DEPPL

Engineering Research and Development Consultants

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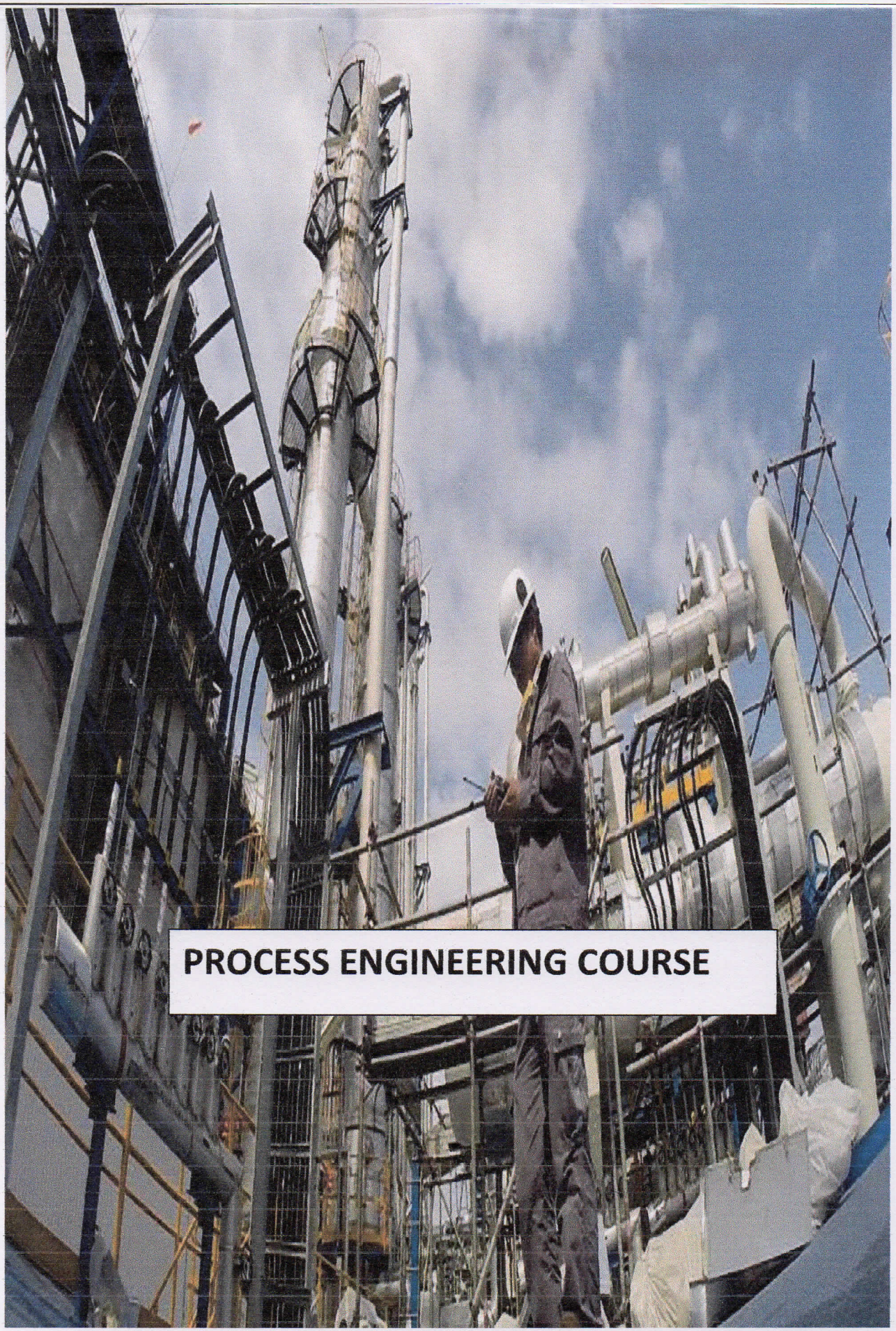

PROCESS ENGINEERING COURSE

It has been observed that Chemical Engineers who have just graduated & joined Organizations find it difficult to adjust.

We have formulated the modules keeping in mind industry requirements which can help graduated engineering students to understand intricacies and help them bridge the gap.

The Syllabus has been developed to cover all the areas expected from a Chemical Engineer & make him ready for the Industry.

The Course would be limited to five students per batch to lay emphasis on personalised training. The subjects would be covered industry experts

Sr. No	Subject	Man hours
1)	Overview of Chemical Industry and role of a Chemical Engineer in various fields	2 hours
2)	Overview of Basic Engineering Package & FEED	2 hours
3)	Introduction to Process Documents such as Design Basis, Process Flow Diagram (PFD) , Process Data Sheets (PDS) , Piping & Instrumentation Diagram (P&ID) , Line List , Process Control Philosophy, Cause & Effect Diagrams , Equipment List, Utility Consumption List, Operating Manuals	3 hours
4)	Development of Process Flow Diagram (PFD) and Piping & Instrumentation Diagram (P&ID).	2 hours
5)	Document Numbering , Document Control Index and Flow & Development of the Engineering Documents	3 hours
6)	Introduction to Engineering Codes and Standards used in industry such as API , ASME , NACE ,TEMA , ISA, NFPA, OISD	2 hours
7)	Line Sizing Calculations for Single Phase & Two Phase applications	2 hours
8)	Types of Valve used in the Chemical Industry , basis of selection valve specifications	2 hours
9)	Types of Pumps used in the Chemical Industry , basis of selection & Pump specifications	2 hours
10)	Centrifugal Pumps, Differential Head & NPSH Calculations	2 hours
11)	Shell & Tube Heat Exchanger (STHE) : Selection of type of STHE & Thermal Design	3 hours
12)	Concepts Distillation Columns	2 hours
13)	Separator Sizing for Two Phase & Three Phase applications	
14)	**Storage Tanks** Types & Design ,Selection Criteria Storage Tank Sizing , In breathing Out breathing calculations , Storage Tanks Control Systems , Bund Calculations , VOC calculations & design of Vapour Recovery Units in Tank farms	3 hours
15)	**Plant Utilities** : Cooling Water	2 hours

	Cooling Water Network, Cooling Tower Basics & types, TDS in Cooling water, Cycles of Concentration & Water Treatment. Material Selection (Material of Construction) for Cooling Water Network, Type of Corrosion in Cooling water system & Corrosion preventive measures.	
16)	**Plant Utilities**: Steam Steam basics, Boiler Feed Water, Deareators, Boiler Types, Steam Line Sizing, Steam Distribution, Types of steam traps & selection, Drip Leg Design, Condensate recovery, Steam Control & Sizing of PSV. Material Selection (Material of Construction) for Steam Network	2 hours
17)	**Plant Utilities**: *Compressed Air & Instrument Air.* Air Compressor & types, Types of Air Dryer, Selection Criteria for Air Compressor & Drying Unit.	2 hours
18)	**Plant Utilities** : Nitrogen & about Nitrogen Generation Unit	2 hours
19)	**Process Instrumentation** Field Instrumentation & Plant Automation	2 hours
20)	**Process Risk Assessment Studies** Guidelines for HAZOP Studies. Introduction to risk assessment studies such as HAZID, ENVID, SIL, and LOPA & QRA.	2 hours
21)	**Hazardous Area Classification**: Guidelines for Hazardous Area Classification & procedure to develop Hazardous Area Classification drawing.	2 hours
22)	**Plant Cost Estimation** : Equipment Cost Estimation, Levels of Plant Cost Estimations , *Plant Operating Cost , Project Viability , Detailed Feasibility* Report	2 hours
23)	**Corrosion & Selection of Material of Construction** Types of Corrosion, causes of Corrosion, preventive measures & material selection depending upon the type of Process Industry. Lining of vessels & tanks.	2 hours
24)	**Process Intensification :** Introduction to Process Intensification Technologies	2 hours
25)	**Pressure Relief Systems** : Types of PSV , Selection Criteria for PSV , PSV Sizing , Rupture Disks, Flare Systems : Types, Selection Criteria	2 hours
26)	Vacuum Systems	2 hours
27)	Introduction to Engineering Softwares used in Process Design such as HYSYS, ASPEN PLUS, HTFS ,AFT FATHOM , PIPENET	2 hours
28)	Overview of Plant Engineering Cycle from Conceptualisation to Commissioning	2 hours
29)	**Total Man hours**	**60**