

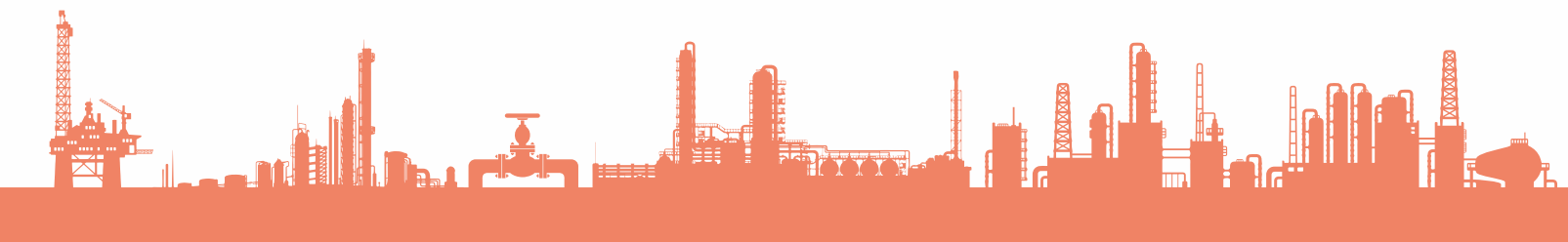


A Navratna Company

# OPEN PROGRAMS

...Sharing Engineering Knowledge of 5 Decades

TRAINING CALENDAR 2017-18





## ABOUT EIL

Engineers India Ltd. (EIL) is a leading global engineering consultancy and EPC company. The Company has a diverse portfolio comprising Hydrocarbon, Chemicals & Fertilizers, Mining & Metallurgy, Infrastructure, Water and Waste Management, Solar & Nuclear Power sectors.

EIL has emerged as a 'Total Solutions' engineering consultancy company providing design, engineering, procurement, construction and integrated project management services from 'Concept to Commissioning' with highest quality and safety standards. It also provides specialist services such as heat and mass transfer equipment design, environmental engineering, specialist materials and maintenance and plant operations and safety services.

Over the past five decades, EIL has executed more than 5000 projects including over 400 major projects. These projects, successfully completed and operating smoothly (in most cases at more than rated capacity), have created an array of satisfied clients. EIL has secured many repeat businesses from clients; a sign of client satisfaction, confidence and trust reposed in EIL.

EIL has earned the reputation of being a veritable treasure of technical knowledge, skills and professional competence. We have worked with almost all process licensors and a large number of engineering/

contracting companies worldwide and are well versed with international engineering codes and practices. With an workforce of over 2900 experienced employees determined to deliver projects, EIL offers an advantage to clients like none other.

This long standing experience enables EIL to mentor and provide training to its collaborators in the business, through structured training programs.

“ Over the past five decades, EIL has executed more than 5000 projects including over 400 major projects worth USD 200 Billion in total cost. ”

For last few years, EIL has been conducting customized training programs for various organizations in India and abroad to meet client needs, and various exclusive programs have been delivered at client premises. Additionally, open programs on select topics are being organized in the state-of-the-art Training Centre at Gurgaon, Haryana, set in an idyllic environment. Experienced faculty members create an environment wherein participants are encouraged to challenge the status quo and develop critical thinking skills.

The ambience at the Training Centre situated in sprawling 34 acre complex has been custom-made to provide an engaging and enriching experience for the participants.



# CUSTOMIZED PROGRAMS AT CLIENT PREMISES

## Overview

Customized Programs are tailor-made programs for executives drawn from a single organization or consortium. This provides opportunity to discuss technical issues in an open and transparent manner, with the aim of finding a specific solution.

## Target Audience

Customized Programs are typically designed for engineers at junior, middle and senior level(s) to help in their overall professional development. EIL has been organizing customized technical training programs at various client locations in India and abroad.

## Approach

Customization of training programs is based on client specified needs, drawn from the spectrum of following competencies required in hydrocarbon, petrochemical and infrastructures sectors, conjoined and/ additional topics, to meet desired expectations.

## Duration

The customized programs are of minimum 2-days duration and up to a week or two, based on program content.



## Benefits

The customized programs help participants to understand the concept, both theoretically and practically through presentations, audio-visual aids and hands-on exercises. Real time case studies are also discussed to provide required insights.

Design aspects are based on National/ International standards/ codes of practices.

## Process Engineering

The module provides insights into the following areas:

- Refinery Process- an overview
- Petrochemical Processes-an overview
- Improving Energy Efficiency in Refineries
- Bottom upgradation options for value addition in Refineries
- Process safety management for lifecycle of a plant
- Procedures for safety studies (HAZOP/SIL/Risk Analysis)
- Plant Shutdown & Turnaround
- Sulfur Block Technologies
- Pinch Technology
- Separation-Advanced Technologies (Distillation Column Internals)
- Computational Fluid Dynamics
- Secondary Processing Technologies
- Bottom Upgradation Technologies
- Gasification/Bottom of Barrel

## Plant Layout and Fire Protection System

- Overall Plot Plan Development
- Waste Collection and Conveying Systems
- Fire Protection Systems

The module is aimed to provide an insight and overview of the following:

- **Development of Overall Plot Plan in compliance to statutory norms.**
  - Requirements of International codes & standards
  - Selection of site for locating the plant
  - Process flow sequence
  - Location of facilities maintaining safe inter distances
  - OISD requirements
- **Waste Collection and Conveying Systems.**
  - Type of Hydrocarbon waste
  - Segregation of Hydrocarbon waste
  - Collection system of waste
  - Conveying of waste up to treatment plant in a safe system
- **Fire Protection Systems for Oil and Gas installations.**
  - Fire Protection philosophy
  - Requirements of International codes & standards
  - Classification of Hydrocarbons based on ignition temperature
  - Selection of fire protection as per risk involved
  - Hydraulic analysis of fire water network
  - OISD requirements

## Piping

The module is aimed to provide an insight and overview of the following:

- Equipment Layout
- Piping Layout and supporting
- 3D Modeling

These modules provide an insight into the factors to be considered while developing an Equipment Layout. The modules also give an introduction to the technologies available for 3D modeling of units in the Hydrocarbon industry along with an overview about the advantages of the same.

### Rotating Equipments

- Turbines
- Compressors
- Pumps

**The module highlights salient aspects for selection/design of the following equipments:**

- Turbines (Steam, Gas)
- Compressors (Centrifugal, Reciprocating, Rotary)
- Pumps (Centrifugal, Reciprocating, Rotary)

**The module is designed to familiarize participants with the following aspects:**

- Equipment Sizing
- Equipment Sealing Methods
- Equipment Testing
- Equipment Codes and Standards
- Equipment Inspection
- Design Features
- Equipment Operation
- Efficiency, Reliability, and Longevity
- Equipment Selection

### Packaged Equipments

- Nitrogen Generation System
- Compressed Air System
- Refrigeration System
- Extruders
- Hoppers/Silos

**The module is aimed to provide an insight and overview of the following systems:**

- Compressed Air System
- Nitrogen Generation System
- Extruders
- Hoppers/Silos
- Refrigeration System

**This module will cover the following areas:**

- Application and importance of utility systems
- Types of Nitrogen Generation System, Compressed Air System and Air Dryer types
- Selection criteria from application point of view.
- Detailed description with reference to GAD's, P&ID's, and data sheets etc.
- Design Aspects, configuration and layout details (including interface etc.)

### Static Equipments

- Pressure Vessels
- Storage Tanks
- Heat Exchangers
- Specialized Static Equipments – Reactors & RR Package

**The module highlights salient aspects for selection/design of the following equipments:**

- Pressure Vessels
  - Storage Tanks
  - Heat Exchangers
  - Specialized Static Equipments – Reactors & RR Package
- The module covers information about the specialized Static Equipments, Reactors & Reactor regenerator package. It provides an insight and overview of the design and factors considered while selecting the MOC of the equipment.

### Architecture

- Aspects of Green & Intelligent Building Design
- Green Building Rating Systems: GRIHA (Green Rating for Integrated Habit Assessment) National Rating System
- Building Simulation Software - An overview

**The module is aimed to provide an insight and overview of the following:**

- Aspects of Green & Intelligent Building Design
- Green Building Rating Systems: GRIHA (Green Rating for Integrated Habit Assessment) National Rating System
- Building Simulation Software-An overview

These modules shall enable the participant understand the aspects of Green and Intelligent Building Concept and Design, further this shall also provide an overview of the latest software being used.

### Structural

- Wind Analysis & Design
- Seismic Analysis & Design

**The module is aimed to provide an insight and overview of the following:**

- Wind Analysis & Design
- Seismic Analysis & Design

**The thrust shall be on the following structures:**

- Buildings
- Major Foundations
- PipeRack
- Technological structures

This module gives an insight and overview of Codal requirements for analysis and design of structures. Also this shall also provide an overview of the application aspects of the same in the latest software being used.

### Electrical

- Hazardous Area Classification
- Electrical Equipment selection in Hazardous Area
- Basic Electrical Engineering Concepts, SLD, Power Distribution & System Analysis

**The modules capture the insight and overview of Hazardous Area Classification and Electrical Equipment Selection in Hazardous Area with following thrust areas:**

**Hazardous Area Classification**

- Basic concepts and definitions related to Hazardous area classification
- Basis of recommended practices for Hazardous area classification for flammable gases & vapours specifically considering the Indian standards
- Classifications of flammable and combustible liquids
- Hazardous area Zones as per Indian standards
- Grades of release, relationship between grade of release, ventilation and hazardous area zones
- Ignition characteristics of the flammable material (Gas Group) and ignition temperature (Temperature classification)
- Extents of classification for specific equipments

from source of release in petroleum refinery & hydrocarbon industry.

- Latest trends of hazardous area classification as per IEC standards which may be adopted by BIS in future
- **Electrical Equipment Selection in Hazardous Area**
  - Zones, Gas Groups and Temperature Classification for Electrical Equipment
  - Enclosure Ingress Protection IP/ NEMA ratings
  - Equipment Protection Levels (EPLs)
  - IS / IEC Codes for Explosion Protection Electrical Equipment
  - Techniques for Explosion Protection Electrical equipment
  - National and International Testing Agencies for Explosion Protection Electrical Equipment
- **Basic Electrical Engineering Concepts, SLD, Power Distribution & System Analysis**
  - Concepts related to preparation of SLD & design of power system components
  - Voltage drops and short circuit capacities
  - Normal, emergency & critical power system concepts
  - Electrical Equipment sizing criteria
  - Neutral earthing & plant earthing concepts
  - Control, protection and metering requirements
  - Substation sizing and switchyard concepts
  - Cable laying and plant lighting concepts

### Instrumentation in Refinery Industry

**The module captures the overall role of Instrumentation and Control in refinery complex with the following thrust areas:**

- Overview of Instrumentation, Control and automation for Hydrocarbon Installation
- Hazardous Area Classification and Equipment selection, Intrinsic Safety - concepts solutions and implementation
- Hydrocarbon Transportation-Custody Metering and Loading System
- Blending Automation
- DCS- Concept & Engineering and PLC-Concept & Engineering
- Tank Farm Management System-An overview
- Analyzers-An overview
- Fire & Gas Detection systems-An overview
- Field bus Engineering
- Wireless Instrumentation in Process Industry
- Level and temperature measurements in double wall storage tanks

### Instrumentation in Petrochemical Industry

**The module captures the overall role of Instrumentation and Control in Petrochemical complex with the following thrust areas:**

- Overview of Instrumentation, Control and automation

for Hydrocarbon Installation

- Hazardous Area Classification and Equipment selection, Intrinsic Safety - concepts solutions and implementation
- DCS- Concept & Engineering and PLC-Concept & Engineering
- Analyzers-An overview
- Fire & Gas Detection systems-An overview
- Field bus Engineering
- Wireless Instrumentation in Process Industry

### Instrumentation in Pipelines

**The module captures the overall role of Instrumentation and Control in Pipelines with the following thrust areas:**

- Pipeline SCADA system Engineering
- Hydrocarbon Transportation-Custody Metering and Loading System
- Leak Detection System

### Environmental Engineering

**The module is focused on the Environmental issues concerning in the Oil and Gas Sector:**

- Pollution measurement & control methodologies
- Refinery/Petrochemical Process- an overview and issues, challenges
- Technologies scanner- Air, Water, Noise
- Water recycling for zero effluent discharge
- Sulfur Recovery Technologies, WAO, ETP,VRU
- Environmental Impact Assessment
- 'Look ahead' into the emission norms and their future perspective
- Statutory Norms and Standards: Learn all the codes and standards applicable for Environment

### Pipeline Engineering

- Onshore Pipelines • Offshore Pipelines

**The module gives an overview of the activities involved in Onshore and Offshore Pipelines.**

- Pipeline Engineering Basics
- Pipeline Material Selection
- Pipeline Design
- Pipeline Welding
- Pipeline Routing and Construction
- Internal Pipeline Corrosion
- Monitoring of Internal Pipeline Corrosion
- Pipeline Inspection, Operation and Maintenance

### Specialised Service

**The module caters to the Specialist Service areas with focus on the following:**

- Refractories for Chemical Process Industries
- Materials selection in Oil and Gas Industries
- Corrosion, Corrosion Control and Monitoring in Oil and Gas Industries
- Water Treatment for Corrosion Control
- Health study and RLA for Oil and Gas Industry

- Design of Refinery Distillation Columns
- Mass Transfer
- Efficiency Improvements in Existing Air Coolers
- Fired Equipment NOx Emissions and Control Techniques
- Welding Techniques
- NDT Techniques

### Special Programs

**Following are the modules relevant in today's era of shrinking margins:**

- Value Add through Refinery and Petrochemical Integration
- Value Add options for a refinery through Coke/ Slurry Gasification
- Layout Engineering
  - Development of Equipment Layout
  - Development of overall plot plan in compliance to statutory norms

- Catalytic olefins and its relevance in the Indian context
- Gas integration to Refinery

### Project Management

**The module gives an overview of the Project Management, Project Planning & Control and Construction Management activities:**

- Overview of Project Planning & Control System
- Construction Planning System
- Progress Measurement Concepts and Techniques
- Commercial and Technology contracts
- Strategic Procurement Management
- Project Implementation Methodologies
- Risk Management during Project Execution
- Construction Management Methodologies
- Quality Management System at construction sites
- HSE Management Concepts and Practices
- Heavy Lift Erection Techniques

## Open Programs conducted at EIL Gurugram (2016-2017)



- Engineering (Design) & Laying of Subsea & Onshore Pipeline including Horizontal Directional Drilling(HDD) Techniques
- Management and Control of Effluent: Operational and Handling Issues in Oil Industry
- Engineering (Design) of Piping/Equipment Layout
- Environmental Impact Assessment-Statutory norms and standards
- PLC and DCS - Overview & its engineering Foundation Field Bus- Introduction and Engineering SCADA System Engineering
- Selection Requirements of Rotary Equipment- Pumps, Compressors and Turbines
- Preparation and Finalization of Electrical Design Basis and Selection of Electrical Equipment in Hazardous Area
- Design Aspects for Refineries and Insulation for Oil & Gas Industry
- Revamping of Process Units
- Procedure for Rapid Risk Analysis (RRA)/ Quantitative Risk Analysis (QRA)



### Contact

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