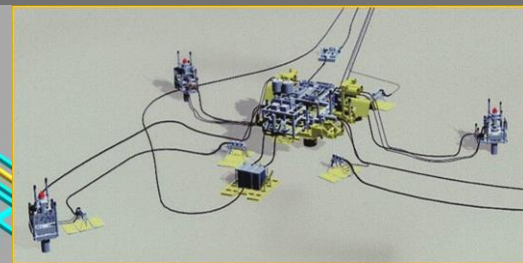
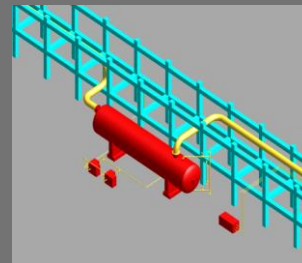


2022

INDIVIDUAL TRAINING SCHEDULE AND COURSE OUTLINE

COD Energy services limited



27B Ada George Road, Port Harcourt (Orji Close)
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COD ENERGY 2022 INDIVIDUAL TRAINING SCHEDULE

■ PIPELINE CONSTRUCTION - PART 1: LAND AND SWAMP CONSTRUCTION IN NIGERIA

✚ Sessions will be in 12-19 Feb & 26 Nov – 3 Dec.

■ OIL & GAS FACILITIES INSTRUMENTATION CONTROL & AUTOMATION SYSTEMS DESIGN

✚ Sessions will be in 26 Mar- 2 April & 17-24 Sept.

■ DOCUMENT CONTROLLER COURSE

✚ Sessions will be in 18-22 April. & 5-10 Dec.

■ FACILITY PIPING SYSTEMS ENGINEERING DESIGN

✚ Sessions will be in 28 May – 4 Jun, 24 Sept – 8 Oct

■ PIPELINE AND RISER SYSTEMS DESIGN

✚ Sessions will be in 25 June – 2 July, 29 Oct 29 to 12 Nov

■ PROCESS ENGINEERING

✚ Sessions will be in 9-16 July.

■ PROJECT PLANNING AND CONTROL (PROJECT PLANNER COURSE)

✚ Sessions will be in 23-30 July.





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PIPELINE CONSTRUCTION - PART 1: LAND AND SWAMP CONSTRUCTION IN NIGERIA

Tuition: N47, 800.00

ABOUT THE COURSE

This intensive course focuses on in-depth requirement of onshore Land and Swamp Pipeline construction. Session provides guidance to Pipeline Engineers in areas related to Government Regulatory fulfillment expectations, overview of procurement expectations for Linepipes and ancillaries, industry code/standard compliance expectations with respect to established calculations/methodologies, in-depth overview in application of design documentation/drawings and local principles/methodologies in carrying out swamp and land pipeline construction up to Pre-commissioning stage. The result of this course is ensure a cost-effective, safe and environmentally sound execution strategy while putting in place onshore pipelines. Problems and group projects are an integral part of this course.



COURSE IS FOR

Technical professionals new to the pipeline business or needing a broad understanding of the pipeline business including: pipeline project managers, pipeline engineers, facilities engineers, pipeline design and construction engineers, and engineering and construction contractors.

COURSE CONTENT

Pipeline construction Safety

- Why Pipeline Design and construction must demonstrate ALARP for safe O&M assurance using a Pipeline Safety video session and lessons learnt.
- Expectation of assuring personnel and equipment safety in swamp and land pipeline construction activities.
 - PPE types for swamp and land locations
 - Fire risk mitigation/prevention i.e during weld joint pre-heating, welding in brown field ROWs and spark emission control for diesel fuelled equipment/vehicles
 - Equipment and ancillary's certification expectations
 - Lifting and excavation standard requirements
 - Road and Marine Traffic management



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Pipeline activities In-Country Regulatory guidance

- The Nigerian Pipeline Act
- Overview of application for Permit to Survey (PTS) and Oil Pipeline License (OPL) approval.
- Overview of Expectation of Environmental, Social and Health Impact Assessment (ESHIA) with respect to Environmental Impact Assessment (EIA) Report, Environmental Monitoring Plan (EMP), and Waste Management Plan (WMP).
- Overview of expectations of Nigerian Inland Waterways (NIWA) compliance/approval for pipeline river crossings.
- Overview of expectations of State /Federal Ministry of works for Road and Railway crossings, as well inter-city pipeline networks distribution.
- Overview compliance/approval for Standards Organization of Nigeria Conformity Assessment Program (SONCAP) Certification for Imports to Nigeria, with respect to Pipeline Procurement activities
- Understanding when to exercise the law regulating the issuance of Import Duty and VAT Exemption Certificates (IDEC) for Pipeline procurement activities
- Expectations of compliance to the Nigeria Nuclear Regulatory Authority (NNRA) for use of nuclear tools and radioactive materials.
- NIRA for radioactive substance handling
- Overview of expectations of the Nigerian Content Development and Monitoring Board for assured implementation of Nigerian Content law in all activities of the pipeline project.

Pipeline Materials Procurement:

- Guidelines for assured quality linepipe and bends procurement from Milling Plants. (interactive session including use of Milling Plant Process videos)
- Overview of Pipeline Flange, Valve, PE sleeve Joint coating and Isolation Joint Procurement (interactive session with use of applicable datasheets)
- Overview of 3LPE, PP, FBE, CWC Linepipe coating activities at coating Plant. (interactive session with slides/videos)

Pipeline Welding and NDT:

- Introduction to WPQR, WPS and PQTS.
- Overview of Welders Qualification Test process for Welders' Guild.
- Understanding various weld type ad formations (Root, Hot, Pass, Filler and Cap) for weld joints in pipeline construction.
- Overview of Visual inspection and NDT processes for completed weld joints.





Setting up for Success in Pipeline Construction

- Overview of Social Performance Plan and implementation for Pipeline project host communities.
- Overview of Construction Survey works
 - Setting up verification survey scope of work
 - Typical Survey Crew and Equipment
 - Format of Survey Report i.e Plan and Profile Maps, Coordinate listing and daily activity progress reporting, features reporting.
 - Expectations of bathymetric survey for river beds
- Attributes of Project Campsite set-up.
- Overview of Typical L1, L2, and L3 Project Schedule for P50 or P90 Plan

Pipeline Construction

- Overview of linepipe storage and linepipe stacking calculation requirement against in-ovality.
- Overview of ROW Clearing
 - Crew and
 - Land Typical ROW Clearing processes/Equipment
 - Swamp Typical ROW Clearing processes/Equipment
- Overview of String crew and Stringing Processes using Side Booms/ Cranes referencing the alignment sheet for Land
- Overview of ROW linepipe welding, NDT and PE Joint coating.
 - Weather control welding booths types,
 - Welding Machines,
 - Tractors,
 - Linepipe transportation
- Expectations of Trenching Crew, referencing Trench detail drawings.
 - Survey line boundary in-situ checks prior to and during ditching
 - Sloping against trench wall collapse
- Lowering using Side Booms and Cranes.
 - Calculations for handling points of linepipe during lowering for buckling/kinking prevention
- Welding and Laying Technique in Marine environmental
 - Dredging process for river beds
 - Welding stations /lay barge overview
 - Use of Floaters for River crossings
 - River hydrology checks against silting for pipelines on open trenches used as Navigable Canal
 - Stinger pipeline laying equipment option and calculations for tensile stress checks from over-bends during lowering
- Understanding the basis for tie-in welds and Golden welds.





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Special Pipeline Construction,

- Overview of Processes of Horizontal directional drilling
 - Single linepipe HDD process for land and River crossing (use of interactive video)
 - Multiple Linepipe HDD crossing land and River crossing (use of interactive video)
 - HDD calculation for tensile strength checks against soil stiffness characteristics.
- Uncased/cased Pipeline Thrust Boring process for Public road crossings. (use of interactive video)
 - Overburden weight compliance calculation checks.

Temporary and Permanent Cathodic Protection Systems in Pipeline

- Approach to Installing TCP prior to Commissioning.
- Overview of PCP systems on Pipeline.
 - Understanding basis for determining Test Post on Pipeline ROW.
 - Understanding ground bed and Transformer rectifier units
 - Approach to soil resistivity check
 - Calculations for ground bed determination





Pipeline Pre-Commissioning

- Overview of typical pipeline pre-commissioning activities:
 - When to use a Temporary Pig Trap system for Pre-Com
 - Why Pipeline valves are not lined up during Pre-Com
 - Knowing the Pipeline Tools to apply for Cleaning, ILI and flooding operations during Pre-Com
 - Pipeline drying and preservation operations.
 - Interactive Video session of ILI tools used during commissioning.
- Pipeline system Leak and Strength base Hydrotest Operations
 - Hydrotest Pressure monitoring using chart.
 - Pressure equalization, using bleed-off and injection

SATURDAY TIME/ MODULE 11.30am – 4.30pm	MONDAY TIME/ MODULE 4.00pm – 7.00pm	TUESDAY TIME/MODULE 4.00pm – 7.00pm	WEDNESDAY TIME/MODULE 4.00pm – 7.00pm	THURSDAY TIME/ MODULE 4.00pm – 7.00pm	FRIDAY TIME/ MODULE 4.00pm – 7.30pm	SATURDAY TIME/ MODULE 11.30am – 4.30pm
Pipeline Construction Safety (HAZID, QRA, SCE)	Generating TBEs from Pipeline Material list	Setting up for Success in Pipeline Construction (Early works)	Various Pipeline Construction Drawings (Alignment sheets, Coating,, Approach, Installations)	Various Pipeline Construction Drawings (Alignment sheets, Coating,, Approach, Installations)	Installation Engineering Calculations	Understanding Temporary /Permanent Cathodic Protection and Test Posts
	Mill activities : - Mill selection - Pipes Mill QA - Pipe coating	Pipeline Construction and Installation				Pre-commissioning and Commissioning
Pipeline activities In-Country Regulatory guidance	-Welders Qualification -Pipeline Welding and - NDT					





OIL AND GAS FACILITIES INSTRUMENTATION, CONTROL AND AUTOMATION SYSTEMS DESIGN

Tuition: N47, 800.00

DESIGNED FOR

Fresh graduates with Mechanical, Electrical, Systems and Computer engineering background, Experienced Oil and Gas Field Technicians, Oil and Gas facilities control room operators, Project managers and Project Engineers requiring a broad understanding of instrumentation, control, and automation systems Design.



YOU WILL LEARN

Instrumentation and Control

- Defining what to measure, why a parameter measure and how to measure.
- Determining and using the many control strategies, equipment and computer systems common to an oil and gas facility.
- Identifying equipment and instrument characteristics and using appropriate instrumentation and controls.
- Defining and integrating components into systems that monitor and locally control the process (and related equipment), safety systems, and the communications and remote-control systems use.

ABOUT THE COURSE

This course provides an overview of process systems instrumentation, and control strategies and configurations. The focus is on application and integration into the process and control of upstream and midstream oil and gas facilities. The material of the course is applicable to field production facilities, pipelines, gas plants, and offshore systems.



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- Process systems operations and the key characteristics, and measurement needs, as well as
- Techniques to measure and control.
- Control modes and their applications, communications requirements, and the operator and
- Computer controller interface.
- Interrelationships between process, equipment, instruments and controls.
- Field (facility) control and monitoring systems such as pressure and level indicators and controllers.
- Field (facility) safety monitoring and response systems including SIS, HIPPS and emergency shutdown valves.
- System-wide considerations including communications, local control, remote control, and
- Data management and use.



COURSE CONTENT

10.30 am to 4.30pm Sessions: Overview of upstream oil and facilities operations :

- Safety in Oil and Gas
- Subsurface oil and gas activities Overview
- Flow station





- Gas Plants
- Pipelines
- Oil Tank Farm
- Offshore facilities
- Understanding Conceptual Engineering, Front End Engineering Design, Detailed Engineering Design and Process deliverable sessions for optimal design
- Understanding a PI&D
- Introduction to Valves, process components and symbol

5-7pm sessions: Instrumentation Control and Automation Design:

- 1.1 Flow Measurement & Orifice Plate
- 1.2 Level Measurement
- 2.2 Temperature Measurement
- 2.3 Fire and Gas
- 2.4 Pressure Measurement & Pressure Relief
- 3.1 Control and Automation
 - Understand various programming languages of the PLC in line with IEC- 61131-3
 - -Knowing what input and output devices and other PLC/PAC Equipment
 - -Knowing how the PLC communication concept, e.g. the Ethernet, master slave networks, RTU/DCS/HMI interfaces, Drivers, etc.
 - -Understanding Human-machine interface functions
 - Understanding the DCS initiatives
 - Introduction to DCS
 - Evolution from DCS to Smaller hybrid systems, large Enterprise-wide systems, and so called open control Systems
 - Comparing DCS to traditional single-loop, central computer, PLC, PAC, PC, field buses, Safety systems and security issues.
- 3.2 Signal Transmission
- 3.3 ESD
- 3.4 SCADA
- 4.1 Field Instrumentation and Operator interface.
 - Understanding instrument unit Location Plan
 - to understand the use of location plans or layouts in instrumentation
 - to understand and read location plans for detection of equipment on Plans
 - Generating instrument Loop diagrams
 - to understand the use of Loop Diagrams in instrumentation
 - to generate loop Diagrams from the P&IDs
 - to effectively read and recognize the various valves, tubing's and cabling Involved in the Loop Diagrams
 - to understand every connections or interrelationships involved in loop Diagrams
 - to read and analyse various Loop Diagrams.
 - Generating instrument tubing and Tray layout e.g. using Equipment layout drawing
- 4.2 Installation Design
 - To understand the use of installation details in instrumentation





- o To understand and extract the materials for construction
- o To effectively read and recognize the various valves, tubing and cabling
- o Involved in the various installation details
- o To understand how to extract material take off or Bill of materials from
- o To read and analyse various Installation details

4.3 Instrument Electrical Protection

5.1 Generating Instrument List from PID and Layout

- o Definition of Instrument list
- o To understand the purpose of having an instrument list
- o To effectively read and interpret the Instrument list
- p To know the composition of Instrument list

5.2 Instrument Safety: Overview of HAZOP, SIF and SIL Classification in oil and Gas Operations.

- o Introduction to Safety Analysis and System Design
- o Protection Concepts and Safety Analysis

WEEK 1	SAT TIME/MODULE 4.30PM TO 7.00PM	MON TIME/MODULE 4.30PM TO 7.00PM	TUE TIME/MODULE 4.30PM TO 7.00PM	WED TIME/MODULE 4.30PM TO 7.00PM	THUR TIME/MODULE 4.30PM TO 7.00PM	FRI TIME/MODULE 4.30PM TO 7.00PM	SAT TIME/MODULE 11.30PM TO 4.30PM
	-Understanding Piping and Instrument Diagrams	-Temperature Measurement - Fire and Gas Pressure Measurement & Pressure Relief -Flow Measurement & Orifice Plate Level Measurement	Generating Instrument List from PID and Layout drawings. Generating	Introduction to Cause and Effects	-Understanding Control and Automation -Understanding Signal Transmission For ESD and SCADA	Field Instrumentation and Operator interface. Installation Design Instrument Protection Instrument Safety: Overview SIF and SIL Classification.	Generating instrument Specification/datasheet for vendor procurement.
WEEK 2	SAT TIME/MODULE 11.00AM TO 4.00PM	MON TIME/MODULE 11.00AM TO 4.00PM	TUE TIME/MODULE 11.00AM TO 4.00PM	WED TIME/MODULE 11.00AM TO 4.00PM	THUR TIME/MODULE 11.00AM TO 4.00PM	FRI TIME/MODULE 11.00AM TO 4.00PM	SAT TIME/MODULE 11.00AM TO 4.00PM
	Oil and Gas Facility Overview	-Intro to Concept Study, FEED and Detailed Design -Introduction to various Discipline drawings and drawing Symbols Understanding Piping and Instrument Diagrams	Understanding Piping and Instrument Diagrams	Understanding Piping and Instrument Diagrams	Process Safety	Process Safety	Generating instrument Specification/datasheet for vendor procurement.





DOCUMENT CONTROLLER COURSE

Tuition: N27, 800.00

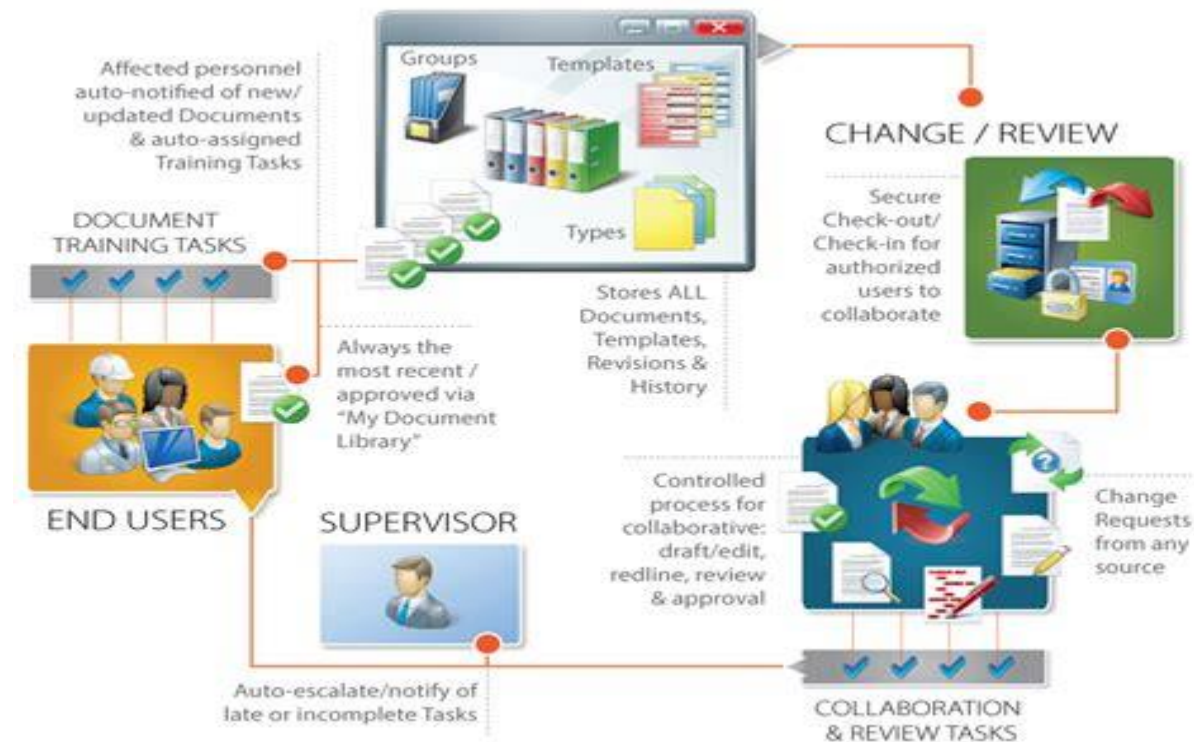
ABOUT THE COURSE

This course covers the best practices of Document Control with a very practical and hands-on approach, and it goes through all the components, the core expert topics and activities of the profession..

It also defines the theory, the scope, the boundaries and the ethics of the profession.

This course gives a robust foundation for the profession, explains all the tasks and responsibilities, and contains numerous workshops and tutorials. You will acquire competencies that can be applied to day-to-day work.

Most Document Controllers learnt the discipline 'on-the-job'. This course consolidates basics, formalises knowledge and deepens competences. It allows experienced Document Controllers to compare their experience with common / best practices and for everyone; it's a great opportunity to network and share experience with other Document Control professionals.





COURSE CONTENT

1. Introduction to Document Control

What is Document Control and the role of the Document Controller

2. The Basics of Document Control Document control checks and gatekeeping

3. Document Identification. How to make sure that document are identifiable; Means of identification (numbering, metadata, document description, file naming...)

4. Document Classifying, Filing & Information Security; How to organise documents and manage information security

5. Documents Lifecycle

What is the lifecycle of technical documents? Document creation, modification, review cycle, comments, approval: How to manage documents at each step of their life
How to avoid misuse of obsolete documents

6. Document Distribution; How to ensure an efficient and relevant distribution of documents

7. A Project Document Control; Specifics of Project Document Control; Managing deliverables; Flow of project documents

Interactions with Client, Contractors, Sub-contractors, Suppliers, Vendors; Master Deliverable Register (MDR)

7. B As-Built and Final Documentation; Specifics of As-Built / Final Documentation; Document Controller tasks during As-Built phase

8. Document Control Procedures and Specifications; why do we need procedures? Which subjects should be included in a Document Control Procedure?

9. Electronic Document Management Systems; which software packages are used by Document Controllers? What are the functionalities of Document Control Software Packages? How can it help Document Controllers?

10. Interactions with project teams, engineering teams, managers; How to support technical teams? How to manage work pressure? How to manage difficult situations?

MON TIME/MODULE 4.30am – 7.30pm	TUESDAY TIME/MODULE 4.30am – 7.30pm	WEDNESDAY TIME/ MODULE 4.30am – 7.30pm	THURSDAY TIME/ MODULE 4.30am – 7.30pm	FRIDAY TIME/ MODULE 4.30am – 7.30pm
1. Introduction to Document Control What is Document Control and the role of the Document Controller. 2. The Basics of Document Control Document control checks and gatekeeping 3. Document Identification. How to make sure that document are identifiable; Means of identification (numbering, metadata, document description, file naming...)	4. Document Classifying, Filing & Information Security; How to organise documents and manage information security 5. Documents Lifecycle What is the lifecycle of technical documents? Document creation, modification, review cycle, comments, approval: How to manage documents at each step of their life How to avoid misuse of obsolete documents 6. Document Distribution; How to ensure an efficient and relevant distribution of documents	7. A Project Document Control; Specifics of Project Document Control; Managing deliverables; Flow of project documents Interactions with Client, Contractors, Sub-contractors, Suppliers, Vendors; Master Deliverable Register (MDR) 7. B As-Built and Final Documentation; Specifics of As-Built / Final Documentation; Document Controller tasks during As-Built phase 8. Document Control Procedures and Specifications; why do we need procedures? Which subjects should be included in a Document Control Procedure?	9. Electronic Document Management Systems; Which software packages are used by Document Controllers? What are the functionalities of Document Control Software Packages? How can it help Document Controllers?	10. Interactions with project teams, engineering teams, managers; How to support technical teams? How to manage work pressure? How to manage difficult situations?





FACILITY PIPING SYSTEMS DESIGN

Tuition: N47, 800.00

ABOUT THE COURSE

This course is for Technical professionals new to the oil and gas facilities piping systems or needing a broad understanding of the piping systems design, including: project managers, facilities engineers, construction engineers and Fresh B.Eng. /B.Tech/HND graduates with Mechanical, Production and Metallurgical engineering back ground.

This intensive foundation level course covers the design of Oil and Gas facilities Piping systems and an introductory session into oil and gas and operations. The Piping design focus is on routing, process review and mechanical design for onshore and offshore applications. This 6-days foundation level course for engineers and piping system designers reviews the key areas associated with the design of piping systems for oil and gas facilities.



The course is focused on four areas: codes and standards, pipe materials and manufacture, piping components, and piping layout and design. Applicable piping codes for oil and gas facilities (IASME B31.3), pipe sizing calculations, pipe installation, and materials selection are an integral part of the course. The emphasis is on proper material selection and specification of piping systems. Piping codes and standards (ANSI/ASME, API, ISO) The result of this course is to ensure an environmentally safe design, ease in construction, and operations cost benefits during project opportunity framing

COURSE CONTENT

GENERAL MODULE 1:

Safety in Oil and Gas

Subsurface oil and gas activities Overview

Oil and Gas definitions from origin -modern day Drilling technology (video)

- Reservoir analysis and in-put to process engineering (video)

GENERAL MODULE 2:

Overview of typical Onshore and Offshore oil and Gas processing facility - Onshore Oil processing system units





- Wellhead
- Flow lines
- Inlet manifold
- Separators – detailed operating system demonstration – (video)
- Surge vessel
- LACT unit
- Export pumps
- Live session of a typical Oil and Gas CPF designed for waxy crude oil. (Video) Processing units in Gas handling facilities
- Overview of Crude Oil tank farm
- Oily water treatment units
- LNG storage trains

GENERAL MODULE 3:

Offshore Oil and Gas facilities Overview

DAILY COURSE OUTLINE

WEEK 1 BEGINS: SATURDAY TIME/ MODULE 11.30am – 4.30pm	MON TIME/MODULE 4.30am – 6.30pm	TUESDAY TIME/MODULE 4.30am – 6.30pm	WEDNESDAY TIME/ MODULE 4.30am – 6.30pm	THURSDAY TIME/ MODULE 4.30am – 6.30pm	FRIDAY TIME/ MODULE 4.30am – 6.30pm	SATURDAY TIME/ MODULE 11.30am – 4.30pm
Process Safety in Oil & Gas General overview of key Oil & Gas facilities.	Mechanical systems and Piping systems definition. Introduction to Piping Deliverables (FEED & Detailed Design)	Introduction to PI&D and Preliminary Piping material take off.	Introduction to PI&D and Preliminary Piping material take off.	Defining wall thickness by Industry calculation specifications and by Company Specification	Generating Valve Datasheet, Flange Datasheet, and Specialty item Datasheet. By industry specification and Company Specification	Practical session on Site visit activities and facility sketch taking for as-built using piping symbols.
WEEK 2 BEGINS:	MON TIME/MODULE 4.30am – 6.30pm	TUESDAY TIME/MODULE 4.30am – 6.30pm	WEDNESDAY TIME/ MODULE 4.30am – 6.30pm	THURSDAY TIME/ MODULE 4.30am – 6.30pm	FRIDAY TIME/ MODULE 4.30am – 6.30pm	SATURDAY TIME/ MODULE 4.30am – 6.30pm
	Tracing existing Piping general arrangement (PGA) drawings using PEFS -As-Built Dwgs -Demolition Dwgs -Modification Dwgs	PGA generation from P&IDs using a HEXRA project Drawings	PGA generation cont'd and Introduction to Pipe support systems.	Generating Isometrics	Generating Isometrics Final Material Take-off, Data Sheets, and Piping	Piping Stress analysis calculation and Issuing Flexibility analysis Report





PIPELINE AND RISER SYSTEMS DESIGN SESSION

Tuition: N47, 800.00

ABOUT THE COURSE

This intensive, foundation level course covers the design, construction, and operation of pipeline systems. The focus is on pipeline routing, hydraulics, mechanical design, and construction for both onshore and offshore pipelines. The result of this course is cost-effective, safe and environmentally sound design, construction, inspection, operation, and maintenance of pipelines. Design problems and group projects are an integral part of this course.



DESIGNED FOR

Technical professionals new to the pipeline business or needing a broad understanding of the pipeline business including: pipeline project managers, pipeline engineers, facilities engineers, pipeline design and construction engineers, and engineering and construction contractors.

COURSE CONTENT

Pipeline systems definition and applications

Why Pipeline Design and construction must demonstrate ALARP for safe O&M assurance

A Pipeline Safety video session and lessons learnt.

What is a Pipeline?

What is a Flowlines?

What is a Riser?

In what context can we refer to Pipeline as a Spurline/Delivery line and Bulkline / Trunkline?

Discussion on the Nigerian Pipeline Acts

Codes and standards related to pipelines

- What do we understand as Country Regulations, industry Codes, international standards and specifications, and Company design practices
- Discussion on Nigerian Pipeline Acts
- Discussion on the ASME B.31.4 Code, with emphasis on chapter 2 and 9
- Discussion on the ASME B.31.8 Code, with emphasis on chapter 4 and 8
- Discussion on standards and recommended practices such as ISO 3183, DNV OS F101, DNV-RP-E30, DNV-RP-F109, API RP 1102, API 1111, API 5L and API 6D



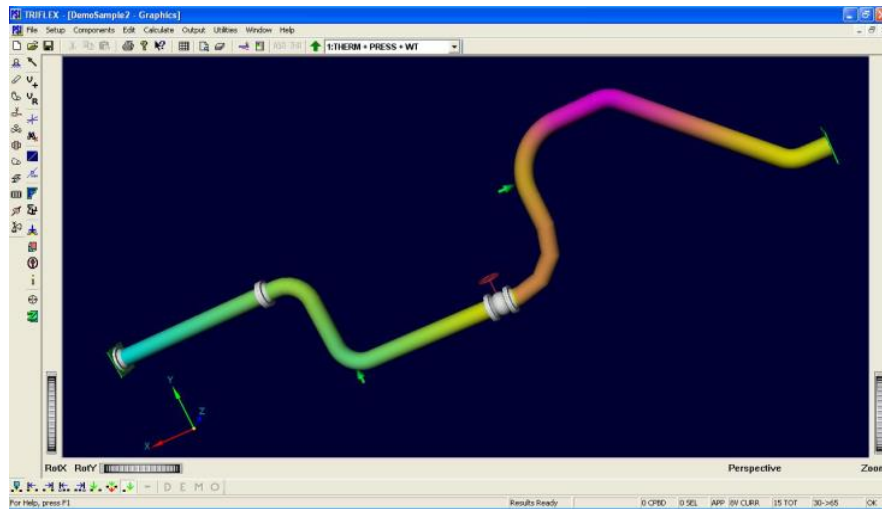


Pipeline materials and Components:

- Pipeline material types
- Pipeline valve systems
- Feature of API 6D Valve selection
- When to deploy a Valve stations
- Pipeline Flange details
- Pipeline induction bends
- Barred Tees
- Pigging system
 - Various types of Pigs and uses
 - Pig Launcher and Receivers details
 - Valves used for Pigging
- Basis for Pipeline Manifold Stations/Pipeline Nodes

Pipeline hydraulics:

- Introduction to single-phase gas and liquids, multiphase fluids and heavy/waxy crudes.
- Challenges of Flow Assurance in pipelines
- First Rule calculations for Pipeline pressure drops
- First Rule calculations for Pipeline Pressure Surge
- First Rule calculation for Time Line on Line Packing of Pipelines due to sudden valve closure.





Pipeline Mechanical design1

Major design considerations for strength, stability, and installation for onshore Pipelines

- Fundamentals of Pipeline Material Grade Type Selection
- Requirements for wall thickness calculations, with reference to ASME B31.8 code and the ISO 3183 code
 - Fluid classification in oil industry and understanding the use of Location design class factors
 - Understanding Temperature derating factors in Pipeline materials
 - Difference between ND and NPS with respect to ASME B36.10m
- Requirements for wall thickness calculations, with reference to ASME B31.8 code and the ISO 3183 code contd.
 - Selecting the Longitudinal weld joint efficiency factor
 - Knowing Pipeline material SMYS and SMTS
 - Differences between Pipeline Operating Pressure, incidental Pressure, Design Pressure and Test Pressure.
- Introduction to Hot and Cold Bends
- Calculating Pressure containment wall thickness for Pipes using the Barlow equation
- Bend wall thickness calculation
- Hydrotest Calculations
- Calculating Pressure containment wall thickness for pipes using the Limit State Criteria
- Concerns for HP/HT
- Verification checks for HP/HT related upheaval buckling of onshore pipelines
- Mitigations for HP/HT related upheaval buckling defects
- Basis for Pipeline On –Bottom Stability
 - Considerations for Specific gravity of Mud and Water.
 - Pipe surface area considerations for buoyancy checks
 - Concrete density selection for coating application
- Pipeline On-bottom Stability and Concrete coating calculation.
- Pipeline soil weight and Road crossing calculations
- Requirements for Offshore Pipeline wall thickness calculations and collapse check, with reference to chapter VIII of ASME B31.8 code, chapter IX of ASME B31.4 code, API 1111 and the DNV OS F101
- Introduction to the Effects of Free spans on offshore Pipeline and Riser Systems.
 - Free Span Calculations for Vortex induced vibration check on offshore rigid pipeline and Risers
- Mitigation approaches for Free Span related defects

Pipeline and Riser Flexibility Analysis

Flexibility analysis of an Onshore Pipeline system and Offshore Riser/ Connecting Spool

- Introduction to pipe flexibility and stresses
- Classification of loads
- When Pipeline flexibility calculations are required
- Development of Stress isometrics
- Understanding Static and Dynamic analysis
- Modeling onshore Pipeline systems in FEA tool
- Pipeline and Riser non-linear static analysis
- When Anchor Block calculations may be required
- Modeling offshore Riser and Connecting spool systems in FEA tool
- Riser and Connecting spool non-linear static analysis
- Results of reactions on clamp supports and code compliance check





Pipeline Route Selection optimization

Introduction to pipeline Route Selection

- Steps in determining optimal routes
- Route Acquisition in the Nigerian Context.
 - PTS, ROW, Stakeholder's workshops, QRA
- Developing Pipeline Schematics
- Route Mapping using Satellite Imagery
- Route selection and scoring assessment Matrix,
- Understanding Plan and Profile Maps
- Development of Pipeline Approach drawings
- Understanding how Pipeline Route Alignment Sheet drawings are developed.

WEEK 1 BEGINS: SATURDAY TIME/ MODULE 11.30am – 4.30pm	MON TIME/MODULE 4.30pm – 6.30pm	TUESDAY TIME/MODULE 4.30pm – 6.30pm	WEDNESDAY TIME/ MODULE 4.30pm – 6.30pm	THURSDAY TIME/ MODULE 4.30pm – 6.30pm	FRIDAY TIME/ MODULE 4.30pm – 6.30pm	SATURDAY TIME/ MODULE 11.30am – 4.30pm
Pipeline systems definition and applications Pipeline Safety (HAZID, QRA, SCE) Pipeline activities In-Country Regulatory guidance	Pipeline Components & function	Understanding P&IDs	Developing Pipeline materials list from P&IDs	Pipeline Hydraulics	WT Design	Stability Design Pipeline Mechanical design (HT & HPHT) Limit State design
WEEK 2 BEGINS:	MON TIME/MODULE 4.30pm – 6.30pm	TUESDAY TIME/MODULE 4.30pm – 6.30pm	WEDNESDAY TIME/ MODULE 4.30pm – 6.30pm	THURSDAY TIME/ MODULE 4.30pm – 6.30pm	FRIDAY TIME/ MODULE 4.30pm – 6.30pm	SATURDAY TIME/ MODULE 4.30pm – 6.30pm
	Pipeline Expansion Analysis	Free Span Analysis	Intro to Plus one	Pipeline and Riser Flexibility Analysis Flexibility analysis of an Onshore Pipeline system and Offshore Riser/ Connecting Spool	Pipeline and Riser Flexibility Analysis Flexibility analysis of an Onshore Pipeline system and Offshore Riser/ Connecting Spool	Pipeline Route Selection optimization Introduction to pipeline Route Selection Pipeline Construction Drawings





OIL AND GAS FACILITIES PROCESS MODELLING AND DESIGN

Tuition: N47, 800.00

DESIGNED FOR

Engineering graduates of Chemical, Mechanical, Petroleum, and Production Engineers, other professionals, such as Facility engineers, Project Engineers and Oil and Gas Plant Operators, are also eligible to participate.



COURSE CONTENT

GENERAL MODULE 1:

Safety in Oil and Gas

Subsurface oil and gas activities Overview

Oil and Gas definitions from origin -modern day Drilling technology (video)

- Reservoir analysis and in-put to process engineering (video)

GENERAL MODULE 2:

Overview of typical Onshore and Offshore oil and Gas processing facility - Onshore Oil processing system units

- Wellhead
- Flow lines
- Inlet manifold
- Separators – detailed operating system demonstration – (video)
- Surge vessel
- LACT unit
- Export pumps
- Live session of a typical Oil and Gas CPF designed for waxy crude oil. (Video) Processing units in Gas handling facilities
- Understanding the principles of heat exchanger in Gas Processing (video) Oil and Gas storage
- Overview of Crude Oil tank farm
- Oily water treatment units
- LNG storage trains

Offshore Oil and Gas facilities Overview





TRAINING SCHEDULE

WEEK 2: SATURDAY TIME/ MODULE 11.30am – 4.30pm	MON TIME/MODULE 4.30pm – 6.30pm	TUESDAY TIME/MODULE 4.30pm – 6.30pm	WEDNESDAY TIME/ MODULE 4.30pm – 6.30pm	THURSDAY TIME/ MODULE 4.30pm – 6.30pm	FRIDAY TIME/ MODULE 4.30pm – 6.30pm	SATURDAY TIME/ MODULE 11.30am – 4.30pm
General overview of key Oil & Gas facilities.	Process Safety in Oil & Gas	Introduction to P&IDs, PFS, UFS, UEFS	Introduction to P&IDs, PFS, UFS, UEFS	Introduction to P&IDs, PFS, UFS, UEFS	Introduction to P&IDs, PFS, UFS, UEFS	Generating Process drawings: P&IDs, PFS, UFS, UEFS
WEEK 2:	MON TIME/MODULE 4.30pm – 6.30pm	TUESDAY TIME/MODULE 4.30pm – 6.30pm	WEDNESDAY TIME/ MODULE 4.30pm – 6.30pm	THURSDAY TIME/ MODULE 4.30pm – 6.30pm	FRIDAY TIME/ MODULE 4.30pm – 6.30pm	SATURDAY TIME/ MODULE 11.30am – 4.30pm
	Generating Process drawings: P&IDs, PFS, UFS, UEFS	Generating Process drawings: P&IDs, PFS, UFS, UEFS	Generating Line, Valve and Tie-in list from Modification P&IDs	Generating Line, Valve and Tie-in list from Modification P&IDs	Process calculations, Safety Analysis and System in Design	Process calculations, Safety Analysis and System in Design Introduction to Safety Analysis and System Design

PROCESS MODULES:

Understanding Process engineering

- In-country Oil & Gas Regulations, International Codes & Standards, Specifications, Recommended Practices, Publications, Bulletins & Technical Reports
- Understanding Conceptual Engineering, Front End Engineering Design, Detailed Engineering Design and Process deliverable sessions for optimal design
- Understanding the fundamentals of API RP 14C
- Valve types and function (manual and controlled)
- Instrument Devices and functions
- Introduction to Flanges, strainers and blinds
- Identifying general process and safety device Symbols
- Practical class session - Identifying and sketching live process and safety devices (view graphs)

Introduction to Process drawings

- Introduction to various types of process drawings
- Understanding Process engineering interface with ICA (Instrumentation /Controls and automation) and Mechanical Piping
- Understanding a PI&D using the Legend Sheet
- Describing typical ASME B36.10 oil industry pipe sizes
- Understanding ASME /API Pressure Rating or class
- Learning how to carry out typical Line numbering





- Learning how to carry out typical valve tagging
- Learning how to carry out Equipment tagging using the PVT data.

Generating Line, Valve and Tie-in list from Modification P&ID

- Practical session on generating line list
- Practical session on generating Valve list
- Practical session on generating tie-in list

Process Calculations

- Practical session of Principles of Line Sizing (single phase / liquid & gas)
- Practical session of Principles of Control valve sizing and Relief valve sizing

Generating Process drawings

- Learning the use of Flow direction symbols while generating process drawings
- Generating Simple and Complex Process Flow Diagram
- Generating Simple and Complex Piping and Instrumentation Diagram (P&ID)
- Generating SAFE Chart
- Understanding and capturing requirement from a typical Project Scope prior to site visit
- What to look out for at site and how to prepare a Check List and Site Visit Report for Typical projects.
- Understanding the As-Built, Demolition and Modification drawings process with a case study.

Introduction to Safety Analysis and System Design

Protection Concepts and Safety Analysis **Process Safety**

- Understanding SAFE Chart in oil and Gas operations
- HAZOP
- Fundamentals of HAZOP in safe oil and Gas Operations
- Expectations of a HAZOP session
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PROJECT PLANNING AND CONTROL (PROJECT PLANNER COURSE)

Tuition: N47, 800.00

ABOUT THE COURSE

This interactive course will equip you with the skills and knowledge in forming a career path for Document control management and planning/Scheduling to deliver successful deliver projects, within budget, timeframe and proper documentation.

Case studies on downstream projects will provide you with real-life examples of best strategic practices in project management.



DESIGNED FOR

This course is designed for anyone who intends to have skills and industry insights in project planning and control, Course participant will entail:

- Young graduates from Pure sciences and Engineering that which to specialize as Project Schedulers and Planners.
- Managers, supervisors and project team members involved in planning, implementing, supervising and directing projects.
- Upstream professionals, such as: engineers, geoscientists and planners.
- Downstream professionals, such as: facility engineers and operators.
- Corporate and asset managers involved in acquisitions, disposals and business re-engineering projects.

COURSE CONTENT

- Explain and evaluate the basic principles and techniques of project planning and project control.
- Apply new project management methods to your work environment.
- Discuss and use a variety of project scheduling techniques.
- Write management and technical reports.
- Use project networks and Gantt charts to assist in successful project planning.
- Describe and use resource levelling and fast-tracking techniques.





SATURDAY TIME/ MODULE 11.30am – 4.30pm	MON TIME/MODULE 4.30pm – 6.30pm	TUESDAY TIME/MODULE 4.30pm – 6.30pm	WEDNESDAY TIME/ MODULE 4.30pm – 6.30pm	THURSDAY TIME/ MODULE 4.30pm – 6.30pm	FRIDAY TIME/ MODULE 4.30pm – 6.30pm	SATURDAY TIME/ MODULE 11.30am – 4.30pm
Explain and evaluate the basic principles and techniques of project planning and project control. Apply new project management methods to your work environment.	Discuss and use a variety of project scheduling techniques.	Write management and technical reports.	Use project networks and Gantt charts to assist in successful project planning 1	Use project networks and Gantt charts to assist in successful project planning 2	Describe and use resource levelling and fast-tracking techniques 11	Describe and use resource levelling and fast-tracking techniques 2





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GLOBAL OIL
& GAS SERVICE DELIVERY

