BOOST
THE LEADING TRAINING PROVIDER

Civil Engineering

Introduction to Facilities Engineering

Course Introduction

This training program consists to develop the knowledge and skill for the design requirement in each phase of engineering project named conceptual, basic and detailed design or using international terminology: Design Basis), Project proposal, conceptual, basic and detailed designs.

The training program covers the most important aspects of engineering disciplines in the different phases of the design: civil, mechanical, process, electrical; safety, instrumentation and control, communication system, piping and pipeline, and value engineering.

Target Audience

- Process, Mechanical,
- Instrumentation and control
- Civil and Electrical engineering.
- Engineering Project Managers.

Learning Objectives

- Understand the sequence and phases of project execution.
- Learn cost impact and benefits at each project phase.
- Recognize key deliverables in Conceptual, Basic, and Detailed Engineering.
- Define project scope and resources in the Facilities Design Basis.
- Assess the role of design contractors and construction agencies.
- Learn how to estimate costs during the design phase.
- Understand key elements of process engineering and deliverables.
- Evaluate risks, environmental impacts, and operational philosophies in Conceptual Engineering.

- Develop preliminary designs in mechanical, civil, electrical, and instrumentation engineering.
- Learn how to perform cost estimations and layout evaluations.
- Understand risk analysis and safety requirements in Conceptual Engineering.
- Finalize process layout and equipment specifications.
- Understand the importance of energy requirements and material specifications in Basic Engineering.
- Learn to consolidate basic engineering and perform risk analysis.
- Dive into detailed engineering design and deliverables for mechanical, civil, electrical, and instrumentation engineering.
- Perform detailed cost and risk evaluations.
- Learn how to assess HSE requirements for final project delivery.

Course Outline

- **01 DAY ONE**

  Introduction

  - Project Initial evaluation
  - Project execution sequence
  - Benefits.
  - Cost impact vs project phase.
  - Standards to be applied.
  - Activities and deliverables in each phase of project development.
  - Conceptual Engineering phase.
  - Basic Engineering phase.
  - Detailed Engineering phase.
  - Estimated costs

  Facilities Design Basis

  - Definition of the main element of the project scope (what would be built)
  - Definition of the project scope of work
  - Deliverables
  - The plan

- Resources

- **02 DAY TWO**

Facilities Design Basis (cont.)

- Design contractor information
- Construction agency to effectively plan and execute the project
- Cost estimation
- Conceptual Engineering

Process Eng.

- Input verification.
- Evaluation of probable process strategies.
- Typical deliverables (FD, main equipment list, preliminary specification of process elements, preliminary risk considerations, uncertainty estimation of product quality, environmental impact estimation, operational philosophy).
- Review of real case examples

Mechanical Eng.

- Preliminary layout.
- Evaluation and preliminary sizing of pipeline, piping and process equipment.
- Cost estimation.
- Review of real case examples

- **03 DAY THREE**

Conceptual Engineering (cont.)

- Piping and pipelines
- Preliminary layout.
- Evaluation and preliminary sizing of pipeline, piping and process equipment.
- Cost estimation.
- Review of real case examples

Civil Eng.

- Evaluation and identification of main construction elements.
- Preliminary sizing and Cost estimation

- Real case revie
- Electrical Eng.
    - Preliminary electrical power requirements.
    - Evaluation of power sources
    - Power distribution strategy
    - Cost estimation
    - Real case review

Instrumentation Eng.

- Identification of instrumentation and control requirements.
- Evaluation of control strategies.
- Identification of main instrumentation.
- Cost estimation
- Real case revie

Review of Conceptual Engineeri

- PFD and UFD development and approva
- Sizing of process equipmen
- Risk analysi
- Safety requirements
- Environmental impact evaluation
- Review of operational philosophy.
- Global test definition

• **04 DAY FOUR**

Basic Engineering (and FEED)

- Mechanical Eng.
- Final process layout.
- Piping and equipment layouts.
- Specifications of mechanical equipment
- Maintenance guidelines.
- Energy requirements.
- Pipeline preliminary design.
- Material specifications.
- Material estimation.

- Definition of tests for mechanical equipment
- Cost estimation

Civil Eng.

- Loads estimation.
- Preliminary design of buildings, foundations and main structures.
- Roads.
- Cost estimation.
- Electrical power estimated consumptions.
- Power generation/supply specifications.
- Energy distribution system specifications.
- Main electrical equipment specifications.
- Area classification definition.
- Cost estimation.

Instrumentation Eng.

- Preliminary P&ID.
- Control system specifications.
- General specifications for instrumentation.
- Specifications of data acquisition system.
- Control valve preliminary sizing and specifications.
- Alarm system philosophy.
- Operation philosophy.
- Maintenance guidelines
- Review of Basic Engineering.
- Basic Engineering consolidation.
- Risk analysis.
- Cost estimation.
- Interaction among specialists

- **05 DAY FIVE**

Detailed Engineering

Mechanical Engineering:

- Design
- Deliverable

Civill Engineering

- Design
- Deliverables

Electrical Engineering:

- Design
- Deliverables
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Instrumentation Engineering:

- Design
- Deliverables

Piping and pipeline:

- Design

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 21, 2025	April 25, 2025	5 days	4250.00 $	UAE - Abu Dhabi
July 6, 2025	July 10, 2025	5 days	4250.00 $	KSA - Riyadh
Oct. 5, 2025	Oct. 9, 2025	5 days	2150.00 $	Virtual - Online