

MODULE CONTENT

PFE 101

PETROLEUM SUBSURFACE ENGINEERING FOR NON-PETROLEUM ENGINEERS

To give participants from non-petroleum engineering background, working in Petroleum facilities either involve in facilities operation or projects, the basic knowledge of petroleum subsurface activities which is used as the basis of designing petroleum facilities (Surface Facilities)

Topics

Introduction to petroleum industry; Field Life Cycle; Exploring for oil and gas; Hydrocarbon origins and accumulations; Well logging; Reservoir geology; Drilling Systems; Drilling Operations; Well Planning; Well Control; Casing and Cementing; Well Completion; Fundamentals of Reservoir Engineering; Reservoir Rocks; Concepts of Permeability, Porosity and Saturation; Reservoir Fluid Properties; Fluid Sampling and PVT analysis; Coring and Core Analysis; Volumetric (Reserves) Estimation; Deterministic Methods; Inputs to Volumetric Estimates; Reservoir Dynamic Behaviour; Reservoir Drive Mechanism; Fluid Displacement; Prediction Methods; Reservoir Modeling and Simulation; Development of a finite difference model; Derivation of governing equations and discretisation to obtain various difference schemes; Different approaches in generating the coefficient matrices; Errors in finite difference schemes; Matrix solvers; Errors in Data Handling; History matching; EOR – Recovering the remaining Oil; Thermal techniques; Chemical Techniques; Miscible Processes; Microbial Processes and others; Well Testing; Petroleum Production System; Petroleum Facilities Operation; Gas lift System; Offshore Petroleum Facilities; Gas Processing Facilities; Oil Production Facilities; Land and offshore production facilities; Crude oil Terminal and Storage Tanks; Transportation system; Visit Petroscience Petronas (KLCC)

PFE 102

PETROLEUM SURFACE FACILITIES

A comprehensive introduction to the technology, terminology of petroleum surface facilities engineering and various options facilities available in the market to ensure the most economical approach of petroleum production. The course discusses what the industry does and the tools it uses, decision-making processes, economic results and the risks involved. Class exercises provide practical experience and insight into what is involved in doing business in today's industry. The participants will be exposed previous development project experiences.

Topics

Petroleum Facilities Process Engineering; Oil Production Facilities; Gas Production Facilities; Offshore Storage Facilities; Pipeline Facilities; Crude oil Terminal and Storage Tanks; Transportation system; Material Balance; Process Simulation; Process Flow Diagram; Piping and Instrumentation Diagram (P&ID); Process Data Sheet; Petroleum Exploration Facilities; Self Elevating Jack Up Rig; ●Tender Assist Rig; Self Contained Rig; Drill Ship; Semi-submersible Rig; Drilling System; Mud Circulating System; Kick; Well Control; Surface Facilities Overview; Drilling Platform; Riser Platform; Processing Platform; Satellite Platform; Complex Facilities; FSO/FPSO; Subsea Facilities; TLP; Subsea Facilities; Spar DTU; Wellhead; Separators; Launcher & Receivers; Facilities Engineering; FEED; Conceptual; Detailed; Modification; As Built; Shop Drawing; Material Control; Production/Fabrication/Construction; QA/QC; Installation & Commissioning; Final Documentation; Facilities Operation and Maintenance; Operation; Document Management; Risk Management; Turnaround; Maintenance; Modification; Expansion; Debottlenecking; Rejuvenization

PFE 103

PETROLEUM FACILITIES LAYOUT DEVELOPMENT AND 3D MODELING APPLICATIONS

This module introduces the students the sequence of Plant Layout Development and Optimization. It includes the general process involved in developing a plant layout. It also introduces the process of optimizing the plant space utilization required by all engineering disciplines. In general, Piping designers are responsible to coordinate with all disciplines to ensure all plant spacing requirement are complied as per project specification considering all plant process, safety, ergonomics, installation, accessibility and economics requirements.

Topics

- Plant Layout Design Engineer Responsibility in Various Industries
Power Plant; Refinery; Offshore Platform; Chemical Plant; Food Plant; Pharmaceutical Plant; Buildings; Miscellaneous Processing Plant or Factory
- Plant Design Engineering Input
Project design data - Client data; Vendor Data; Process & Instrumentation Diagram; Utilities Flow Diagram; Equipment Datasheets; Piping Specification; Electrical Room and Cable Tray; Instrument Hook up and Installation Requirements, Structural Drawing, Safety Requirement
- Developing Equipment Layout
Process requirements, Maintenance Access; Operation Access; Operation Access; Installation Access; Real Estate Availability; Pipe Rack Configuration; Roads, Access Ways and Prying; Area Classification Drawing (By Safety); Hazop Report
- Piping Layout Study
Plant Layout Orientation; Pipe Rack, Major Piping; Process Piping; Utility Piping;
- Plant Design Methodology
Manual; Autocad 2-D; 3-D CADD System; Plastic Model

PFE 104

PETROLEUM FACILITIES ECONOMICS

This module covers basic economics and the study of economic justification before executing any petroleum development relates to different stages of the petroleum asset lifecycle. This module begins by describing the overall petroleum asset lifecycle. It also covers cost estimation of project. Finally, it reviews the preparation of production forecast, the cashflow of project; and project economic criteria and approval.

Topics

- Economic Principles
Economic theory; Business profit; Opportunity cost; Economic Profit; Accounting Profit; Depreciation; Appreciation; Market; Supply and Demand Curve; Microeconomics; Managerial Economics; Price Elasticity; Price Discrimination
- Field Development Plant
Initial Field development (Greenfield); Establish Subsurface options; Formulate development concept; Evaluate development concepts; Evolve concept selection (Brownfield); Engineering data; Budget CAPEX; OPEX and completion time; Cost time resources analysis
- Cost Estimation
Reviewing of Invitation to Bid (ITB) / Invitation to Tender (ITT) document and ensuring the cost estimate as per bid document; Compiling of cost date for : engineering services, Material, Equipment, Fabrication, Site supervision, Installation, Commissioning, Commercial
- Petroleum economic Analysis
Production Cashflow; Capital Expenditure; Operating Expenditure; Annual Cashflow; Discounted Cashflow; Cumulative Cash Flow; Return of Investment; Rate of return; Payout.
- Field development Exercise
New development project (Greenfield); Expansion (Brownfield); Debottlenecking; Rejuvenization.

PFE 105

PETROLEUM FACILITIES QHSE MANAGEMENT

Quality is every employee's responsibility. Therefore, every person within an organization needs to understand and be able to apply basic quality concepts to their daily work activities and interactions, both internal and external.This module is a basic level training program designed to introduce quality concepts and tools fundamental quality practices and principles, to employees new to quality and to refresh the skills of those with some previous background in quality. It is designed for organizations dedicated to improving and maintaining the highest level of quality excellence from the ground up.The course is effective for employee training, orientation programs or reinforcing common quality competencies throughout your organization. It also satisfies Section 6.2 resource management requirements for the new ISO 9001:2000 standard which cover competence, awareness and training.

Topics

- Quality
The needs; Quality and Business; Benefits to employees, organizations, customers and society; Quality Standard; ISO9001:2000; Corporate Quality Manual; Project Quality Plan; Documentation Traceability and Master Documents
- Health
Personnel Health Management; Understanding disease terminology; Stress Management; Modern Medicine Approach; Diagnostic Tools; Food and Dieting; Health Statistics; Health Risk Management

- Safety and Environment

The needs; Business Reputation; Benefits to employees, organizations, customers and society; Safety definitions; Safety Standard; OSHA; Accident Triangle Theory; Corporate Safety Manual; Project Safety Plan

- QHSE Plan and Audit
Audit Plan; Pre-Audit; Audit; Audit Report; Case Study

- QHSE Behavior Enhancement and Culture
Understanding Human Behavior; Human Belief System; Knowledge vs Belief; Changing the Belief; Self Talk Therapy; Implementation

PFE 106

FIELD DEVELOPMENT PROJECT MANAGEMENT

A comprehensive introduction to the project management normal practice for petroleum surface facilities development project to ensure the project is delivered on schedule and within budget without compromising safety, quality and environment. The course discusses what the industry does and the tools it uses, decision-making processes, economic results and the risks involved. Class exercises provide practical experience and insight into what is involved in doing business in today's industry. The participants will be exposed previous development project experiences.

Topics

- Project Management Principle
Project definition; Project Organization; Project planning and cost control; Tools and techniques; Managing project; Managing people and team; Risk and Contingency; Project Monitoring; Project Management Exercise
- Engineering Discipline scope
Mechanical; Process; Instrumentation; Piping; Structural; Process Safety; Electrical; Pipeline; HVAC; Architecture; Fabrication; Installation; Commissioning (Onshore and Offshore)
- Project Management Team Scope
Procurement; Planning; Cost control; Document control; Interface; Quality; HSE; Contract; Finance Regulatory; Risk Management; Logistic;Expedite

- Project Development Lifecycle
FEED; Conceptual; Detailed; Shop Drawing; Material; Control Production/Fabrication/Construction; QA/QC; Modification; As Built Installation & Commissioning; Final Documentation; Handover; Project Development Experience; Drilling Platform; Processing Platform; Complex Facilities; Satellite Platform; Spar DTU

PFE 201

PETROLEUM FACILITIES PROCESS ENGINEERING AND OPERATION

A comprehensive introduction to the Process engineering and operation normal practice for petroleum surface facilities development project to ensure the project is delivered on schedule and within budget without compromising safety, quality and environment. The course discusses what the industry does and the tools it uses, decision-making processes, economic results and the risks involved. Class exercises provide practical experience and insight into what is involved in doing business in today's industry. The participants will be exposed previous development project experiences.

Topics

- Piping and Layout Engineering Management
Scope of Work; Organization; Deliverables; Workflow-Input and Output; Tools and Software; Human Resource; Cost time Resources Management; Risk; Discipline Interface; Requisitions; Technical Bid Tabulation; Vendor, Brand and OEM; Technical Standard and References
- Engineering Activities and Documentation at Every Stage
FEED; Conceptual; Detailed; Shop Drawing; Material Control; Production/Fabrication/Construction; QA/QC, Modification; As Built; Installation & Commissioning; Final Documentation; Handover; Operation and Maintenance

- Project Engineering Experience and Lesson Learnt
Drilling Platform; Processing Platform; Modification; Spar DTU

PFE 202

PETROLEUM FACILITIES MECHANICAL ENGINEERING

A comprehensive introduction to the piping and plant layout normal practice for petroleum surface facilities development project to ensure the project is delivered on schedule and within budget without compromising safety, quality and environment. The course discusses what the industry does and the tools it uses, decision-making processes, economic results and the risks involved. Class exercises provide practical experience and insight into what is involved in doing business in today's industry. The participants will be exposed previous development project experiences.

Topics

- Overview Mechanical and HVAC Engineering Management
Scope of Work; Organization; Deliverable; Workflow; Tools and Software; Human Resource; Cost Management; Risk; Technical Standard and References
- Engineering Discipline Interfacing
Mechanical; Process; Instrumentation; Piping; Structural; Process Safety; Electrical; Pipeline; HVAC; Architecture; Fabrication; Installation; Commissioning (Onshore and Offshore)

- Project Management Interface
Procurement; Planning; Cost Control; Document Control; Interface; Quality; HSE; Contract; Finance; Regulatory; Risk Management; Logistic; Expedite

- Engineering Documentation Lifecycle
FEED; Conceptual; Detailed; Shop Drawing; Material Control; Production/Fabrication/Construction; QA/QC/ Modification; As Built; Installation & Commissioning; Final Documentation; Handover

- Project Development Experience
Drilling Platform; Processing Platform; Complex Facilities; Satellite Platform; Spar DTU

PFE 203

PETROLEUM FACILITIES OFFSHORE STRUCTURE AND PIPELINE ENGINEERING

A comprehensive introduction to the offshore structure and Pipeline engineering normal practice for petroleum surface facilities development project to ensure the project is delivered on schedule and within budget without compromising safety, quality and environment. The course discusses what the industry does and the tools it uses, decision-making processes, economic results and the risks involved. Class exercises provide practical experience and insight into what is involved in doing business in today's industry. The participants will be exposed previous development project experiences.

Topics

- Piping and Plant Layout Engineering Management
 - Scope of work
 - Organization
 - Deliverables
 - Workflow - Input and Output
 - Tools and Software
 - Human Resource
 - Cost Resources Management
 - Risk
 - Discipline Interface
 - Requisitions
 - Technical Bid Tabulation
 - Vendor, Brand adn OEM
 - Technical Standard and References

Engineering Activities and Documentation at every stage

- FEED
- Conceptual
- Detailed
- Shop Drawing
- Material Control
- Production/Fabrication/Construction
- QA/QC
- Modification
- As Build
- Installation & Commissioning
- Final Documentation
- Handover
- Operation and Maintenance

Project Engineering Experience and Lesson Learnt

- Drilling Platform
- Processing Platform
- Modification
- Spar DTU

PFE 204

PETROLEUM FACILITIES ELECTRICAL AND INSTRUMENTATION ENGINEERING

A comprehensive introduction to the electrical and instrumentation control engineering normal practice for petroleum surface facilities development project to ensure the project is delivered on schedule and within budget without compromising safety, quality and environment. The course discusses what the industry does and the tools it uses, decision-making processes, economic results and the risks involved. Class exercises provide practical experience and insight into what is involved in doing business in today's industry. The participants will be exposed previous development project experiences.

Topics

- Piping and Plant Layout Engineering Management
Scope of work; Organization; Deliverables; Workflow-Input and Output; Tools and Software; Human Resource; Cost Time Resource Management; Risk; Discipline Interface; Requisitions; Technical Bid Tabulation; Vendor, Brand and OEM; Technical Standard and References;
- Engineering Activities and Documentation at Every Stage
FEED; Conceptual; Detailed; Shop Drawing; Material Control; Production/Fabrication/Construction; QA/QC, Modification; As Built; Installation & Commissioning; Final Documentation; Handover; Operation and Maintenance

- Project Engineering Experience and Lesson Learnt
Drilling Platform; Processing Platform; Modification; Spar DTU

PFE 205

PETROLEUM FACILITIES PIPING & PLANT LAYOUT ENGINEERING

A comprehensive introduction to the piping and plant layout engineering normal practice for petroleum surface facilities development project to ensure the project is delivered on schedule and within budget without compromising safety, quality and environment. The course discusses what the industry does and the tools it uses, decision-making processes, economic results and the risks involved. Class exercises provide practical experience and insight into what is involved in doing business in today's industry. The participants will be exposed previous development project experiences.

Topics

- Piping and Plant Layout Engineering Management
Scope of work, Organization, Deliverables, Workflow-input and Output, Tools and Software, Human Resource, Cost time resources Management, Risk, Discipline Interface, Requisitions, Technical Bid Tabulation, Vendor, brand and OEM, Technical Standard and References
- Engineering Activities and Documentation at Every Stage
Feed, Conceptual, Detailed, Shop Drawing, Material Control, Production/Farication/Construction, QA/QC, Modification, As Built, Installation & Commissioning, Final Documentation, Handover, Operation and Maintenance
- Project Engineering Experience and Lesson Learnt
Drilling Platform, Processing Platform, Modification, Spar DTU

PFE 206

PETROLEUM FACILITIES DEVELOPMENT PROJECT

Understanding of project planning, management and control is very crucial to ensure that; project is delivered on time, within budget and meeting the required quality. Competent project managers need to apply the principles of project planning, management and control and drives the project team to execute the project. The course is intended to provide hands on knowledge and understanding by preparing key project documentation for execution of design contract.

Topics

- Project definition
- Project Organization
- Field Development Plan
- Project Development Plan
- Project Execution Plan
- Project Coordination Plan
- Project Planning
- Project Cost Control
- Interface
- Procurement Strategy
- Vendor Management
- HR Management
- Contract Management
- Managing People and Team
- Risk and Contingency
- Cost Time Resources
- QHSE
- Fabrication and Construction Management
- Installation and Commissioning
- Document Control and Circulation
- Project Management Exercise

PFE 300

PROJECT

- ***Our trainers are made up of experienced professionals who are currently working with local and international upstream petroleum companies***