To understand the surface phenomenon concepts for corrosion occurrence and control.
- To have an overview of the concepts of coating for high and low temperature applications
- To learn the current trends and emerging technologies for Corrosion control.
- To gain knowledge of Tests and Standards used in Corrosion.

COURSE COVERAGE

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

- Fundamentals of Corrosion: Phenomena & Mechanism
- Types of Corrosions and preventions
- Types of metallic Corrosion
- Corrosion Controls & Corrosion Inhibitors:
- Corrosion prevention Methods: Barrier Coatings, Hot-Dip Galvanization, Alloyed Steel, Cathodic and Anodic Protection

- Corrosion related failure analysis
- Introduction to Coatings - Concepts, Processes and Applications
- Metallic and Inorganic Coatings, Organic Coatings and Linings
- Electro and electro less coatings
- Surface Engineering for prevention of corrosion and material degradation.
- Recent developments in Corrosion and Surface Engineering with Emerging Technologies
- Corrosion Testing, Standards and Quality Assurance
- Selection of materials for oil, chemical, gas, naval 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. Case Method of Instructions will be the main method of knowledge facilitation. Technical Field and Social visits are integral part of the training methodology.

TARGET PARTICIPANTS

Senior & Middle Level Engineers, Executives, Managers and Quality Assurance Executives, Scientists, responsible for maintenance & operation of equipment/systems pertaining to Power plants, Refineries, Fertilizers, Pharmaceuticals, Railways, Power Plants, Nuclear Industries Chemical Engineering set ups, Navy, Army Air force, Production and Manufacturing set ups. In addition faculty from academic institutions will also be benefitted by the course. Defence Establishments like Dockyards, Base Repair Depots, EME Workshops will find it very useful, leading them to excel in their performance.

BENEFITS TO THE PARTICIPANTS

- Understanding the types and occurrence of corrosion.
- Understand methodologies for corrosion control
- Gain knowledge in mitigating corrosion risks in their respective domains at their work places.
- Have knowledge of the advanced materials as substitutes for better corrosion control.
- Gain knowledge about the testing and standards used in corrosion.

EXPERT FACULTY

The faculty consists of experts from industry, research establishments and academia besides that from ESCI.

PROGRAMME DIRECTORS

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PROGRAMME DATES & TIMINGS

Dates: 21 – 24 July 2025

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.22,000/- (Rupees Twenty Two Thousand 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. 13,000 /- (Rupees Thirteen Thousand 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.

Note: GST Nil for Central Govt. Departments (like DRDO, DGQA & Govt. Departments).

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.