

PetroSkills[®]

John M. Campbell

**2021 Oil and Gas Facilities and Midstream
Training and Development Guide**



OGCI[®]

John M. Campbell

RDC

Message from the CEO

A competent workforce has always been critical for our industry's success.

This guide presents the industry's most comprehensive workforce development programs – focused on building competent people. PetroSkills brings together industry-driven and industry-approved programs that deliver flexible, practical, fit-for-purpose training and development. This guide can help you find ways to advance your technical competence and build your company's value.



Since the first offerings of Production Operations 1 and the Campbell Gas Course® over 52 years ago, PetroSkills instructor-led training programs have set the standard for excellence from subsurface to downstream. This guide presents hundreds of sessions offered worldwide by top industry experts in each technical discipline across the value chain. Our competency-based programs are designed and delivered under the direction of the PetroSkills Alliance which includes some of the top petroleum companies worldwide, working together, to offer an industry-driven and vetted set of courses, products and services.

In addition to our instructor-led programs, our digital learning solutions and professional services continue to lead the industry; see page 3 for more details.

Also, we are excited to announce that we have expanded our capabilities in operator training by acquiring Simulation Solutions Inc. This allows us to offer you a dynamic library of hands-on simulator training for console and outside operators. See petroskills.com/ssi for details.

We are proud that our blended/virtual learning program, PetroAcademy™, continues to grow. This unique course model delivers the same competency development as our face-to-face courses via virtually delivered Skill Modules™, available from anywhere in the world.

Two important blended/virtual courses have been added to our extensive library, and we will be adding more throughout 2021.

- Basics of Rotating Mechanical Equipment - page 14
- Basics of Static Mechanical Equipment - page 14

For a full list of blended/virtual courses, see the back cover, or petroskills.com/blended.

I hope you find this guide useful. If there is any way that we can help you, your team, or your organization, please don't hesitate to contact me personally at ford.brett@petroskills.com, or contact our Customer Service Department at +1.918.828.2500.

A handwritten signature in black ink that reads "Ford Brett". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

FORD BRETT
CEO, PETROSKILLS

4 Course Progression Map

GAS PROCESSING

- 6 Gas Conditioning and Processing (Campbell Gas Course®) – G4
- 6 Gas Conditioning and Processing Principles - G3 (Virtual/Blended course)
- 6 Gas Conditioning and Processing – LNG Emphasis – G4 LNG
- 7 Gas Treating and Sulfur Recovery – G6
- 7 LNG Short Course: Technology and the LNG Chain – G29
- 7 Overview of Gas Processing – G2
- 7 Practical Computer Simulation Applications in Gas Processing – G5

PROCESS FACILITIES

- 10 Applied Water Technology in Oil and Gas Production – PF21
- 8 Choosing the Right Facilities Equipment for the Reservoir – PF3
- 11 CO₂ Surface Facilities – PF81
- 10 Fundamental and Practical Aspects of Produced Water Treating – PF23
- 9 Fundamentals of Process Safety - PS2
- 8 Introduction to Oil and Gas Production Facilities – PF2
- 8 Oil Production and Processing Facilities – PF4
- 10 Oil Well Pad Facilities (for Facilities Engineers) – OWPF-FE
- 8 Oil Well Pad Facilities (for non-Facilities Engineers) – OWPF-NFE
- 11 Onshore Gas Gathering Systems: Design and Operations – PF45
- 9 Process Safety Engineering – PS4
- 9 Process Safety Engineering Fundamentals - PSF (Virtual/Blended course)
- 9 Process Safety Engineering Principles - PSE (Virtual/Blended course)
- 10 Relief and Flare Systems – PF44
- 9 Risk Based Process Safety Management – HS45
- 11 Troubleshooting Gas Processing Facilities - PF49G
- 11 Troubleshooting Oil Processing Facilities - PF49O

INSTRUMENTATION, CONTROLS & ELECTRICAL

- 12 Electrical Engineering Fundamentals for Facilities Engineers – E3
- 12 Flow and Level Custody Measurement – IC73
- 12 Instrumentation and Controls Fundamentals for Facilities Engineers – IC3
- 12 Instrumentation, Controls and Electrical Systems Overview for Non-Electrical . . . Engineers – ICE21
- 13 Practical PID Control and Loop Tuning – IC74

MECHANICAL ENGINEERING

- 14 Basics of Rotating Mechanical Equipment - BRM (Virtual/Blended course)
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- 15 Compressor Systems - Mechanical Design and Specification – ME46
- 14 Corrosion Management in Production/Processing Operations – PF22
- 15 Fundamentals of Pump and Compressor Systems – ME44
- 15 Mechanical Specification of Pressure Vessels and Heat Exchangers – ME43
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PIPELINE ENGINEERING

- 16 Offshore Pipeline Design and Construction – PL43
- 16 Onshore Pipeline Facilities - Design, Construction and Operations – PL42
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OFFSHORE & SUBSEA

- 17 Flow Assurance for Offshore Production – FAOP
- 17 Fundamentals of Offshore Systems Design and Construction – OS4
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PRODUCTION AND COMPLETIONS ENGINEERING

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- 18 Production Operations 1 – P01 (Also available as a Virtual/Blended course)
- 18 Production Technology for Other Disciplines – PTO (Also available as a Virtual/Blended course)
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OPERATIONS & MAINTENANCE

- 20 Amine Sweetening and Gas Dehydration for Operations and Maintenance - OT41
- 21 Applied Maintenance Management – OM21
- 20 Crude Oil Pipeline Operations – OT50
- 20 LNG Facilities for Operations and Maintenance – OT43
- 21 Maintenance Planning and Work Control – OM41
- 20 NGL Extraction, Stabilization and Fractionation for Operations and Maintenance - OT42
- 20 Oil and Gas Processing Facilities for Operations and Maintenance – OT1
- 21 Process Plant Reliability and Maintenance Strategies – REL5
- 21 Turnaround, Shutdown and Outage Management – TSOM

HEALTH, SAFETY, ENVIRONMENT

- 23 Spill Control and Remediation Engineering - SCRE

PETROLEUM BUSINESS

- 26 Advanced Decision Analysis with Portfolio and Project Modeling – ADA
- 25 Cost Management – CM
- 25 Economics of Worldwide Petroleum Production – EWP
- 24 Essential Leadership Skills for Technical Professionals – OM23
- 24 Expanded Basic Petroleum Economics – BEC
- 25 Managing Non-Technical Risks - MNTR
- 25 Petroleum Finance and Accounting Principles – PFA
- 26 Petroleum Risk and Decision Analysis – PRD

PROCUREMENT/SUPPLY CHAIN MANAGEMENT

- 27 Contracts and Tenders Fundamentals – SC41
- 27 Cost/Price Analysis and Total Cost Concepts in Supply Management – SC64
- 27 Effective Materials Management – SC42
- 27 Inside Procurement in Oil and Gas – SC61
- 27 Strategic Procurement and Supply Management in the Oil and Gas Industry – SC62
- 27 Supplier Relationship Management – SC63

PROJECT MANAGEMENT

- 29 Advanced Project Management – FPM62
- 29 Advanced Project Management II – FPM63
- 30 Advanced Project Management Workshop - APMW
- 30 Construction Management for the Project Professional - FPM64
- 28 Managing Brownfield Projects – FPM42
- 28 Petroleum Project and Program Management Essentials - P3ME
- 30 Petroleum Project Changes and Claims Workshop - PPCC
- 28 Petroleum Project Management: Principles and Practices – PPM
- 29 Project Controls for Capital Projects - PC21
- 28 Project Management for Engineering and Construction – FPM22
- 29 Turnaround, Shutdown and Outage Management – TSOM

MULTI-DISCIPLINE TRAINING

- 32 Basic Petroleum Technology Principles – BPT (Virtual/Blended course)
- 32 Basic Petroleum Technology – BPT
- 32 Overview of the Petroleum Industry – OVP
- 32 Operations Crew Resource Management - OCRM

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The Alliance is the Advantage

The PetroSkills Alliance was founded in 2001 by Shell, BP and OCGI, to provide “important but not unique” competency-based training to the oil and gas workforce. Alliance members are provided opportunities to collaborate around challenges facing organizational competency and workforce development.

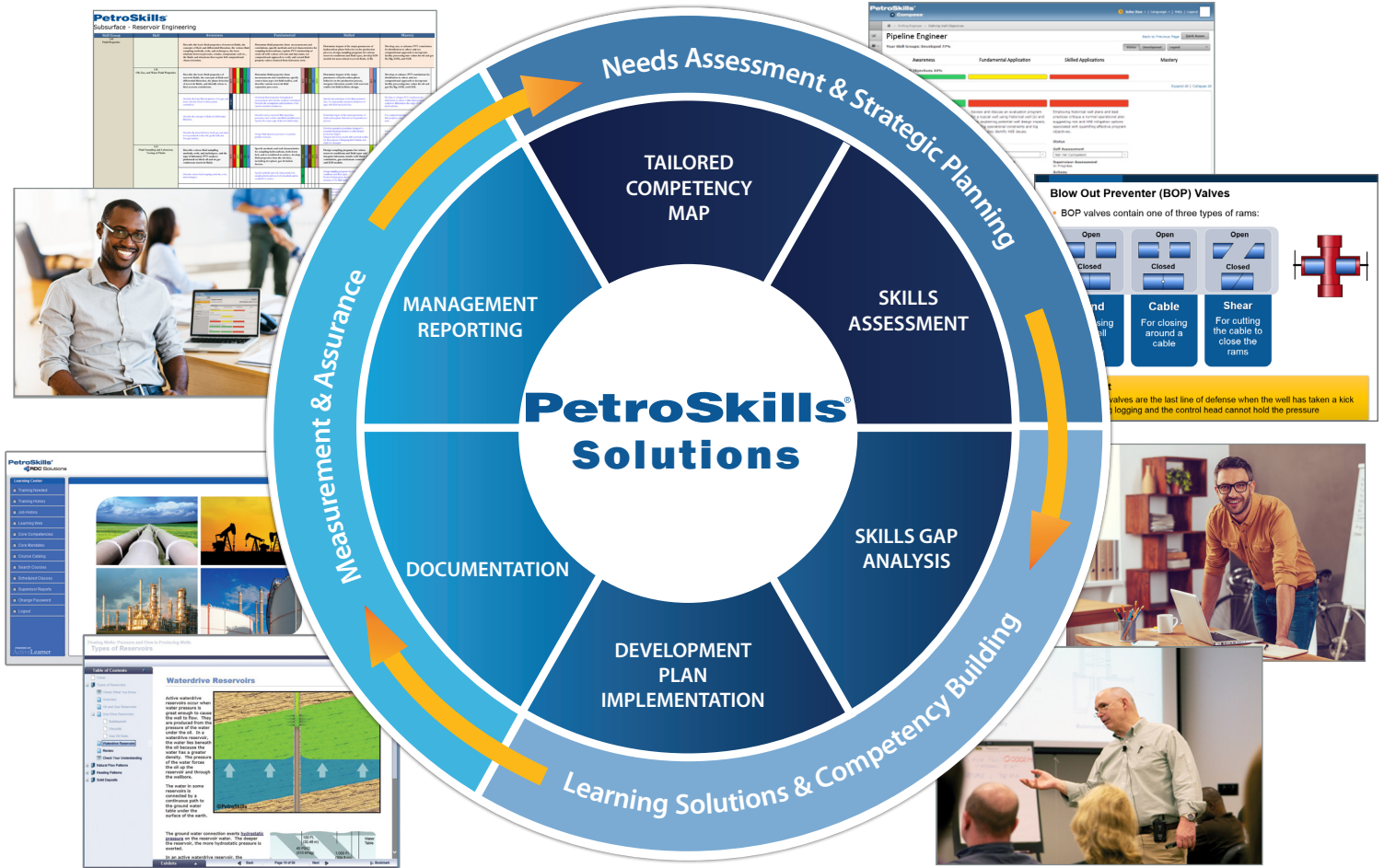
Alliance benefits include:



The PetroSkills Alliance spans the full energy value chain. Member companies include:



Our Approach to Workforce Development



As a trusted advisor to the industry for over 50 years
PetroSkills understands the challenges that our clients face every day.

We can help:

- Bridge knowledge gaps in your workforce and develop an enterprise-wide training standard
- Accelerate time to competency for Engineers, Project Managers, Operators, and Technicians
- Assure the integrity of your investments by meeting regulatory and compliance demands

PetroSkills has the experts, processes, and technology to provide a comprehensive workforce development plan. We enable companies to develop a workforce able to meet business challenges, enhance effectiveness, achieve compliance goals, mitigate risk, and improve operations. With our deep industry experience and competency building expertise, PetroSkills is the industry's trusted workforce development advisor.

For more information please email solutions@petroskills.com
or visit our website at www.petroskills.com/solutions

4 Facilities Course Progression Map

	Oil and Gas Processing			Process Safety	Instrumentation, Controls & Electrical		Offshore & Subsea	Pipeline Engineering
	Gas	Oil / Water	General Processing		Electrical	Instrumentation & Controls		
Specialized			CO ₂ Surface Facilities – PF81 p.12					
Intermediate	Gas Treating and Sulfur Recovery – G6 p.7 Practical Computer Simulation Applications in Gas Processing – G5 p.7 Onshore Gas Gathering Systems: Design & Operation – PF45 p.11 Troubleshooting Gas Processing Facilities – PF49G p.11	Troubleshooting Oil Processing Facilities – PF49O p.11	Separation Equipment - Selection & Sizing – PF42 (See website)	Relief and Flare Systems – PF44 p.10		Practical PID Control and Loop Tuning – IC74 p.13 Flow and Level Custody Measurement – IC73 p.12	Flow Assurance for Offshore Production – FAOP p.17	
Foundation		Oil Well Pad Facilities (For Facilities Engineers) – OWPF-FE p.10 Fundamental and Practical Aspects of Produced Water Treating – PF23 p.10 Applied Water Technology in Oil and Gas Production – PF21 p.10		Process Safety Engineering – PS4 p.9 Risk Based Process Safety Management – HS45 p.9 Fundamentals of Process Safety – PS2 p.9	Electrical Engineering Fundamentals for Facilities Engineers – E3 p.12	Instrumentation and Controls Fundamentals for Facilities Engineers – IC3 p.12	Fundamentals of Offshore Systems: Design and Construction – OS4 p.17 Offshore Pipeline Design and Construction – PL43 p.16 Corrosion Management in Production/ Processing Operations – PF22 p.14	Terminals and Storage Facilities – PL44 p.16 Onshore Pipeline Facilities: Design, Construction and Operations – PL42 p.16
	Oil Production and Processing Facilities – PF4 p.8							
	Gas Conditioning and Processing - LNG Emphasis – G4LNG p.6							
	Gas Conditioning and Processing – G4 p.6							
Basic	Gas Conditioning and Processing Principles – G3 Virtual/Blended Course p.6							
	LNG Short Course: Technology and the LNG Chain – G29 p.7 Overview of Gas Processing – G2 p.7 Introduction to Oil and Gas Production Facilities – PF2 p.8	Oil Well Pad Facilities (For Non-Facilities Engineers) – OWPF-NFE p.8	Choosing the Right Facilities Equipment for the Reservoir – PF3 p.8	Process Safety Engineering Principles – PSE Virtual/Blended Course p.9	Instrumentation, Controls and Electrical Systems Overview for Non-Electrical Engineers – ICE21 p.12		Overview of Subsea Systems – SS2 p.17 Overview of Offshore Systems – OS21 p.17	

Mechanical Engineering			Operations & Maintenance		Project Mgmt.	Procurement/ Supply Chain Management
Non-Rotating	Rotating	Reliability	O&M Management	Operator Training		
	Compressor Systems - Mechanical Design and Specification - ME46 p.15		Petroleum Project Changes and Claims Workshop - PPCC p.30 Construction Mgmt for the Project Professional - FPM64 p.30		Advanced Project Management - FPM62 p.29 Advanced Project Management II - FPM63 p.29 Advanced Project Mgmt Workshop - APMW p.30	
Mechanical Specification of Pressure Vessels and Heat Exchangers - ME43 p.15 Piping Systems - Mechanical Design and Specification - ME41 p.14	Fundamentals of Pump and Compressor Systems - ME44 p.15		Turnaround, Shutdown, and Outage Management - TSOM p.21 Process Plant Reliability and Maintenance Strategies - REL5 p.21		Managing Brownfield Projects - FPM42 p.28 Project Management for Engineering and Construction - FPM22 p.28 Project Controls for Capital Projects - PC21 p.29 Petroleum Project Management: Principles and Practices - PPM p.28	Cost/Price Analysis and Total Cost Concepts in Supply Management - SC64 p.27 Supplier Relationship Management - SC63 p.27 Strategic Procurement and Supply Management in the Oil and Gas Industry - SC62 p.27 Inside Procurement in Oil & Gas - SC61 p.27
				Amine Sweetening and Gas Dehydration for Operations & Maintenance - OT41 p.20 NGL Extraction, Stabilization and Fractionation for Operations & Maintenance - OT42 p.20 Crude Oil Pipeline Operations - OT50 p.20 Maintenance Planning and Work Control - OM41 p.21 LNG Facilities for Operations & Maintenance - OT43 p.20		Effective Materials Management - SC42 p.27 Contracts and Tenders Fundamentals - SC41 p.27
Basics of Static Mechanical Equipment - BSM p.14	Basics of Rotating Mechanical Equipment - BRM p.14		Applied Maintenance Management - OM21 p.21	Oil & Gas Processing Facilities for Operations & Maintenance - OT1 p.20	Petroleum Project and Program Management Essentials - P3ME p.28 Managing Non-Technical Risks - MNTR p.25	

Additional courses available in:

- Production & Completions**
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- Petroleum Business**
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- Professional Petroleum Development**
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Gas Conditioning and Processing Principles – G3

BASIC

52 HOURS

PetroSkills®
PetroAcademy™

BLENDING LEARNING

This course will be delivered virtually through PetroAcademy providing participants with the knowledge they need at their convenience.

The Campbell Gas Course® has been the industry standard for more than 52 years and the core competencies of the Campbell Gas Course are now available in self-paced online Skill Modules™. These competencies set the base knowledge that is required for a successful career as an entry-level facilities engineer, seasoned operator, and/or field supervisor. These modules provide an understanding of common terminology, hydrocarbons and their physical properties, qualitative and quantitative phase behavior, hydrates, and fluid flow. In addition, they provide a systematic approach to understanding the common types of equipment, and the primary unit operations in both offshore and onshore gas conditioning and processing facilities. Each module ranges from 3–5 hours of self-paced activities, with pre and post assessments. In addition, the modules have interactive exercises and problems to solve on the various topics.

DESIGNED FOR

Facilities engineers, process engineers, senior operations personnel, field supervisors, and engineers who select, design, install, evaluate, or operate gas processing plants and related facilities.

SKILL MODULES

- Hydrocarbon Components and Physical Properties
- Introduction to Production and Gas Processing Facilities
- Qualitative Phase Behavior and Vapor Liquid Equilibrium
- Water/Hydrocarbon Phase Behavior
- Thermodynamics and Application of Energy Balances
- Fluid Flow
- Separation
- Heat Transfer Equipment Overview
- Pumps and Compressors Overview
- Refrigeration, NGL Extraction, and Fractionation
- Contaminant Removal - Gas Dehydration
- Contaminant Removal - Acid Gas and Mercury

Self-paced, virtual course
- start anytime.
Tuition US\$3890

FOR MORE INFORMATION, VISIT
PETROSKILLS.COM/G3ONLINE

Gas Conditioning and Processing – G4 The Campbell Gas Course®

FOUNDATION

10-Day

The Campbell Gas Course® has been the standard of the industry for more than 52 years. Tens of thousands of engineers have attended our G4 program, considered by many to be the most practical and comprehensive course in the oil and gas industry.

The Campbell Gas Course® textbooks, Volumes 1 and 2, are routinely updated to reflect evolving technologies in this broad industry.

Both hand-methods and computer-aided analysis are used to examine sensitivities of technical decisions. To enhance the learning process, about 30 problems will be assigned, reviewed, and discussed throughout the course. Problems will be solved individually and in teams.

DESIGNED FOR

Production and processing personnel involved with natural gas and associated liquids, to acquaint or reacquaint themselves with gas conditioning and processing unit operations. This course is for facilities engineers, process engineers, senior operations personnel, field supervisors, and engineers who select, design, install, evaluate, or operate gas processing plants and related facilities. A broad approach is taken with the topics.

YOU WILL LEARN

- Application of gas engineering and technology in facilities and gas plants
- Important specifications for gas, NGL, and condensate
- About the selection and evaluation of processes used to dehydrate natural gas, meet hydrocarbon dewpoint specifications, and extract NGLs
- How to apply physical/thermodynamic property correlations and principles to the operation, design, and evaluation of gas processing facilities
- Practical equipment sizing methods for major process equipment
- To evaluate technical validity of discussions related to gas processing
- To recognize and develop solutions for operating problem examples and control issues in gas processing facilities

COURSE CONTENT

- Gas processing systems
- Physical properties of hydrocarbons
- Terminology and nomenclature
- Qualitative phase behavior
- Vapor-liquid equilibrium
- Water-hydrocarbon phase behavior, hydrates, etc.
- Basic thermodynamics and application of energy balances
- Process control and instrumentation
- Relief and flare systems
- Fluid hydraulics; two-phase flow
- Separation equipment
- Heat transfer equipment
- Pumps
- Compressors and drivers
- Refrigeration in gas conditioning and NGL extraction facilities
- Fractionation
- Glycol dehydration; TEG
- Adsorption dehydration and hydrocarbon removal
- Gas treating and sulfur recovery
- Overview and summary

2021 Schedule and Tuition (USD)

ABERDEEN, UK	27 SEP-8 OCT	\$9990+VAT
DENVER, US	7-18 JUN	\$9120
HOUSTON, US	26 JUL-6 AUG	\$9115
	6-17 DEC	\$9115
KUALA LUMPUR, MALAYSIA	29 NOV-10 DEC	\$9990
LONDON, UK	10-21 MAY	\$9990+VAT
	15-26 NOV	\$9990+VAT
PERTH, AUSTRALIA	16-27 AUG	\$9995+GST
STAVANGER, NORWAY	18-29 OCT	\$9990
VIRTUAL	26 APR-14 MAY	\$8990
	7-25 JUN	\$8990
	6-24 SEP	\$8990
	1-19 NOV	\$8990

Gas Conditioning and Processing – LNG Emphasis – G4 LNG

FOUNDATION

10-DAY

This is the LNG-industry version of our popular G4 course, with expanded coverage of refrigeration and LNG technologies. The course includes in-depth information on basic natural gas conditioning and processing. This is mainly the core G4 Campbell Gas Course® curriculum in an LNG context with the expanded refrigeration coverage. The course covers relevant details of both the mixed refrigerant (APCI) and cascade (ConocoPhillips) processes in LNG liquefaction. Reference is made to other liquefaction processes including Mixed Fluid Cascade Process, Dual Mixed Refrigerant Process, and Nitrogen (single or dual) Cycles being developed for FLNG projects. This is followed by higher level coverage of the LNG value chain consisting of a gas liquefaction section; LNG run-down to LNG storage; loading berth for LNG export; LNG shipping; and LNG receiving and regasification terminals. Versions of this course have been taught in many of the world's base-load and peak-shaving LNG plants, such as in Australia, Indonesia, Malaysia, Norway, Qatar, UK, and West Indies.

Clients are invited to evaluate the curriculum for LNG Short Course: Technology and the LNG Chain (G29). The G29 course has more coverage on LNG technology and the LNG value-chain and does not contain the same materials as The Campbell Gas Course® (G4).

DESIGNED FOR

Personnel involved with natural gas processing and LNG production, as well as anyone interested in a solid technical understanding of the principles of an LNG plant.

YOU WILL LEARN

- The basics of LNG gas conditioning and processing
- Selection and evaluation processes used to dehydrate natural gas, remove heavy components and other contaminants, and extract NGLs for LNG plants
- Physical/thermodynamic property correlations and principles, including heating values, etc. as applied to gas processing facilities and LNG plants
- Fundamentals of propane, propane-precooled, mixed refrigerants, and cascade systems used in LNG plants
- Key points in other LNG liquefaction technologies
- How to perform and review equipment sizing for major process equipment
- Solutions to operating problems and control issues in LNG and gas processing facilities

COURSE CONTENT

Basic gas technology principles • Terminology and nomenclature • Physical properties of hydrocarbons • Qualitative phase behavior • Vapor-liquid equilibrium • Water-hydrocarbon system behavior, hydrates, etc. • Thermodynamics of LNG processes • Separation equipment • Gas treatment, CO₂, and H₂S removal • Dehydration of natural gas (TEG and Molecular Sieve) • Heat transfer and exchangers • Pumps and compressors • Refrigeration systems • LNG liquefaction technologies • Fractionation • and more...

2021 Schedule and Tuition (USD)

DOHA, QATAR	10-21 OCT	\$9990
HOUSTON, US	14-25 JUN	\$9115
VIRTUAL	5-23 APR	\$9115



Overview of Gas Processing – G2

BASIC 3-DAY

G2 is a versatile overview of the gas conditioning and processing industry. This course is designed for a broad audience and is engaging and interactive, utilizing basic technical exercises and terminology to communicate key learning points. This course does not cover the technology and engineering principles in depth, and is only recommended for those needing an overview of the industry and common processes and equipment used.

DESIGNED FOR

As a wide ranging overview, it is suitable for interested parties, such as geologists, reservoir engineers, procurement professionals, and sales or business development staff; related specialists like environmental staff, operational staff, and shift foremen; those new to the industry, such as entry-level (1-2 year) engineers; or anyone interested in a general, technically-oriented overview of the gas processing industry.

YOU WILL LEARN

- An overview of natural gas and world energy trends
- Natural gas sources, makeup, properties, specifications, and related oil and gas terminology
- Markets and uses for NGL, LPG, ethane, propane, and butane
- Summary of gas processing costs, and commercial and contract issues in liquids extraction
- How gas is transported and sold
- Overview of the common equipment used in the oil and gas industry, including heat exchangers, pumps, and compressors
- Options for various basic gas conditioning and processing steps, including acid gas removal, dehydration, liquid extraction, product fractionation, LNG overview, pipelines, sulfur recovery, and acid gas injection

COURSE CONTENT

Natural gas and world energy trends • Hydrocarbon components and physical properties • The role of gas processing in the natural gas value chain • Heat transfer equipment • Pumps and compressors • Acid gas removal • Gas dehydration • NGL extraction • Fractionation and stabilization • LNG • Pipelines and storage • Sulfur recovery and acid gas injection

2021 Schedule and Tuition (USD)

HOUSTON, US	19-21 OCT	\$3250
LONDON, UK	25-29 OCT	\$3790+VAT

LNG Short Course: Technology and the LNG Chain – G29

BASIC 5-DAY

This LNG Short Course is designed for participants requiring moderate technical coverage, coupled with information on LNG commerce and all parts of the LNG Value Chain. Over 5-days, the course covers technical LNG basics and facility operation topics, plus technical, design, and commercial issues. Selected exercises and syndicates are used to reinforce the main topics of LNG trade and technology. In-house versions are available with either increased technical and operational emphasis or increased project and development emphasis. More in-depth coverage for technical, production, and processing personnel is available in our 10-day course, G4 LNG, Gas Conditioning and Processing – LNG emphasis.

DESIGNED FOR

Commercial and managerial staff looking for a concise overview; engineers new to the LNG industry; operations supervision staff and senior plant personnel; specialists looking to broaden their general knowledge of LNG; and staff involved in LNG commerce and interested in LNG technical fundamentals.

YOU WILL LEARN

- What is LNG, why it is produced, and what is the current status of the industry
- LNG facilities world-wide
- The LNG chain and impact of contractual issues on LNG plant design and operation; LNG pricing
- A survey of commercial and contractual issues
- Project costs, feasibility, development, and issues
- Some technical fundamentals of gas processing, such as molecular weight, heating value, Wobbe Index, vapor pressure, multi-component mixtures, thermodynamics
- Refrigeration: single and multi-component refrigeration cycles
- Technologies used in the production of LNG for base-load and small scale production, issues relating to technology selection, and operation
- Equipment used in the production of LNG: heat exchangers, compressors and drivers used for LNG, pumps, and turbo expanders
- To apply knowledge of LNG gas pretreatment, drying, and refrigeration
- About LNG storage, shipping, and terminals, sizing basis, and small scale tanks
- Types of LNG carriers, marine management issues, and LNG transfer
- LNG importing, regasification of LNG and distribution to consumers, basis for sizing, technology selection, and energy integration
- New developments: development of off-shore LNG operations to regasification and liquefaction; coal seam gas project issues
- Site selection and HSSE considerations

COURSE CONTENT

What LNG is and where it comes from • Physical properties of LNG • Vapor-liquid equilibrium behavior of LNG and refrigerants • Gas pre-treatment • Heat exchangers • Refrigeration • Rotating machinery • Liquefaction processes • LNG storage • LNG shipping • LNG importing

2021 Schedule and Tuition (USD)

HOUSTON, US	15-19 NOV	\$4310
PERTH, AU	1-5 NOV	\$5610+GST
VIRTUAL	23 AUG-3 SEP	\$3890+VAT

Practical Computer Simulation Applications in Gas Processing – G5

INTERMEDIATE 5-DAY

This full 5-day course covers sweet gas processing and NGL extraction, using a commercial simulator to perform calculations. A basic working knowledge of the commercial process simulation package used (generally UNISIM) is suggested to achieve the course learning objectives. Volumes 1 and 2 of the John M. Campbell textbooks, Gas Conditioning and Processing, are the basis for the material presented, coupled with a 'red thread' comprehensive exercise based on a typical gas processing facility (can be applied to onshore or offshore facilities). The exercise is developed in stages as the material is covered. Participants will develop a comprehensive process simulation that includes a dew point control process, a mechanical refrigeration process with economizers, hydrate inhibition using MEG, and NGL liquid product stabilization with recycle.

NOTE: The individual exercises include condensed gas processing fundamentals drawn from the internationally famous Campbell Gas Course® textbooks Volumes 1 & 2.

DESIGNED FOR

Engineers that require practical in-depth training on natural gas processing and NGL recovery processes, with emphasis on the use and benefits of a simulation package.

YOU WILL LEARN

- To determine the water content and hydrate formation conditions for gas streams using both a commercial process simulator and hand calculation methods
- Techniques to inhibit hydrate formation, including injection of equilibrium inhibitors such as methanol and MEG
- Preliminary design and evaluation of TEG dehydration processes using quick hand calculations
- Process design used to control the hydrocarbon dew point of sales gas streams by removing NGLs using mechanical refrigeration processes
- Various techniques to optimize mechanical refrigeration systems
- How to use the process simulator to evaluate the impact that pressure and temperature changes have on the sizing of process equipment and levels of NGL recovery
- How to use short-cut distillation calculations to provide input to rigorous distillation simulations in order to obtain faster convergence
- Which thermodynamic property correlations are appropriate for various gas processing systems
- Limitations associated with commercial simulation packages and how the results can be quickly checked for relative accuracy

COURSE CONTENT

Physical properties of hydrocarbons • Qualitative phase behavior • Vapor-liquid equilibrium • Water-hydrocarbon equilibrium • Basic thermodynamic concepts • Separation equipment • Heat transfer • Pumps • Compressors • and more...

2021 Schedule and Tuition (USD)

DUBAI, UAE	17-21 OCT	\$5770+VAT
HOUSTON, US	12-16 JUL	\$4950

* plus computer charge

Gas Treating and Sulfur Recovery – G6

INTERMEDIATE 5-DAY

This course emphasizes process selection, practical operating issues, technical fundamentals, and integration of the sweetening facilities into the overall scheme of gas processing. Sulfur recovery and tail gas processes are also covered, including standard Claus configurations, SuperClaus, EuroClaus, SCOT, etc. Special design and operation topics, such as trace sulfur compound handling and the importance of H₂S:CO₂ ratio, are covered as well. Related topics reviewed during the course include liquid product treating, corrosion, materials selection, and NACE requirements.

DESIGNED FOR

Production and processing personnel involved with natural gas treating and sulfur recovery, requiring an understanding of the principles of these process operations. This course is for facilities engineers, process engineers, operations personnel, and field supervisors, as well as others who select, design, install, evaluate, or operate gas sweetening and sulfur recovery facilities.

YOU WILL LEARN

- Evaluation and selection of processes to remove acid gases (H₂S, CO₂, COS, CS₂, mercaptans, etc.) from gas and NGLs
- The advantages and disadvantages of available gas treating technology and processes
- How to estimate solvent circulation rates, energy requirements, and equipment sizes
- To recognize and evaluate solutions to common operating and technical problems
- Sulfur recovery technologies, including an overview of the Claus Sulfur process
- How to select among the proper sulfur recovery process given differing process conditions
- Tail gas cleanup

COURSE CONTENT

Fundamentals of sour gas processing, sweetening, etc. • Overview of gas treating and sulfur recovery, terminology • Gas specifications and process selection criteria • Generic and specialty amine treating • Common operating and technical problems • Proprietary amine solvents, such as Sulfinol and Flexsorb • Carbonate processes • Physical absorption processes, e.g. Selexol • Metallurgical issues (corrosion) • Other technologies and new developments • Selective treating, acid gas enrichment • Solid bed and non-regenerable treating; scavengers • Liquid product treating • Sulfur recovery processes (including degassing) • Tail gas clean-up (SCOT-type, CBA, and others) • Acid gas injection • Membranes • Emerging and new technologies • Course workshop and summary

2021 Schedule and Tuition (USD)

HOUSTON, US	14-18 JUN	\$4640
LONDON, UK	27 SEP-1 OCT	\$5360+VAT
VIRTUAL	22 MAR-2 APR	\$4090



Introduction to Oil and Gas Production Facilities – PF2

BASIC 3-DAY

The scope of the discussion ranges from an overview of the oil and gas industry, hydrocarbon phase behavior characteristics, and different reservoir types, to product specifications and the processes used to meet these. Other facilities considerations are addressed, such as process safety and downstream processing that may impact the production facility selection and operation.

DESIGNED FOR

Those interested in an overview of production facilities, including subsurface professionals, line managers, sales or business development staff, environmental personnel, operations staff, and those new to the industry.

YOU WILL LEARN

- How the reservoir type, drive mechanism, fluid properties, location, and product specifications influence the selection and design of the production facilities
- How to do quick 'back of the envelope' calculations to better understand equipment sizing and capacity
- Parameters that affect the design and specification of oil stabilization and dehydration equipment
- Awareness of the parameters that determine flowline/gathering system capacity
- The purpose of separators in a production facility and familiarity with the typical configurations
- Typical design parameters, operating envelopes, common operating problems of oil and gas production equipment, and the effect of changing feed conditions over the life of a field
- To describe oil dehydration/desalting process options and equipment
- Produced water treating options and the dependence on surface vs. subsurface, offshore vs. onshore disposal
- Compressor performance characteristics and how they affect production rates and facility throughput
- Gas dehydration process options, with a particular emphasis on glycol dehydration
- The principles of asset integrity and inherently safe design given the rate, composition, temperature, and pressure of the production stream
- About midstream facilities required downstream of the primary production facility to deliver saleable products to the market, and how these facilities are affected by production rates, composition, and production facility performance

COURSE CONTENT

Overview of oil and gas industry • Qualitative phase behavior and reservoirs • Hydrocarbon properties and terminology • Typical sales/disposal specifications • Flowlines, piping and gathering systems • Production separation • Oil processing • Water injection systems (including pumps) • Gas handling - compression, dehydration • Measurement and storage • Other facilities considerations - utilities, process safety • Midstream facilities - gas processing, pipelines, LNG

2021 Schedule and Tuition (USD)

HOUSTON, US 27-29 SEP \$3250

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Choosing the Right Facilities Equipment for the Reservoir – PF3

BASIC 5-DAY

This course is similar to Introduction to Oil and Gas Production Facilities (PF-2), but is presented in the context of concept selection and front-end field development planning.

DESIGNED FOR

This course is intended for those working on field development teams, as well as those who need to better understand how surface facilities are selected and how subsurface characteristics affect facility design and specification.

YOU WILL LEARN

- How to develop the project framework and decision making strategy
- How the specification of production/processing facilities is influenced by reservoir type, drive mechanism, fluid properties, location, and contractual obligations
- Operating conditions that affect the specification of the production facilities from the wellhead through initial separation
- Parameters that affect the design and specification of oil stabilization and dehydration equipment
- The design and specification of produced water systems appropriate for the rate and composition of the produced water to meet the required environmental regulations and/or injection well capacity
- The design and specification of gas handling facilities, including compression dehydration and sweetening
- The impact of artificial lift systems and secondary/tertiary production projects on facilities selection and design
- The principles of asset integrity and inherently safe design given the rate, composition, temperature, and pressure of the production stream
- About midstream facilities required downstream of the primary production facility to deliver saleable products to the market, and how these facilities are affected by production rates, composition, and production facility performance

COURSE CONTENT

Reservoir types, fluid properties, and typical product specifications • Flowlines, gathering systems, flow assurance, and production separation • Oil dehydration and stabilization • Produced water treating and water injection systems • Gas handling, including compression, dehydration, and sweetening • The effect of artificial lift systems, and secondary and tertiary recovery projects • Midstream facilities - gas processing, pipelines, product storage, and LNG • Other facility considerations - utility systems, process safety and asset integrity, and environmental regulations

2021 Schedule and Tuition (USD)

HOUSTON, US 3-7 MAY \$4310

+1.800.821.5933 (toll free North America)

Oil Well Pad Facilities (for non-Facilities Engineers) – OWPF-nFE

BASIC 3-DAY

NEW

This course provides a comprehensive overview of onshore oil well-pad facilities as typically utilized for the development of shale/tight oil fields. The course is focused on the purpose, function, and operation of the facilities - what, why, how - not on the more detailed engineering aspects which are covered in a companion course OWPF-FE (for Facilities Engineers). A major aspect of the non-Facilities Engineers course is how the pad facilities integrate with the wells/subsurface and also the product (oil, gas, produced water) export systems. This course does not contain many calculations; instead the intent is to generate discussion and better understanding of the issues involved with design, operation and maintenance of the pad facilities, and their role in providing value to the development as a whole.

DESIGNED FOR

This course is aimed primarily at non-Facilities Engineers, e.g. production/reservoir engineers, operations personnel, environmental staff, etc, or anyone who needs a basic understanding of oil well pad facilities - what they do and how they work.

YOU WILL LEARN

- The different types of process flow schemes typically used for oil well pad facilities
- The various types of engineering drawings used to describe facilities and how to interpret them
- How well production characteristics/performance should be integrated into the facilities design
- The range of fluid compositions and properties typically encountered in the newer shale/tight oil developments and their impact on facilities design and operation
- The main processing requirements and associated equipment types typically required
- How the various processes and equipment types work with focus on the requirements of typical onshore shale/tight oil well pad facilities
- Effects of third party gas gathering system design and operation on the well pad facilities

COURSE CONTENT

Engineering drawings • Oil well pad process flow diagrams • Well production characteristics • Fluid compositions and properties • Separation equipment • Oil treating • Oil stabilization • Storage tanks and vapor recovery • Facility piping systems • Compressors • Sand handling • Produced water handling • Flow measurement

2021 Schedule and Tuition (USD)

HOUSTON, US 6-8 DEC \$3250

Any course is available in-house at your location. Contact us today.

Oil Production and Processing Facilities – PF4

FOUNDATION 10-DAY

The emphasis of this course is on oil production facilities - from the wellhead, to the delivery of a specification crude oil product, to the refinery. Both onshore and offshore facilities are discussed. Produced water treating and water injection systems are also covered. Solution gas handling processes and equipment will be discussed at a relatively high level. In addition to the engineering aspects of oil production facilities, practical operating problems will also be covered, including emulsion treatment, sand handling, dealing with wax and asphaltenes, etc. Exercises requiring calculations are utilized throughout the course. The course is intended to complement the G-4 Gas Conditioning and Processing course, focused on the gas handling side of the upstream oil and gas facilities area.

DESIGNED FOR

Process/facilities engineers and senior operating personnel involved with the design and operation of oil and produced water processing facilities.

YOU WILL LEARN

- Well inflow performance and its impact on production/processing facilities
- About oil, gas, and water compositions and properties needed for equipment selection and sizing
- How to select and evaluate processes and equipment used to meet sales or disposal specifications
- To apply physical and thermodynamic property correlations and principles to the design and evaluation of oil production and processing facilities
- How to perform equipment sizing calculations for major production facility separation equipment
- To evaluate processing configurations for different applications
- How to recognize and develop solutions to operating problems in oil/water processing facilities

COURSE CONTENT

Reservoir traps, rocks, and drive mechanisms • Phase envelopes and reservoir fluid classification • Well inflow performance • Artificial lift • Gas, oil, and water - composition and properties • Oil gathering systems • Gas-liquid separation • Emulsions • Oil-water separation • Oil treating • Desalting • Oil stabilization and sweetening • Oil storage and vapor recovery • Sand, wax, asphaltenes, and scale • Transportation of crude oil • Produced water treatment • Water injection systems • Solution gas handling

2021 Schedule and Tuition (USD)

DENVER, US	10-21 MAY	\$9120
DOHA, QATAR	4-15 JUL	\$9715
DUBAI, UAE	5-16 DEC	\$9715+VAT
HOUSTON, US	8-19 NOV	\$9115
LONDON, UK	2-13 AUG	\$9115+VAT
VIRTUAL	16 AUG-3 SEP	\$8990



Fundamentals of Process Safety – PS2

FOUNDATION 5-DAY

The course will cover the fundamentals of Process Safety for all staff levels of processing facilities in the upstream and downstream oil, gas, and petrochemical industry. To identify how different disciplines and roles can have an impact on Process Safety performance, there is a rolling case study (Project COLEX) throughout the course that involves the installation of a separator vessel. The associated Process Safety considerations and implications are explored and discussed at the various stages, from design to full operation.

DESIGNED FOR

The course will benefit all staff associated with the operation, maintenance, and governance in production and processing facilities. It is relevant to roles, including senior management, project and engineering support teams, HSE support, supervisors, and operator and maintenance technicians. An understanding is provided of the design basis and essentials for safe operations, without addressing the more detailed calculation aspects covered in Process Safety Engineering PS4.

YOU WILL LEARN HOW TO

- Identify the systems and processes required to enhance process safety in a high hazard installation
- Identify and choose appropriate techniques and tools to qualitatively assess process hazards
- Determine appropriate risk reduction strategies and identify effective risk reduction measures to prevent, control, and mitigate process safety risk
- Recognize and develop systems to manage Process Safety in operations through operating procedures and operating limits, ensuring plant integrity through maintenance and inspection
- Use a management of change process to minimize risk of change
- Identify and monitor key performance measures and verifications to maintain and improve safety performance

COURSE CONTENT

Business context for Process Safety • Risk assessment (hazard identification, hazard scenarios, consequence and likelihood analysis, and risk analysis and tools and techniques) • Risk reduction measures (barriers) • Management of process safety in operations (operating procedures, design and operating limits, human factors, inspection and maintenance, and emergency response) • Management of change • Learning from previous incidents and near misses • Self-verification and measurement • Process safety key performance indicators • Management review and auditing • Process safety leadership (governance and culture)

2021 Schedule and Tuition (USD)

HOUSTON, US	4-8 OCT	\$4410
LONDON, UK	22-26 NOV	\$5135+VAT

Process Safety Engineering Fundamentals - PSF

FOUNDATION **NEW**

PetroSkills PetroAcademy™

BLENDED LEARNING

This course will be delivered virtually through PetroAcademy providing participants with the knowledge they need at their convenience.

This Process Safety Engineering Blended program extends the Process Safety Engineering Principles program to the Fundamental level. Course material is reinforced using problems, simple calculations, and applications to an example facility. The applications provide an opportunity to integrate the concepts and methods in an oil and gas environment.

2021 Schedule and Tuition (USD)

VIRTUAL	30 MAR-21 MAY	\$3990
	28 SEP-19 NOV	\$3990

Process Safety Engineering Principles – PSE

BASIC 40 HOURS

BLENDED LEARNING

This course will be delivered virtually through PetroAcademy providing participants with the knowledge they need at their convenience.

This Process Safety Engineering Principles Blended Program provides an overview of process safety engineering fundamentals for hydrocarbon processing facilities.

YOU WILL LEARN

- How to analyze and assess different types of risk analyses
- How to utilize models that are associated with risk management
- The importance of building safety into processes
- How Inherently Safer Design can be applied
- and more...

COURSE CONTENT

Process Safety Risk Analysis and Inherently Safer Design • Process Hazards Analysis and Layers of Protection analysis techniques • Leakage and dispersion of hydrocarbons • Combustion behavior of hydrocarbons • and more...

**Self-paced, virtual course
- start anytime.
Tuition US\$3890**

Process Safety Engineering – PS4

FOUNDATION 5-DAY

This is a competency driven, fundamental course covering the broad scope of process safety engineering. Other topics relevant to process safety are introduced, showing how process safety engineering fits into the broader context of risk management and process safety management, but the emphasis is on the technical content.

The course is designed to accelerate the participants process safety learning curve. Serious process safety incidents occur somewhere in the industry nearly every week, and few if any are new; essentially the same ways of going wrong are found repeatedly, in different operating contexts. One of the main objectives of PS-4 is to develop knowledge of the more common ways of going wrong, and one of the ways of doing that is discussion of major incidents, including some of those that have affected our regulatory environment. PS-4 graduates should be able to see their facilities and projects with a new perspective, a new sense of not only how things work, but also of how things fail. They will also have an appreciation of the reasons for some of our process safety practices and regulations, which will contribute to more consistent and better reasoned application of them.

DESIGNED FOR

Anyone who needs to work with process safety engineers; this would include facilities engineers, operations and maintenance supervisors, project engineers and managers, entry level process safety engineers, experienced professionals new to oil and gas, and anyone who needs a general understanding of the breadth of the process safety engineering discipline. Technical staff from insurance companies and regulatory agencies have found the course useful. Those requiring a less technical course may be interested in PS-2, Fundamentals of Process Safety; and risk-based process safety management is the subject of HS45.

YOU WILL LEARN

- Types of equipment and process systems that have historically been problematic in the Upstream and Midstream oil and gas industry
- Basics of risk analysis
- Thinking in terms of Inherently Safer Design
- Most common process hazard analysis methods and where they are used
- Layers of Protection concept - what the different layers are and how they are applied
- Detection and mitigation methods for different types of hazards

COURSE CONTENT

Historical incidents and problem areas • Risk analysis basics • Process hazards analysis techniques - overview • Layers of protection • Inherently safer design • Hazards associated with process fluids • Leakage and dispersion of hydrocarbon releases • Combustion behavior of hydrocarbons • Sources of ignition • Hazards associated with specific plant systems • Plant layout and equipment spacing • Pressure relief and disposal systems • Corrosion and materials selection • Process monitoring and control • Safety instrumented systems • Fire protection principles • Explosion protection

2021 Schedule and Tuition (USD)

HOUSTON, US	23-27 AUG	\$4525
KUALA LUMPUR, MYS	18-22 OCT	\$6015
LONDON, UK	13-17 DEC	\$5265+VAT
PERTH, AU	7-11 JUN	\$6605+GST

Risk Based Process Safety Management

– HS45

FOUNDATION 5-DAY

This course introduces process safety management in the oil and gas industry, the elements and benefits of process safety management systems, and tools for implementing and managing a system. In this course the participant will learn to use tools and techniques for managing process safety. The Center for Chemical Process Safety's (CCPS) book titled "Guidelines for Risk Based Process Safety" or "RBPS Guidelines" will be the text for this course. Participant-centered exercises and selected case studies will be used to build on the concepts that CCPS advocates for risk based process safety.

Throughout the course, participants will be challenged to think how their process safety management system can be enhanced and modified to meet the concepts of risk-based decision making. An individual action plan will be developed to apply the information from the course to the workplace.

DESIGNED FOR

HSE professionals, operations and maintenance technicians, engineers, supervisors and project managers requiring a basic foundation in developing and managing process safety. The more technical aspects of process safety engineering are covered in PS4, Process Safety Engineering.

YOU WILL LEARN HOW TO

- Identify processes applicable to Process Safety Management (PSM) and describe relevant terms used
- Identify which standards are to be applied for managing process hazards
- Apply programs and tools for managing a PSM system
- Choose appropriate decision making methods and tools to identify process hazards
- Describe and use techniques available for control of hazards associated with process designs
- Describe the criteria and methods of selecting equipment and safeguarding controls
- Research and apply the performance parameters for the safety systems in operations
- Explain the role of all disciplines and their contribution to the management of potential HSE hazards

COURSE CONTENT

Process safety culture and competency • Compliance with standards • Understand hazards and risk • Operating procedures and safe work practices • Asset integrity and reliability • Management of change • Conduct of operations • Incident investigation (associated with plant failures) • Measurement and metrics • Management review and continuous improvement

2021 Schedule and Tuition (USD)

DUBAI, UAE	12-16 SEP	\$5550+VAT
HOUSTON, US	8-12 NOV	\$4410
LONDON, UK	26-30 JULY	\$5135+VAT
VIRTUAL	29 NOV-9 DEC	\$3990



Applied Water Technology in Oil and Gas Production – PF21

FOUNDATION 5-DAY

This course provides an overview of the main water handling systems typically encountered in upstream (E&P) production operations, both onshore and offshore. The chemistry of the main water-related problems of mineral scales, corrosion, bacteria, and oily water will be reviewed both from the theoretical and practical aspects. Produced water treatment equipment and typical water quality specifications will also be reviewed, as well as water injection and disposal systems. An exercise will be given to identify typical system problems and to apply the knowledge you gained to propose solutions. Emphasis will be placed on understanding and resolving operational problems in process equipment.

DESIGNED FOR

Managers, engineers, chemists, and operators needing to understand water-related problems in oil and gas production and their solutions.

YOU WILL LEARN

- The basics of oilfield water chemistry
- How to monitor and control corrosion, scale, and bacterial growth in produced water and water injection/disposal systems
- How to implement system surveillance programs to detect potential problems before system damage occurs
- Produced (oily) water treatment options and related treatment equipment
- How to use the knowledge gained to identify typical system problems and be able to propose solutions

COURSE CONTENT

Water chemistry fundamentals • Water sampling and analysis • Water formed scales • Corrosion control • Water treatment microbiology • Produced water discharge/disposal and treatment principles • Produced water treating equipment - theory of operation, advantages and disadvantages, and the importance of oil droplet size • Water injection and disposal systems - theory of operation, corrosion, scale, and biological control • Case study

2021 Schedule and Tuition (USD)

HOUSTON, US 26-30 JUL \$4410

Fundamental and Practical Aspects of Produced Water Treating – PF23

FOUNDATION 5-DAY

This course covers topics related to Produced Water Treatment in upstream oil and gas operations. Produced water composition and physical properties are covered. Water quality requirements for various disposal methods are addressed, including onshore surface discharge, offshore discharge to sea, and reinjection for disposal or waterflood. Regulatory requirements and analytical methods used to monitor and ensure regulatory compliance are discussed. Treatment technology is presented along with practical considerations for selecting and operating typical water treatment equipment. Representative process flow diagrams illustrate equipment selection, design features, layout, and processes. Chemical treatment options are also considered.

DESIGNED FOR

Managers, engineers, chemists, and senior operations personnel responsible for designing, operating, and maintaining facilities that process and manage produced water. This course will provide participants with an understanding of the technical aspects required to select, design, maintain, and troubleshoot produced water equipment.

YOU WILL LEARN

- How produced water compositions affect water treatment system design and performance
- How to interpret produced water analytical data and calculate common Scale Indices
- How emulsions form and contribute to water treatment challenges
- How Total Suspended Solids (TSS) affects water quality and what to do about it
- What water quality is required for surface or overboard disposal, for injection disposal, or for beneficial use
- The regulatory requirements for offshore water disposal and what is in an NPDES Permit
- What analytical methods actually measure and how to select an appropriate method
- How separators, clarifier tanks, CPIs, hydrocyclones, flotation cells, and bed filtration work and how to improve their performance
- The most common causes of water treating problems and how to diagnose and resolve them
- Typical PFDs used to illustrate operational issues

COURSE CONTENT

Introduction to water treatment technology and issues • Produced water chemistry and characterization • Defining and characterizing emulsions that impact water quality and treatment • Water quality requirements for injection or surface disposal, NPDES permits, analytical methods • Primary water treatment technologies - separators, hydrocyclones, and CPIs • Secondary water treatment - induced gas flotation • Tertiary water treatment technologies - media and membrane filtration • Chemicals and chemical treatment • Diagnostic testing and in-field observations • Diagnosing and resolving water treatment issues based on actual field experiences

2021 Schedule and Tuition (USD)

HOUSTON, US 18-22 OCT \$4410

Oil Well Pad Facilities (for Facilities Engineers)

– OWPF-FE

FOUNDATION 5-DAY

NEW

This course is focused on onshore well-pad facilities that are typically used for the development of shale/tight oil fields. The course starts with the review of typical well-pad facility process flow diagrams (PFDs) and the considerations involved in selecting a suitable PFD for the given conditions. Variations on the different PFDs are evaluated and their applications, pros and cons discussed. The main equipment types utilized are reviewed with focus on selection and sizing. A key aspect of this course is understanding the interfaces between the producing wells, the well-pad facility, and the gas, oil, and produced water export systems. Numerous exercises and calculations will be utilized throughout the course to develop solid understanding and competence level in the areas covered. This course differs from the OWPF-NFE (Non-Facilities Engineers) course in that it is longer, goes into more detail in the subject areas, and is focused on facilities engineering aspects and calculations.

Note: This course has some overlap of content with PF-4 Oil Production & Processing Facilities which is a 10-day Intermediate level course. PF-4 is broader in scope, covers onshore and offshore facilities and goes into more detail in certain areas. OWPF is more narrowly focused on onshore oil pad facilities.

DESIGNED FOR

This course is aimed primarily at Facilities Engineers but would also be suitable for senior operations personnel involved with design and operation of onshore oil well-pad facilities. It is not an engineering discipline-specific course but instead covers multiple aspects of pad facilities. OWPF could also be used for cross-training of more specialized discipline engineers to provide them with a better understanding of how the various pad facilities components integrate and act together.

YOU WILL LEARN

- The factors involved in selecting a process flow scheme for a typical oil well-pad
- The effect of well production characteristics and well performance on the surface facilities and how to integrate the two areas efficiently
- Typical wellstream compositions and their variability, and how to determine the fluid properties needed for equipment selection and sizing and their effects on operations
- The main pad facility processing requirements needed to produce on-spec products for sale or disposal, and the associated equipment types and operating conditions typically utilized
- *and more...*

COURSE CONTENT

Oil well pad process flow diagrams • Well production characteristics • Fluid compositions and properties • Separation equipment • Oil treating • Oil stabilization • Storage tanks and vapor recovery • Facility piping systems • Relief and flare systems • Compressors • Sand handling • Produced water handling • Flow measurement

2021 Schedule and Tuition (USD)

HOUSTON, US 12-16 JULY \$4410

Relief and Flare Systems – PF44

INTERMEDIATE 5-DAY

This intensive course provides a comprehensive overview of relief and flare systems for oil and gas processing facilities. The course begins with the need for pressure control/overpressure protection, continues with the key engineering and design aspects including code considerations, and concludes with selecting and sizing the components of a relief and flare system. The material of the course is applicable to onshore field production facilities, pipelines, gas plants, terminals, refineries, and offshore production facilities. The use of dynamic simulations for relief load determination is discussed and demonstrated.

DESIGNED FOR

Engineers responsible for designing, operating, and maintaining relief and flare systems in oil and gas facilities.

YOU WILL LEARN

- Codes and Standards used in relief systems
- Ways to mitigate relief, such as HIPPS
- How to define the possible relief scenarios and calculate their relief loads
- Commonly used pressure relieving devices, and how to size them
- How to calculate relief valve inlet losses
- How to fix relief valve excessive inlet losses
- How to size relief valve outlet piping and flare headers
- How to calculate relief valve backpressure
- How to size flare knockout drums
- How to calculate flare stack height based on radiation limits
- Flare gas recovery systems
- Flare ignition systems available
- Advantages of using dynamic simulation for calculating relief loads

COURSE CONTENT

Overview of typical relief and flare systems and key components • Codes and standards as well as good practices typical in oil and gas facilities • Safety implications and causes of overpressure • Overpressure protection philosophy including source isolation and relief • Determination of relief requirements and defining setpoint pressures • Types, applications, and sizing of common relief devices • Blowdown/depressurizing - purpose and design/operational considerations • Design and specification considerations for relief valves and header systems, including fluid characteristics, services conditions, material selection, and header sizing • Environmental considerations • Radiation calculations and the impact of flare tip design • Selection and sizing of key components: knockout and seal drums, vent/flare stack, vent/flare tips, and flare ignition systems • Defining need and quantity of purge gas • Flare gas recovery, smokeless flaring, and purge gas conservation • Operational and troubleshooting tips • The use of dynamic simulations to determine relief loads

2021 Schedule and Tuition (USD)

HOUSTON, US	11-15 OCT	\$4510
KUALA LUMPUR, MYS	1-5 NOV	\$5670
LONDON, UK	19-23 JUL	\$5235+VAT
VIRTUAL	29 MAR-9 APR	\$4090



Onshore Gas Gathering Systems: Design and Operations – PF45

INTERMEDIATE 5-DAY

This course deals with the design, operation, and optimization of onshore gas gathering systems and their associated field facilities, from the wellhead to the central gas processing facility. From a design perspective, the main variables that impact the flexibility and operational characteristics of an onshore gas gathering system will be discussed. Typical operating problems are covered including hydrates, multiphase flow issues, corrosion, declining well deliverability, etc. Exercises will be utilized throughout the course to emphasize the key learning points.

DESIGNED FOR

Production and facilities department engineers/senior operating personnel responsible for the design, operation and optimization of onshore gas gathering systems and their associated field facilities.

YOU WILL LEARN

- The impact of gathering system pressure on gas well deliverability
- The impact of produced fluids composition on gathering system design and operation
- How to evaluate field facility and gathering system configurations for different applications
- To recognize and develop solutions to operating problems with existing gas gathering systems

COURSE CONTENT

Gas well inflow performance and deliverability • Overview of gas well deliquification methods for low-rate, low pressure gas wells • Effect of gathering system/abandonment pressure on reserves recovery • Impact of produced fluids composition • Sweet/sour • CO₂ content • Rich/lean • Produced water • Hydrates and hydrate prevention • Dehydration • Heating • Chemical inhibition • Multiphase flow basics • Corrosion/materials selection • Gathering system layout • Wellsite/field facilities options • Provisions for future compression

Troubleshooting Gas Processing Facilities – PF49G

INTERMEDIATE 5-DAY

NEW

This course will cover how to establish and apply a general troubleshooting methodology as well as how to conduct process/equipment specific troubleshooting related to gas production and processing facilities. Definitions of good/normal performance will be discussed for each process/equipment type covered. Data gathering, validation and utilization procedures will be discussed. Criteria to use when evaluating possible problem solutions will also be covered. Real-world exercises will be utilized throughout the class to reinforce the learning objectives. Both onshore and offshore facilities will be discussed. It is assumed that course participants have a solid understanding of how typical gas production and processing facilities work, including the commonly used processes and equipment involved. This course will not provide in-depth coverage of fundamentals.

DESIGNED FOR

Process/Facilities engineers with 5-10 years of experience, facilities engineering team leaders/supervisors, and senior facilities operational personnel.

YOU WILL LEARN

- The difference between troubleshooting, optimization, and debottlenecking
- How to recognize trouble when it is occurring
- How to develop a methodical approach to troubleshooting
- To recognize how different components of a facility interact with each other, and the significance of these interactions
- How to gather, validate, and utilize the data needed for troubleshooting
- The criteria to be considered for identifying the best solution when several feasible solutions are available
- Typical causes of problems, and their solutions, for the main types of processes and equipment used in upstream/midstream gas production and processing operations

COURSE CONTENT

Understanding the similarities and differences between troubleshooting vs optimization vs debottlenecking • Types of gas production and processing facilities • System trouble vs component/equipment-specific trouble • Defining good/normal operation • Quantifying the cost of the trouble • Gathering, validating, and utilization of data (types of data, sources of data, data quality and validation, using the data) • Developing a step-by-step troubleshooting methodology/flowchart • Identifying the best solution (criteria for defining best) • Processing and major equipment modules covered include gas-liquid separation, gas sweetening (amine focus), glycol dehydration, molecular sieve dehydration, shell and tube heat exchangers, NGL recovery processes, fractionation facilities, reciprocating compressors, and centrifugal compressors

2021 Schedule and Tuition (USD)

CALGARY, CAN	21-25 JUN	\$4090+GST
HOUSTON, US	29 NOV-3 DEC	\$4510
LONDON, UK	11-15 OCT	\$5235+WAT
PERTH, AU	1-5 NOV	\$5810+GST
VIRTUAL	31 MAY-11 JUN	\$4090

Troubleshooting Oil Processing Facilities – PF49O

INTERMEDIATE 5-DAY

NEW

This course will cover how to establish and apply a general troubleshooting methodology as well as how to conduct process/equipment specific troubleshooting related to oil production and processing facilities. Definitions of good/normal performance will be discussed for each process/equipment type covered. Data gathering, validation and utilization procedures will be discussed. Criteria to use when evaluating possible problem solutions will also be covered. Real-world exercises will be utilized throughout the class to reinforce the learning objectives. Both onshore and offshore facilities will be discussed. It is assumed that course participants have a solid understanding of how typical oil production and processing facilities work, including the commonly used processes and equipment involved. This course will not provide in-depth coverage of fundamentals.

DESIGNED FOR

Process/Facilities engineers with 5-10 years of experience, facilities engineering team leaders/supervisors, and senior facilities operational personnel.

YOU WILL LEARN

- The difference between troubleshooting, optimization, and debottlenecking
- How to recognize trouble when it is occurring
- How to develop a methodical approach to troubleshooting
- To recognize how different components of a facility interact with each other, and the significance of these interactions
- How to gather, validate, and utilize the data needed for troubleshooting
- The criteria to be considered for identifying the best solution when several feasible solutions are available
- Typical causes of problems, and their solutions, for the main types of processes and equipment used in upstream/midstream oil production and processing operations

COURSE CONTENT

Understanding the similarities and differences between troubleshooting vs optimization vs debottlenecking • Types of oil production and processing facilities • System trouble vs component/equipment-specific trouble • Defining good/normal operation • Quantifying the cost of the trouble • Gathering, validating, and utilization of data (types of data, sources of data, data quality and validation, using the data) • Fundamentals of root cause analysis and methodology • Developing a step-by-step troubleshooting methodology/flowchart • Identifying the best solution (criteria for defining best) • Processing and major equipment modules covered include gas-liquid separation, oil-water separation, oil treating and desalting, oil stabilization and sweetening, oil storage and vapor recovery, produced water treating, centrifugal pumps, and water injection

2021 Schedule and Tuition (USD)

LONDON, UK	16-20 AUG	\$5235+WAT
VIRTUAL	29 MAR-9 APR	\$4090

CO₂ Surface Facilities – PF81

SPECIALIZED 4-DAY

FIELD TRIP

This course emphasizes the effect of carbon dioxide on the selection and operation of equipment (separators, compressors, and dehydrators), as well as sweetening process equipment. This program, first introduced in 1985, assists those working with carbon dioxide or high carbon dioxide content natural gas. This course is particularly applicable to those persons who operate and/or design enhanced oil recovery (EOR) facilities using CO₂ as a miscible agent. Physical and thermodynamic property data for carbon dioxide/natural gas mixtures are discussed. Calculations are performed to illustrate principles and techniques. Midland is a four-day session including a CO₂ plant tour on Thursday, contingent on plant availability.

DESIGNED FOR

Engineers and senior operating personnel involved with carbon dioxide/natural gas/CO₂ EOR systems.

YOU WILL LEARN

- What to expect over the life of a CO₂ EOR system
- Impact of CO₂ on the design and operation of oil production equipment
- Physical and thermodynamic properties of pure CO₂, and the impact of CO₂ in hydrocarbon mixtures
- Dehydration of high CO₂-content gases
- Best practices to deal with Dense Phase pipelines, metering, flaring etc.
- How to pump and compress CO₂
- Using purification processes: membranes, Ryan-Holmes, amines, hot carbonate, etc.

COURSE CONTENT

Overview of CO₂ injection and process facilities • Heavy emphasis on CO₂ for enhanced oil recovery • Physical and thermodynamic properties of CO₂ and high CO₂ mixtures • Materials selection and design consideration in CO₂ systems • Process vessel specification • Pumps and compressors • Fluid flow and special pipeline design considerations such as the control of ductile fractures • Dehydration of CO₂ and CO₂-rich gases • General overview of processes to treat/recover CO₂

2021 Schedule and Tuition (USD)

HOUSTON, US	8-10 NOV	\$3430
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2021 Schedule and Tuition (USD)

HOUSTON, US	20-24 SEP	\$4510
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Instrumentation, Controls and Electrical Systems Overview for Non-Electrical Engineers – ICE21

BASIC 5-DAY

This basic level course provides an introduction and overview of electrical systems, instrumentation, process control, and control/safety systems typically encountered in oil and gas facilities. The focus is to understand terminology, concepts, typical equipment configurations, and common pitfalls in order to improve communication with electrical and I&C professionals. This course covers similar content to our E3 and IC3 courses, but at a more conceptual level. This course is not a prerequisite for taking E3 or IC3, but rather a replacement for those that are not able to take both E3 and IC3.

DESIGNED FOR

Process, chemical, and mechanical engineers, (i.e. non-instrumentation and non-electrical disciplines), as well as other technical and non-technical professionals with little or no background in IC&E systems. Electrical and Instrumentation Engineers should consider E3 and IC3 for more in-depth coverage.

YOU WILL LEARN

- Fundamentals of electricity, such as voltage, current, resistance, power factor, and single/three phase power systems
- Electrical specifications, such as voltage selection, load lists, and power
- How to read one-line diagrams and understand the function of the components of power distribution, including transformers, switchgear, MCCs, VFDs, and power distribution
- The function and considerations of infrastructure components, such as cable, conduit, cable tray, and duct banks
- Awareness of the concepts behind classification of hazardous locations and equipment specifications
- Safety risks and mitigation strategies for power systems, including short circuit and overcurrent protection, ground faults, shock hazards, and arc flash
- Fundamentals of control systems, sensors, controllers, and final elements
- Key requirements for instrument specifications such as accuracy, signal selection, process conditions, material compatibility, installation considerations, capabilities and limits, and relative cost
- Basics of specification of shutdown and control valves
- Control system functions, limitations, and architectures, including PLC, DCS, SIS, RTU, and SCADA; common networking systems, including Ethernet, Modbus and Fieldbus
- Exposure to the typical documentation and drawings necessary for the design, specification, installation, operation and maintenance of electrical, instrumentation and control systems

COURSE CONTENT

Fundamentals of electricity • Control system fundamentals • Field measurement and control devices • Hazardous area classification for oil and gas applications • Programmable electronic systems (PLC, DCS, SIS, SCADA) • *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US	29 NOV-3 DEC	\$4310
LONDON, UK	18-22 OCT	\$5035+VAT
VIRTUAL	29 MAR-9 APR	\$3890

Electrical Engineering Fundamentals for Facilities Engineers – E3

FOUNDATION 5-DAY

This course applies fundamental electrical engineering principles to oil and gas facilities. The course is designed for Facilities Engineers who interface with electrical systems, and provides practical insight and development of new Facilities Electrical Engineers. Through the use of individual and group problem solving, attendees will learn about power transformers, motors, generators, one-line diagram interpretation, protection and coordination of electrical equipment, site and standby generation, electrical safety, and hazardous areas identification. Participants will gain a better understanding of electrical power systems in oil and gas facilities. This course is a more in-depth version of the content of ICE21 and ICE21 is not a prerequisite for taking this course.

DESIGNED FOR

Those facilities personnel who interface with facility electrical power systems, including project engineers, operation leads, instrumentation, controls personnel, and electrical engineers who are new to electrical power systems within oil and gas facilities.

YOU WILL LEARN

- Fundamental concepts of electricity including voltage, current, resistance, power, inductance, capacitance, and power factor
- The key components of facilities electric power distribution, which include circuit arrangements, low and medium voltage switchgear, and single-phase and three phase schemes
- Transformer operation, components, turns and voltage ratios, losses, efficiency, rating, and connections
- The difference between direct current, induction and synchronous current motors, motor enclosures, and how to select, start, protect, and control motors
- The principles of protecting electrical equipment, including time current curves, fuses, circuit breakers, and coordination
- The purposes and sizing criteria for backup power, including generators and UPS power systems
- The considerations and sizing criteria for on-site power generation, which includes standby, prime, peak, and co-generation
- What grounding and bonding systems are, with an overview of ignition sources, shock protection, separately derived systems, and substation grounding
- The concepts, terminology and application of hazardous area classification standards, equipment protection methods, and installation requirements for NEC and IEC projects

COURSE CONTENT

Fundamentals of insulation and conduction • Direct current, alternating current • Transformers power and instrument • Motors induction and synchronous • Power distribution • System protection and coordination • Standby power systems • Power generation • Variable speed drive principles • Grounding, bonding, and electrical safety • Hazardous area identification

2021 Schedule and Tuition (USD)

PERTH, AU	30 AUG-3 SEP	\$5710+GST
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Instrumentation and Controls Fundamentals for Facilities Engineers – IC3

FOUNDATION 5-DAY

This course applies fundamental instrumentation and control engineering principles to oil and gas facilities design and operation, and is designed to accelerate the development of new Facilities Instrumentation and Control Engineers. Through the use of individual and group problem solving, attendees will learn about field measurement devices, valves and actuators, documentation, programmable logic controllers, power supplies, PLC, SCADA, DCS, SIS, hazardous areas, and installation methods. This course is a more in-depth version of the content of ICE-21 and ICE21 is not a prerequisite for taking this course.

DESIGNED FOR

Facilities and Project Engineers as well as newly graduated Electrical, Controls and Instrument Engineers (0-5 yrs.) with a need to improve basic understanding of instrumentation and control systems within oil and gas facilities.

YOU WILL LEARN

- Operating principals and specification criteria for field measurement devices including level, pressure, temperature, and flow
- Final elements and actuators including control loops, control valves, shutdown valves, actuators, and transducers
- P&ID symbols and instrument tags, loop and logic diagrams, pitfalls and best practices, ISA symbology, and creation of instrument and I/O lists
- Signal types and wiring requirements for analog/discrete inputs and outputs as well as other signals such as thermocouple, RTD, pulse, and digital communications
- Typical control system functions, limitations, and architectures for PLC and DCS systems including programming methods such as ladder logic and function block
- Process control basics with an emphasis on control loops, types, and configurations for common oil and gas process equipment such as separators, pumps, distillation towers, filters, contactors, compressors, heat exchangers, and fired heaters
- Understanding of the PID algorithm, loop tuning, and advanced process control techniques such as feed forward, cascade, selective, and ratio control
- Supervisory Control and Data Acquisition (SCADA) Systems to include telemetry, RTUs, internet, and web based communications
- Common networking systems including Ethernet, Modbus, and Fieldbus
- Risk mitigation, technologies, and architecture of Safety Instrumented Systems (SIS)
- The concepts, terminology, and application of hazardous area classification standards, equipment protection methods, and installation requirements for NEC and IEC projects

COURSE CONTENT

Fundamentals of control signals and wiring • Control system basics • *and more...*

2021 Schedule and Tuition (USD)

DENVER, US	12-16 JULY	\$4405
HOUSTON, US	1-5 NOV	\$4410

Flow and Level Custody Measurement – IC73

INTERMEDIATE 5-DAY

This course is designed to acquaint users with the problems and solutions for high accuracy transfer of liquid and gas petroleum products from supplier to customer. These needs have been brought about by major changes in manufacturing processes and because of several dramatic circumstantial changes such as: the increase in the cost of fuel and raw materials; the need to minimize pollution; and the increasing pressures being brought to bear to adhere to the requirements for health and safety.

DESIGNED FOR

This workshop is specifically tailored for any personnel who are, or will be, responsible for designing, selecting, sizing, specifying, installing, testing, operating, and maintaining instrumentation related to the field of custody level and flow transfer measurement. This could include facilities, process, chemical, electrical, instrumentation, maintenance, and mechanical engineers and technicians.

YOU WILL LEARN HOW TO

- Recall the basics of fluid mechanics
- Identify the fundamental problems related to uncertainty
- Compare the different methods of measuring flow in the oil and gas industries
- Describe the various methods of level measurement
- Compare the different methods used to derive strapping tables
- Evaluate the different custody transfer standards in use today
- Contrast the methods used in flow calibration
- Identify the different types of prover systems
- Explain the methodology used in truck custody transfer
- Examine the challenges regarding pipelines
- Describe the basics of leak detection
- Analyze the methodology for monitoring and controlling production losses
- Evaluate and compare the problems and solutions associated with the measurement of NGL, LPG, and LNG

COURSE CONTENT

Fluid mechanics • Flowmeter classification • Uncertainty analysis • Flow measurement • Turbine • Positive displacement • Ultrasonic flowmeters • Coriolis mass flowmeters • Level measurement • Buoyancy tape systems • Hydrostatic pressure • Ultrasonic measurement • Radar measurement • Flow calibration • Terminal custody transfer • Tank management systems • Lease automatic custody transfer • Truck and rail custody transfer • Pipeline considerations • Fugitive emissions • Leak detection • Real time transient model • Loss control systems • Custody transfer sampling • Monitoring and controlling production losses • Physical leaks • Meter prover performance • API standards • Measuring the suspended S&W content • Calculating net volume • Flowmeter selection and costs • Initial considerations • Meter selection • Properties and measurement of NGL, LPG, and LNG

2021 Schedule and Tuition (USD)

HOUSTON, US	6-10 DEC	\$4510
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Practical PID Control and Loop Tuning – IC74

INTERMEDIATE 5-DAY

This workshop provides instrumentation, automation, and process engineers and technicians with the basic theoretical and practical understanding of regulatory control systems and how this can be applied to optimize process control in terms of quality, safety, flexibility, and costs. Centered on the ISA-recommended PC-Control LAB simulator, participants will learn through active participation using exercises, questionnaires, and a series of 16 practical simulation sessions covering: process reaction; tuning methods; diagnostic tools; effect of different algorithms; surge tank level control; analysis of such problems as valve hysteresis, stiction and non-linearities and the impact on controllability; and integral windup.

DESIGNED FOR

Instrumentation, automation, and process engineers and technicians involved in specifying, installing, testing, tuning, operating, and maintaining regulatory PID control systems.

YOU WILL LEARN HOW TO

- Describe such terms as process lag, capacitance, and resistance
- Explain the significance of the process reaction curve
- Identify the effects of filtering on loop performance
- Distinguish the effect of span on the system performance
- Analyze such problems as valve hysteresis, stiction, and non-linearities
- Evaluate the effects of proportional, integral, and derivative control
- Correctly apply both open and closed Loop Tuning according to Ziegler-Nichols
- Apply "as found" tuning
- Estimate the effects on loop tuning using a software-based loop analysis program
- Describe both cascade and feedforward control
- Explain split range control
- Identify and correct problems due to process dead time
- Discuss the top 20 mistakes made in the field of process control

COURSE CONTENT

Basic process considerations • Process lag, capacitance, and resistance • Process reaction curve • 1st and 2nd order reactions • Instrumentation cabling • Filtering • Aliasing • Reaction masking • Sensor placement • Correct PV • Effect of span • Inherent and installed valve characteristics • Actuators • Valve positioners • Testing procedures and analysis • ON/OFF control • Proportional control • Proportional offset • Reset • Integral action and windup • Stability • Derivative action • PID control • Control algorithms • Load disturbances and offset • Speed, stability, and robustness • Open loop reaction curve tuning method (Ziegler-Nichols) • Default and typical settings • Closed loop continuous cycling tuning method (Ziegler-Nichols) • Fine tuning "As found" tuning • Surge tank level control • Split/parallel range control • Cascade systems • Feed-forward and combined systems • Ratio control • System integration



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- Gas Processing Thermodynamics
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- Fractionation
- Solid Bed Adsorption
- Amine Sweetening Process
- Gas Processing Hazards



2021 Schedule and Tuition (USD)

HOUSTON, US 13-17 DEC \$4510
* plus computer charge

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Basics of Rotating Mechanical Equipment

- BRM

BASIC **NEW** 16 HOURS

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BLENDED LEARNING

This course will be delivered virtually through PetroAcademy providing participants with the knowledge they need at their convenience.

This course provides an overview of mechanical rotating equipment. The focus is on selection of pumps, compressors and drivers and their integration into the process scheme and control strategy in upstream and midstream oil and gas facilities. Compressor and pump sizing is addressed as well as sizing of drivers including engines, electric motors and turbines. Commissioning and installation are reviewed to ensure optimal equipment integrity and reliability for the life of the plant. The material of the course is applicable to field production facilities, pipelines, gas plants, and offshore systems.

This program is comprised of the following PetroAcademy™ Skill Modules™. Each module ranges from 3-5 hours of self-paced activities.

DESIGNED FOR

Facilities engineers, process engineers, senior operations personnel, field supervisors, and engineers who select, design, install, evaluate or operate gas processing plants and related facilities.

SKILL MODULES

- Pump and Compressors Overview
- Reciprocating Engines, Electric Motor Drivers, and Generators
- Gas and Steam Turbines
- Machinery Design, Materials, and Subsystems

Self-paced, virtual course
- start anytime.
Tuition US\$1500

FOR MORE INFORMATION, VISIT

PETROSKILLS.COM/BRMBLENDED

Basics of Static Mechanical Equipment

- BSM

BASIC **NEW** 40 HOURS

PetroSkills[®] PetroAcademy™

BLENDED LEARNING

This course will be delivered virtually through PetroAcademy providing participants with the knowledge they need at their convenience.

This course provides an overview of mechanical non-rotating, static equipment. The focus is on selection and integrity of pressure vessels, piping and heat exchangers and their integration into the process scheme and control strategy in upstream and midstream oil and gas facilities. The course addresses code requirements focusing on ASME Boiler & Pressure Vessel code as well as B31 Piping code and API tank construction codes. Heat exchanger sizing and TEMA requirements are also discussed. Piping hydraulics and corrosion mechanisms are reviewed to ensure correct equipment sizing and integrity management. The material of the course is applicable to field production facilities, pipelines, gas plants, and offshore systems.

This program is comprised of the following PetroAcademy™ Skill Modules™. Each module ranges from 3-5 hours of self-paced activities.

DESIGNED FOR

Facilities engineers, process engineers, senior operations personnel, field supervisors, and engineers who select, design, install, evaluate or operate gas processing plants and related facilities.

SKILL MODULES

- Mechanical Equipment
- Properties of Materials
- Piping Systems and Welding
- Heat Transfer Equipment Overview
- Unfired Pressure Vessels
- Fired Heaters and Boilers
- Storage Tanks
- Corrosion Control and Protection
- Fire Protection Systems
- Mechanical Equipment Inspection, Operation and Maintenance Care

Self-paced, virtual course
- start anytime.
Tuition US\$3890

FOR MORE INFORMATION, VISIT

PETROSKILLS.COM/BSMBLENDED

Corrosion Management in Production/Processing Operations

- PF22

FOUNDATION 5-DAY

This comprehensive course will cover the main causes of corrosion in upstream oil and gas operations, as well as monitoring and mitigation methods. The various corrosion mechanisms give rise to a number of different forms of corrosion damage, which will all be considered. Participants will learn about the different aspects that make fluid corrosive, what enhances corrosion rates and how to estimate corrosion rates of a given environment through analysis of the chemical and physical characteristics of the system; review approaches to selecting materials and coatings for corrosion resistance for different conditions and applications (including the use of NACE MR0175/ISO 15156); and be introduced to cathodic protection systems and (CP) surveys, coating systems, and many other corrosion mitigation techniques. The participant will learn how to select and utilize corrosion inhibitors for different systems, and how to select and apply corrosion monitoring techniques to create an integrated monitoring program. The course content is based on a field facilities engineering point of view, as opposed to a more narrowly-specialized corrosion engineering or chemistry viewpoint. It provides an appropriate balance of necessary theory and practical applications to solve/mitigate corrosion-related problems.

DESIGNED FOR

Managers, engineers, chemists, and operators who need to understand corrosion and its control management in oil and gas production and processing.

YOU WILL LEARN

- The basics of corrosion chemistry
- The main corrosion mechanisms occurring in oil and gas production/processing systems
- The different types of damage caused by corrosion
- Materials selection for corrosion prevention
- Some methods for conducting cathodic protection (CP) surveys
- Items to consider in corrosion inhibitor selection
- Key advantages and disadvantages of the various corrosion monitoring methods
- Where the main locations of corrosion concern occur within oil production systems, gas processing facilities (including amine units), and water injection systems
- The principles of managing corrosion and the architecture of corrosion/integrity management systems

COURSE CONTENT

Fundamentals of corrosion theory • Major causes of corrosion (O₂, CO₂, H₂S, microbiologically influenced corrosion) • Forms of corrosion damage • Materials selection • Protective coatings and linings • Cathodic protection • Corrosion inhibitors • Corrosion monitoring and inspection • Corrosion in gas processing facilities • Corrosion in water injection systems • Corrosion management strategy and life-cycle costs

2021 Schedule and Tuition (USD)

DUBAI, UAE	7-11 NOV	\$5550+VAT
HOUSTON, US	12-16 JUL	\$4410
LONDON, UK	6-10 DEC	\$5135+VAT
MIDLAND, US	30 AUG-3 SEP	\$4355
VIRTUAL	7-18 JUN	\$3990
	18-29 OCT	\$3990

Piping Systems - Mechanical Design and Specification – ME41

INTERMEDIATE

5-DAY

This 5-day, intermediate 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 (ISO, B31.3, B31.4, B31.8, etc.), 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.

DESIGNED FOR

This PetroSkills training course is ideal for mechanical, facilities, plant, or pipeline engineers and piping system designers who are involved in the design of in-plant piping systems for oil and gas facilities.

YOU WILL LEARN

- To apply piping system codes and standards
- About line sizing and layout of piping systems in various types of facilities
- How to specify proper components for process and utility applications
- To compare alternative materials of construction
- The process of steelmaking, pipe manufacturing, and material specifications
- Joining methods and inspection techniques
- Key considerations for flare and vent systems, including PSV sizing

COURSE CONTENT

Piping codes and standards (ANSI/ASME, API, ISO) • Pipe materials and manufacturing • Basic pipe stress analysis methods • Valves and actuators • Welding and non-destructive testing • Line sizing basics (single-phase and multiphase flow) • Pipe and valve material selection • Piping layout and design • Manifolds, headers, and flare/vent systems • Non-metallic piping systems • Operations and maintenance considerations of facilities and pipelines

2021 Schedule and Tuition (USD)

DENVER, US	7-11 JUN	\$4505
HOUSTON, US	29 NOV-3 DEC	\$4510
KUALA LUMPUR, MYS	6-10 DEC	\$5670



Mechanical Specification of Pressure Vessels and Heat Exchangers – ME43

INTERMEDIATE 5-DAY

FIELD TRIP

This 5-day, intermediate level course for facility engineers and project engineers reviews the key areas associated with the mechanical design of pressure vessels and heat exchangers for oil and gas facilities. The course is focused on vessels, heat exchangers built in accordance to ASME VIII Div 1, considering material selection, key design calculations, and manufacturing processes. The course is not aimed at process engineers sizing equipment (PF-42 covers these elements), although a brief review of the sizing correlations is included. The course is delivered from the perspective of a vessel fabricator to better understand the dos and don'ts of ideal mechanical specification of pressurized equipment by owner/operators, in order to optimize material utilization and minimize construction costs. The Houston session features an afternoon field trip to a large pressure vessel fabricator.

DESIGNED FOR

Mechanical, facilities, construction, or project engineers and plant piping/vessel designers who are involved in the specification and purchasing of pressure vessels, heat exchangers, and other pressure-containing equipment for oil and gas facilities.

YOU WILL LEARN

- About ASME B&PV code and the commonly used sections relevant to oil and gas equipment
- To specify correct and commonly used materials according to ASME II
- How to design vessel shells, heads, nozzles, and heat exchanger details
- How to provide accurate equipment specification documents and review documentation for code compliance
- Key fabrication processes used in the workshop and how to simplify construction through correct vessel specification
- About welding processes and inspection requirements per ASME IX

COURSE CONTENT

Vessel codes and standards (ASME B&PV Code, TEMA, API) • Vessel material selection, corrosion mechanisms, heat treatment, and basic metallurgy • Essential design calculations for vessels and heat exchangers • Welding process overview and inspection requirements • Constructability and operability considerations • Vessel integrity, evaluation, and re-purposing of pressure-containing equipment according to API/ASME

2021 Schedule and Tuition (USD)

HOUSTON, US	10-12 MAY †	\$3545
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† includes field trip

Fundamentals of Pump and Compressor Systems – ME44

INTERMEDIATE 5-DAY

This is an intensive 5-day course providing a comprehensive overview of pumps and compressor systems. The focus is on equipment selection; type, unit, and station configuration; and integration of these units in the process scheme and control strategy in upstream and midstream oil and gas facilities. The material of the course is applicable to field production facilities, pipelines, gas plants, and offshore systems.

DESIGNED FOR

Engineers, senior technicians, and system operators designing, operating, and maintaining pump and compressor systems in oil and gas facilities.

YOU WILL LEARN

- Selecting the appropriate integrated pump and compressors units (drivers, pumps, compressors, and auxiliary systems)
- Integrating the pump or compressor units with the upstream and downstream piping and process equipment
- Evaluating pump and compressor units and their drivers in multiple train configurations, parallel and series
- Identifying the key local and remote control elements of pumps and compressors as well as their drivers
- Defining the major life-cycle events, such as changes in flows, fluid composition, and operating conditions that can affect equipment selection and operating strategies
- Assessing the key pump hydraulics and compressor thermodynamics, and their effect on selection and operations
- Identifying significant operating conditioning monitoring parameters and troubleshooting techniques

COURSE CONTENT

Types of pumps, compressors, and drivers, and their common applications and range of operations • Evaluation and selection of pumps and compressors, and their drivers for long-term efficient operations • Unit and station configuration including multiple trains in series and/or parallel operations • Integration with upstream and downstream process equipment, local and remote control systems, and facilities utilities • Key auxiliary systems including monitoring equipment, heat exchangers, lube and seal systems, and fuel/power systems • Major design, installation, operating, troubleshooting, and maintenance considerations

2021 Schedule and Tuition (USD)

DENVER, US	14-18 JUN	\$4505
HOUSTON, US	17-21 MAY	\$4510
KUALA LUMPUR, MYS	13-17 DEC	\$5670
KUWAIT CITY, KUWAIT	7-11 NOV	\$5650
MIDLAND, US	16-20 AUG	\$4455
VIRTUAL	22 MAR-2 APR	\$4090

Compressor Systems - Mechanical Design and Specification – ME46

SPECIALIZED 5-DAY

This 5-day, specialized level course is for facility design engineers, operations engineers, and technicians seeking an in-depth understanding of centrifugal, reciprocating, and screw compressors. This course provides basic knowledge of compressor types and associated auxiliary systems, mechanical design of equipment, operating and performance characteristics, control and monitoring systems, maintenance practices, and codes and standards.

DESIGNED FOR

Mechanical, facilities, plant, or pipeline engineers and technicians needing an in-depth understanding of the different types of compressors.

YOU WILL LEARN

- How to apply thermodynamics to compressor performance and operating characteristics
- How to size, specify, and select compressors
- Compressor auxiliary systems
- Series and parallel application of compressors
- How to integrate compressor systems into process facilities used in the oil and gas industry
- How to use state-of-the-art monitor and control devices in the operation, maintenance, and troubleshooting of compression systems
- How to apply maintenance practices to improve compressor reliability
- Shop and field performance testing
- Compressor economics including OPEX vs. CAPEX considerations

COURSE CONTENT

Types and application of compressors • Selection criteria of dynamic and positive displacement compressors • Compressor thermodynamics and operating characteristics • Performance curves and off-design evaluations • Key compressor components and other auxiliary systems • Equipment specifications • Compressor controls and monitoring devices • Driver and gear involvement • Installation, operation, maintenance practices, and troubleshooting • Economic considerations

2021 Schedule and Tuition (USD)

HOUSTON, US	23-27 AUG	\$4610
VIRTUAL	4-15 OCT	\$4190

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Pipeline Engineering, Construction and Operation

FOUNDATION

NEW

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BLENDING LEARNING

This course will be delivered virtually through PetroAcademy providing participants with the knowledge they need at their convenience.

The Pipeline Engineering Principles Program represents the integration of all the skills associated with planning, evaluation, design, construction, operation and asset integrity through asset retirement and abandonment, applied to onshore and offshore pipelines.

The Program covers typical pipeline life cycle activities, starting with the definition of the need for the pipeline, sizing parameters, route selection, environmental concerns and protection, followed by design requirements, strength requirements, construction activities through commissioning. The Program then covers the operating life of the pipeline, including maintenance and leak detection, monitoring and integrity, repair, replacement and alteration activities, leading to retirement and abandonment.

DURATION

Self-paced, approximately 20 hours of e-learning

DESIGNED FOR

Pipeline project managers and engineers, operations and maintenance supervisors, regulatory compliance personnel, and other technical professionals with 1-3 years of experience in natural gas, crude oil, refined petroleum products, LPGs, NGL, chemical, carbon dioxide pipeline engineering, construction, operations, or maintenance. This course is intended for participants needing a broad understanding of the planning, development, construction, start-up, and operating and asset integrity management of onshore pipelines.

SKILL MODULES

- Pipeline O&M, Leak Detection, Repairs, Alterations and Abandonment
- Pipeline Routing and Geomatics
- Compliance and Pollution Events and Environmental Impacts and Assessments
- Pipeline Hydraulics and Flow Assurance
- Pipeline Strength, Stability and Environmental Considerations
- Pipeline Pump and Compressor Stations and Terminals
- Pipeline Construction

Self-paced, virtual course

- start anytime.

Tuition US\$2645

Onshore Pipeline Facilities - Design, Construction and Operations – PL42

FOUNDATION

5-DAY

Successful onshore pipeline businesses require personnel competent in fully integrated approaches to evaluation, planning, design, construction, operations, and asset integrity management. This intensive, 5-day foundation level course explores best practices for developing and maintaining pipeline systems that maximize life cycle reliability; employee, public, and environmental safety; and cost effectiveness. Design and team exercises are an integral part of this course.

DESIGNED FOR

Pipeline project managers and engineers, operations and maintenance supervisors, regulatory compliance personnel, and other technical professionals with 1-3 years of experience in natural gas, crude oil, refined petroleum products, LPGs, NGL, chemical, carbon dioxide pipeline engineering, construction, operations, or maintenance. This course is intended for participants needing a broad understanding of the planning, development, construction, start-up, and operating and asset integrity management of onshore pipelines.

YOU WILL LEARN HOW TO

- Apply regulatory codes, standards, and industry guidelines (API and others) that control and guide the permitting, design, construction, operation, and maintenance of pipeline facilities
- Apply mechanical and physical principles to pipeline design, hydraulics, and material selection
- Apply mechanical and physical principles to pump and compressor selection
- Describe the important factors in station design
- Describe the importance of route selection and hydraulics for long term profitability, reliability, and safety
- Identify special design and construction challenges of onshore pipeline systems
- Describe methods of river and road crossings, HDD crossings, and bores
- Identify the principle interfaces and potential interrelationships of pipeline facilities, such as pump stations and terminals, on design and operations
- Apply operational and maintenance tools and procedures, including system monitoring and control, leak detection, corrosion control, custody measurement and quality control, asset integrity management, and emergency response planning

COURSE CONTENT

Regulations and code compliance requirements • Pipeline survey and routing • Mechanical and hydraulic design • Proper system sizing and design • Equipment selection criteria • Facilities sites and design concerns • Construction methods and contracting approaches • Operations and asset integrity management

2021 Schedule and Tuition (USD)

DUBAI, UAE	29 AUG-2 SEP	\$5550+VAT
HOUSTON, US	26-30 APR	\$4410

Offshore Pipeline Design and Construction – PL43

FOUNDATION

5-DAY

This intensive 5-day foundation level course covers the principal aspects of design, construction, and operations of offshore pipeline systems. The course focuses on pipeline mechanical, strength, and stability design, and construction. Special challenges, such as shoreline crossings, foreign pipeline crossings, repair methods, flow assurance, corrosion control and cathodic protection are an integral part of this course. Participants will acquire the essential knowledge and skills to design, construct, and operate pipelines. Design problems and team projects are part of this course.

DESIGNED FOR

Engineers, designers and operators who are actively involved in the design, specification, construction, and operation of offshore pipeline systems.

YOU WILL LEARN HOW TO

- Apply mechanical, strength, and physical principles to pipeline design, material selection, construction, and operation
- Describe the key construction methods
- Define the importance of environmental conditions, construction methods, and pipeline system hydraulics in design, installation, and operations of offshore pipeline systems
- Identify special design and construction challenges of offshore pipeline systems
- Incorporate construction methods into the design of a pipeline system
- Identify the principal interfaces of pipeline facilities, such as platforms, floating production systems, sub-sea wellheads, and SPMs on design, construction, and operations of offshore pipeline systems
- Identify offshore safety and environmental practices and their effect on design, construction, and operations

COURSE CONTENT

Overview of oil and gas transportation systems • Review pipeline hydraulics, focusing on those aspects that affect design, construction, and operations • Pipeline systems definition, survey, and route selection • Safety, environmental, and regulatory considerations, focusing on Codes and Standards related to pipelines • Pipeline conceptual and mechanical design for strength, stability, and constructibility • Pipeline materials and components selection including line pipe, corrosion and cathodic protection, and coatings • Specialized equipment and materials for integrating with subsea wellhead/manifold systems, side taps, insulation, and pipe-in-pipe will be reviewed • Special design and construction considerations for risers and umbilicals, foreign pipeline crossings, single point moorings, and shore approaches • Introduction to flow assurance considerations and pipeline integrity aspects including in-line inspection, leak detection and emergency planning considerations • Pipeline operations, maintenance and repair considerations and their impact on design and material selection

2021 Schedule and Tuition (USD)

HOUSTON, US	11-15 OCT	\$4410
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Terminals and Storage Facilities – PL44

FOUNDATION

5-DAY

This 5-day, foundation level course reviews key issues associated with development, design, construction, and operation of terminals and storage facilities for liquid hydrocarbons and NGLs. The course focuses on six areas: 1) terminal codes and siting constraints, 2) terminal design and equipment layout, 3) types of storage and selection criteria, 4) design considerations for loading racks, fire protection, vapor recovery, blending equipment, and water treatment, 5) detailed design of storage tanks, vessels, and caverns, and 6) operations and maintenance. Safety, quality control, system reliability, availability, and regulatory compliance are integrated throughout the course. Case studies and team exercises are used to reinforce key points.

DESIGNED FOR

Project managers, engineers, operations and maintenance supervisors, and regulatory compliance personnel with 1-3 years of experience in planning, engineering, constructing and/or operating terminals and storage facilities for hydrocarbon liquids, NGLs, and petrochemical feedstocks. This course is for participants needing a foundation level understanding of the planning, engineering, construction, operations, and maintenance of storage and terminals connected to pipelines, rail, barges/tankers and/or truck loading facilities.

YOU WILL LEARN

- Storage and terminals basics for hydrocarbon liquids, NGLs, and petrochemical feedstocks
- Design and operation of atmospheric storage tanks and pressurized bullets and spheres
- Fundamentals of underground storage (salt and rock caverns)
- Safety, product quality, and reliability/availability concerns

COURSE CONTENT

Sizing criteria and economics for storage and terminal facilities • Various storage types (atmospheric storage tanks, pressure vessels, salt or rock caverns) and appropriate applications • Terminal and tank farm layout constraints • Details of industry codes and standards, plus regulatory and environmental compliance • Selection of equipment for delivery and receipt to/from pipelines, barges and ships, trucks, and rail, including metering options, loading arms, pumps, and control systems • Blending options and equipment, VRU/VCU, water treating, and fire protection • Key factors affecting safety, product quality, system reliability, and profitability in design, construction, and operations • Atmospheric storage tank design, layout, construction, corrosion prevention, and operations covering API 650 and API 653 • Overview of pressure vessel and sphere design and construction • Design, development, and operation of underground cavern storage facilities

2021 Schedule and Tuition (USD)

HOUSTON, US	6-10 DEC	\$4410
VIRTUAL	12-23 APR	\$3990

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Overview of Offshore Systems – OS21

BASIC 5-DAY

This five-day course will accelerate the learning and productivity of individuals with little to no experience working in the offshore oil and gas industry. The course provides an overview of field development concepts and explains how offshore structures and facilities function as integrated systems. The content includes the full range of water depths from shallow water to ultra-deepwater. All major components required for offshore developments such as fixed and floating platforms, drilling and workover rigs, pipelines, risers, process and utilities and construction equipment are discussed. The importance of life-cycle considerations during development planning is emphasized. Individual and group exercises, including a case study, are used throughout the course. The course instructors are experienced offshore managers.

DESIGNED FOR

Technical staff, business professionals, technicians, analysts and other non-technical staff who are involved but have limited experience, or will be involved, with offshore oil and gas facilities. The course provides a basic understanding of offshore systems in all water depths, from shallow to ultra-deepwater, including design, construction, and operations.

YOU WILL LEARN HOW TO

- Identify the key steps in the development of offshore fields from discovery through decommissioning
- Understand the elements of field architecture to define a workable field development
- Recognize key stakeholder issues
- Recognize offshore production facilities and structures, fixed and floating.
- Understand the impact of the ocean environment on facilities design and operations
- Identify major design, construction, and operational issues and interfaces of offshore systems
- Recognize important forces on offshore structures and their influence on design and cost
- Understand strategic options for well drilling (construction) and servicing
- Appreciate the basic processes and equipment involved in the topsides design and operation
- Understand fluid transportation options and equipment
- Recognize the marine equipment used in the construction of offshore facilities
- Understand basic issues in life-cycle and decommissioning decisions
- Appreciate advances in offshore technology

COURSE CONTENT

Field development concepts, fixed and floating • Subsea systems • Wells, construction and servicing • Topsides facilities; processing; utilities • Oil and gas transportation systems, design and installation • Production operations • Offshore construction; equipment • Fabrication; transportation; integration; installation project management • Life-cycle considerations, including decommissioning

2021 Schedule and Tuition (USD)

HOUSTON, US	2-6 AUG	\$4310
VIRTUAL	10-21 MAY	\$3890

Overview of Subsea Systems – SS2

BASIC 5-DAY

An overview of subsea components and how they are integrated into field architecture is provided during this five-day course. Individuals will develop a basic understanding of the various subsea components used in all water depths, from shallow water to ultra-deep water. The participants job productivity will be accelerated by learning how the components are combined and integrated into subsea field developments. Installation and flow assurance are emphasized as key drivers in subsea design. The course emphasizes a systems approach to design. Individual and group exercises are used throughout the course, including a case study to develop field architecture recommendations, basic component selection, and high level project execution plans for a subsea development. Course instructors are experienced offshore managers.

DESIGNED FOR

Technical staff who are beginning or transitioning into the design, construction, and operation of subsea systems. Non-technical staff working with a subsea development team will benefit by developing an awareness of subsea systems.

YOU WILL LEARN HOW TO

- Recognize the integrated nature of field architecture, system design, and component selection
- Identify appropriate applications for subsea systems
- Identify the main subsea components, their functions, strengths, weaknesses, and interfaces from the well to the production facility
- Understand key design, construction, and installation issues
- Describe basic operating and maintenance considerations
- Understand the key steps, from drilling through startup, for the design, fabrication, testing, installation, and operation
- Understand the importance of an integrated approach to design, flow assurance, installation, and life-cycle considerations

COURSE CONTENT

Applications for subsea systems • Flow assurance considerations in system design and configuration • Field architecture considerations • Subsea component descriptions and functions • Fabrication, testing, installation, commissioning, and operational issues • Production, maintenance, and repair considerations

2021 Schedule and Tuition (USD)

HOUSTON, US	22-26 MAR	\$4310
SINGAPORE	29 NOV-3 DEC	\$5470

Fundamentals of Offshore Systems Design and Construction – OS4

FOUNDATION 10-DAY

This 10-day course provides a fundamental understanding of the technology and work processes used for the design and construction of all types of offshore systems, including consideration of asset development, surveillance, and management. The content includes the full range of water depths from shallow water to ultra-deep water and addresses life-cycle considerations in all phases of offshore field development and operation. All major components required for offshore developments, such as fixed and floating platforms, drilling rigs, workover equipment, pipelines, risers, process, and utilities and construction equipment are discussed. Emphasis is placed on the multi-discipline team approach needed to manage the myriad of interfaces of offshore facility design, construction, and operations. Individual and group exercises are used throughout the course. A case study for an offshore project development is included.

DESIGNED FOR

Individuals with a basic awareness of or experience in offshore engineering and operations. Technical staff, project engineers, engineering discipline leads, engineering specialists, and operating staff find that this course accelerates their capability to contribute on offshore field development planning, design, and construction projects and field operations.

YOU WILL LEARN HOW TO

- Identify the key facilities parameters that drive field development
- Recognize the best applications and characteristics of each type of offshore fixed and floating structure
- Understand the effects of the ocean environment on facilities design, construction, and operations
- Identify the impact space, loads and forces have on the structural design and global performance of offshore structures and their influence on development cost
- Describe the impact of topside facilities (well construction, well servicing, processing, and utilities) on the design of the supporting structure, together with an outline of the topsides design process
- Recognize and manage key design and operational interfaces between the major components of offshore facilities systems
- Understand the key design, construction, and installation issues associated with fixed and floating platforms and how to apply the lessons learned to your work

COURSE CONTENT

Offshore systems overview and field architecture selection • Well construction and servicing equipment and operation • Flow assurance • Topsides facilities • Oil and gas transportation facilities • Riser systems • Subsea systems • Production operations • Infrastructure impact on design and operations • Effects of the ocean environment • Introduction to naval architecture • Structural design processes and tools • Construction plans and execution • *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US	12-23 APR	\$7720
LONDON, UK	27 SEP-8 OCT	\$8985+VAT

Flow Assurance for Offshore Production – FAOP

INTERMEDIATE 5-DAY

Flow assurance is a critical component in the design and operation of offshore production facilities. This is particularly true as the industry goes to deeper water, longer tiebacks, deeper wells, and higher temperature and pressure reservoirs. Although gas hydrate issues dominate the thermohydraulic design, waxes, asphaltenes, emulsions, scale, corrosion, erosion, solids transport, slugging, and operability are all important issues which require considerable effort. The participant will be presented with sufficient theory/correlation information to be able to understand the basis for the applications. This intensive five-day course has considerable time devoted to application and design exercises to ensure the practical applications are learned.

DESIGNED FOR

Engineers, operators, and technical managers who are responsible for offshore completions, production, and development; technical staff needing a foundation in principles, challenges, and solutions for offshore flow assurance. The course is also appropriate for persons involved in produced fluids flow in onshore production operations.

YOU WILL LEARN HOW TO

- Identify the components of a complete flow assurance study and understand how they relate to the production system design and operation
- Interpret and use sampling and laboratory testing results of reservoir fluids relative to flow assurance
- Understand the basic properties of reservoir fluids and how they are modeled for the production flowline system
- Understand the thermohydraulic modeling of steady state and transient multiphase flow in offshore production systems
- Evaluate and compare mitigation and remediation techniques for: gas hydrates, paraffin (waxes), asphaltenes, emulsions, scale, corrosion, erosion and solids transport, and slugging
- Understand the elements of an operability report for subsea production facilities, flowlines, and export flowlines

COURSE CONTENT

Overview of flow assurance • PVT analysis and fluid properties • Steady state and transient multiphase flow modeling • Hydrate, paraffin, and asphaltene control • Basics of scale, corrosion, erosion, and sand control • Fluid property and phase behavior modeling • Equations of state • Fugacity and equilibrium • Viscosities of oils • Thermal modeling • Multiphase pressure boosting • Slugging: hydrodynamic, terrain induced, and ramp up • Commissioning, start-up, and shutdown operations

2021 Schedule and Tuition (USD)

HOUSTON, US	6-10 DEC	\$4510
LONDON, UK	13-17 SEP	\$5235+VAT

* plus computer charge



Production Operations 1 – PO1

FOUNDATION

PO1 represents the core foundation course of PetroSkills' production engineering curriculum and is the basis for future oilfield operations studies. Course participants will become familiar with both proven historical production practices as well as current technological advances to maximize oil and gas production and overall resource recovery. The course structure and pace apply a logical approach to learn safe, least cost, integrated analytical skills to successfully define and manage oil and gas operations. Applied skills guide the participant with a framework to make careful, prudent, technical oil and gas business decisions. Currently emerging practices in the exploitation of unconventional resources including shale gas and oil, and heavy oil and bitumen complement broad, specific coverage of conventional resource extraction.

DESIGNED FOR

Petroleum engineers, production operations staff, reservoir engineers, facilities staff, drilling and completion engineers, geologists, field supervisors and managers, field technicians, service company engineers and managers, and especially engineers starting a work assignment in production engineering and operations or other engineers seeking a well-rounded foundation in production engineering.

YOU WILL LEARN HOW TO

- Recognize geological models to identify conventional and unconventional (shale oil and gas and heavy oil) hydrocarbon accumulations
- Understand key principles and parameters of well inflow and outflow
- Build accurate nodal analysis models for tubing size selection and problem well review
- Design and select well completion tubing, packer, and other downhole equipment tools
- Plan advanced well completion types such as multilateral, extended length, and intelligent wells
- Design both conventional and unconventional multi stage fractured horizontal wells
- Apply successful primary casing cementing and remedial repair techniques
- Select equipment and apply practices for perforating operations
- Plan well intervention jobs using wireline, snubbing, and coiled tubing methods
- Manage corrosion, erosion, soluble and insoluble scales, and produced water handling challenges
- Apply well completion and workover fluid specifications for solids control and filtration
- Employ the five main types of artificial lift systems
- Identify formation damage and apply remedial procedures
- Design and execute successful carbonate and sandstone reservoir acidizing programs
- Understand the causes of sand production and how to select sand control options
- Understand the proper use of oilfield surfactants and related production chemistry
- Identify and successfully manage organic paraffin and asphaltene deposits
- Choose cased hole production logging tools and interpret logging results
- Understand modern conventional fracture stimulation practices
- Understand multistage, horizontal well shale gas and shale oil massive frac job design and operations
- Review heavy oil development and extraction including mining operations and current modern thermal processes

COURSE CONTENT

Importance of the geological model • Reservoir engineering fundamentals in production operations • Understanding inflow and outflow and applied system analysis • Well testing methods applicable to production operations • Well completion design and related equipment • Primary and remedial cementing operations • Perforating design and applications • Completion and workover well fluids • Well intervention: wireline, hydraulic workover units, and coiled tubing • Production logging • Artificial lift completions: rod pump, gas lift, ESP, PCP, plunger lift, and others • Problem well analysis • Formation damage • Acidizing • Corrosion control • Scale deposition, removal, and prevention • Surfactants • Paraffin and asphaltenes • Sand control • Hydraulic fracturing • Unconventional resources: shale gas and oil, heavy oil and bitumen

PO1 is also available as a virtual course which is an enhanced version of the face-to-face public session.

29 MAR-16 JUL 2021 US\$6985
13 SEP-24 DEC 2021 US\$6985

Also available anytime, on-demand (with pre-recorded instructor-led sessions).

PETROSKILLS.COM/PO1-BLENDED

2021 Schedule and Tuition (USD)

CALGARY, CAN	24 MAY-4 JUN	\$7895+GST
HOUSTON, US	19-30 JUL	\$7995
	8-19 NOV	\$7995
KUALA LUMPUR, MYS	1-12 NOV	\$9595
LONDON, UK	16-27 AUG	\$9260+VAT

* plus computer charge

Surface Production Operations – PO3

BASIC

This course presents a basic overview of all typical oilfield treating and processing equipment. Participants should learn not only the purpose of each piece of equipment but how each works. Emphasis is on gaining a basic understanding of the purpose and internal workings of all types of surface facilities and treating equipment. A major goal of this course is to improve communication among all disciplines, the field, and the office. Better communication should enhance operational efficiencies, lower costs and improve production economics. Example step-by-step exercises are worked together with the instructor to drive home the important points. Daily sessions include formal presentation interspersed with a good number of questions, discussion and problem solving.

DESIGNED FOR

All field, service, support, and supervisory personnel having interaction with Facilities Engineers and desiring to gain an awareness level understanding of the field processing of production fluids. This course is excellent for cross-training and delivers an understanding of all the fundamental field treating facilities.

YOU WILL LEARN

- A practical understanding of all the fundamental field treating facilities: what they are, why they are needed, how they work
- The properties and behavior of crude oil and natural gas that govern production operations
- Field processes for treating and conditioning full wellstream production for sales or final disposition
- The basics of oilfield corrosion prevention, detection, and treatment
- Internal workings of separators, pumps, compressors, valves, dehydrators, acid gas treatment towers, and other treating equipment
- A wide range of produced fluid measurement and metering devices
- A description of treating equipment whether located on the surface, offshore platform, or sea floor

COURSE CONTENT

Properties of fluids at surface • Flowlines, piping, gathering systems; solids and liquid limits • Oil - water - gas - solids - contaminants • Separation and treatment • 2-3 phase separators, free water knockouts, centrifugal, filter • Storage tanks, gun barrels, pressure/vacuum relief, flame arrestors • Stabilizers • Foams, emulsions, paraffins, asphaltenes, hydrates, salts • Dehydrators • Water treaters: SP packs, plate interceptors, gas floatation, coalescers, hydrocyclones, membranes • Acid gas treatment: coatings, closed system, chemicals, solvents, conversion; stress cracking • Valves: all types; regulators • Pumps/Compressors: centrifugal, positive displacement, rotary, reciprocating, ejectors • Metering: orifice, head, turbine, and others • Corrosion/Scales: inhibition and treatment

2021 Schedule and Tuition (USD)

DUBAI, UAE	12-16 DEC	\$5450+VAT
HOUSTON, US	3-7 MAY	\$4310
	1-5 NOV	\$4310
VIRTUAL	16-27 AUG	\$3890

Production Technology for Other Disciplines

– PTO

FOUNDATION

PTO is an asset team course, as it introduces a broad array of important daily Production Technology practices. Terminologies, expressions, axioms, and basic calculations regularly utilized by production techs are covered. Emphasis is upon proven technology required to effectively develop and operate an asset in a multidiscipline development environment. Practical application of technology is emphasized. Nodal analysis examples to assess well performance are set up. Well completion equipment and tools are viewed and discussed. Exercises include, basic artificial lift designs, acidizing programs, gravel pack designs, and fracturing programs. Shale gas and oil development challenges are thoroughly explained. Horizontal and multilateral technology is presented.

DESIGNED FOR

Exploration and production technical professionals, asset team members, team leaders, line managers, IT department staff who work with data and support production applications, data technicians, executive management, and all support staff who require a more extensive knowledge of production technology and engineering.

YOU WILL LEARN HOW TO

- Apply and integrate production technology principles for oilfield project development
- Choose basic well completion equipment configurations
- Perform system analyses (Nodal Analysis) to optimize well tubing design and selection
- Perform basic artificial lift designs
- Apply the latest shale gas and oil extraction technologies
- Understand the chemistry and execution of sandstone and carbonate acid jobs
- Design sand control gravel pack completions
- Evaluate well candidate selection to conduct a hydraulic fracturing campaign
- Apply new production technology advances for smart well completions
- Maximize asset team interaction and understand the dynamics between production technology and other disciplines

COURSE CONTENT

Role and tasks of production technology • Completion design • Inflow and outflow performance • *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US	20-24 SEP	\$4435
KUALA LUMPUR, MYS	6-10 DEC	\$5350
VIRTUAL	3-14 MAY	\$3990

* plus computer charge



Gas Production Engineering – GPO

INTERMEDIATE 5-DAY

Learn the latest methods for calculating gas well performance from reservoir to sales. Reservoir performance covers the fundamentals of reservoir gas flow and details the best methods for testing wells, according to the time and money available. Reserve calculations and diagnostic testing from production data are covered. The importance of flow regime and non-Darcy flow on test design and interpretation is emphasized for new wells and for the possibility of improving the performance of older wells. Also discussed are performances of tight formations, horizontal wells, fractured wells, and methods for estimating gas reserves. Participants will learn to calculate and determine the effect of each system component on total well performance, which permits optimum sizing of tubing, flowlines, separators, and compressors. Problem-solving sessions allow participants to evaluate field problems. Participants receive complimentary software at the end of the course.

DESIGNED FOR

Production, reservoir and facilities engineers, and others involved in gas production, transportation, and storage including field supervisors.

YOU WILL LEARN HOW TO

- Apply proven techniques to field problems which increase profitability
- Calculate gas well performance from the reservoir to the sales line
- Optimize gas well production
- Relate reservoir and well performance to time
- Predict when a well will die due to liquid loading

COURSE CONTENT

Gas properties: real gas behavior equations of state, impurities, mixtures, phase behavior dew point, retrograde behavior, flash calculations; classifying gas reservoirs • Reservoir performance: gas well testing flow after flow, isochronal, stabilized inflow performance; turbulence and skin effects; perforation effects; tight well analysis; horizontal wells; hydraulically fractured wells • Reserve calculations: P/Z plots, energy plots, water influx, abnormal pressure effects; diagnostic testing based on production data • Flow in pipes and restrictions: pressure loss tubing, flowlines, chokes, safety valves; effects of liquids-liquid loading, liquid removal methods, multiphase flow correlations; erosional velocity • Compression: types of compressors; compressor selection reciprocating and centrifugal; effects of variables; capacity and horsepower • Total system analysis: tubing and flowline size effects; perforating effects; relating deliverability to time; evaluating compressor installations; analyzing injection wells • Flow measuring: orifice metering design, accuracy, troubleshooting; other metering methods • Condensate reservoirs: reservoir types - wet gas, retrograde; reserve estimates, laboratory simulation; gas cycling • Field operations problems: interpreting P/Z plots; hydrate formation

2021 Schedule and Tuition (USD)

HOUSTON, US	20-24 SEP	\$4435
KUALA LUMPUR, MYS	6-10 DEC	\$5350
VIRTUAL	3-14 MAY	\$3990

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Oil and Gas Processing Facilities for Operations and Maintenance – OT1

BASIC 5-DAY

The public course content is governed by the common production / processing facilities in the regions where the course is being held. There are gas / LNG content focus, gas / expander plant, or oil / water / gas focused courses. All locations include an overview of gas processing, industry terminology, process drawings, units of measurement, hydrocarbons physical properties, phase behavior fundamentals, plus the localized topics below. Course content is customizable to client needs at no additional cost.

Marcellus / Bakken Gas Processing Modules

Water / hydrocarbon behavior
Basic principles of fluid flow
Amine gas sweetening
Mole sieve dehydration
Mechanical Refrigeration
GSP (T/E) Process Operations
NGL stabilization and fractionation
Process troubleshooting

Permian / Eagle Ford / North Sea Oil and Gas Production and Processing Modules

Basic principles of fluid flow
Gas lift systems
Production separators
Crude oil dehydration
Crude oil desalting
Crude oil, condensate, and NGL stabilization
Crude oil storage and vapor recovery systems
Crude oil pipeline systems
Produced water treating
Process troubleshooting

Australia Gas Processing Modules

Water / hydrocarbon behavior
Basic principles of fluid flow
Amine gas sweetening (not in Brisbane)
Mole sieve dehydration
Mechanical refrigeration
Cascade refrigeration
Mixed refrigerants
NGL stabilization and fractionation
LNG facilities
Process troubleshooting

DESIGNED FOR

Facility operators who require a working knowledge of the various processes used in production fluid conditioning and processing, including the common operational difficulties that may arise and operational tactics used to resolve them. Also suitable for maintenance technicians, supervisors, and managers, as well as other non-engineering personnel who would benefit in an understanding of gas processing techniques that can be applied in their daily work activities.

YOU WILL LEARN

- The effects of produced fluid compositions (oil/gas/water) on facility operation
- About separation, conditioning, and processing operations to meet product specifications on oil, gas, and produced water streams for disposal/re-use
- How to operate facilities to minimize operating costs
- How to apply course material to troubleshooting equipment and unit operations

See website for dates and locations.

Amine Sweetening and Gas Dehydration for Operations and Maintenance – OT41

FOUNDATION 4-DAY

This course will provide the basic knowledge required for understanding operating issues in natural gas amine sweetening and dehydration units. Course content is customizable to client needs at no additional cost.

YOU WILL LEARN

- Basic principles of gas processing
- The physical properties of hydrocarbons
- Practical application of the principles of hydrocarbon phase behavior
- To determine the water content of produced natural gas and the effects of acid gases
- The problems and dangers of hydrate formation
- Effective methods of hydrate inhibition
- Two types of dehydration processes: absorption and adsorption
- Principles and operational elements of TEG gas dehydration
- Principles and operational elements of mole sieve gas dehydration
- Principles and operational elements of amine sweetening

COURSE CONTENT

Physical properties of hydrocarbons • Phase behavior fundamentals • Water/hydrocarbon behavior • TEG equipment • TEG system operating procedures and problems • Care of the TEG system • *and more...*

See website for dates and locations.

NGL Extraction, Stabilization and Fractionation for Operations and Maintenance – OT42

FOUNDATION 4-DAY

This course is designed to deliver the basic knowledge required for understanding operating issues in NGL (Natural Gas Liquids) extraction and stabilization/fractionation. Course content is customizable to client needs at no additional cost.

YOU WILL LEARN

- About the various unit operations required in gas processing and how they impact one another
- Conditions that favor hydrate formation, and methods to mitigate hydrates (hydrate inhibition)
- Principles and operations of gas compressors (centrifugal/screws/reciprocating)
- Principles, operations, and troubleshooting mechanical refrigeration systems (propane economized systems)
- Molecular sieve dehydration operations and issues
- Operating principles, typical performance, and issues in NGL extraction processes (refrigeration/JT valve/turboexpanders)
- NGL stabilization and fractionation principles, operations, controls, and common operating problems

COURSE CONTENT

Overview of gas processing • *and more...*

See website for dates and locations.

LNG Facilities for Operations and Maintenance – OT43

FOUNDATION 5-DAY

This five-day, LNG facilities course provides an overview of field operations, and an in-depth review of the in-plant equipment and processes. The course includes the two most common types of LNG liquefaction processes, the AP-C3MR™ and ConocoPhillips Optimized Cascade® Process. Class exercises/problems focus on the application of theory to operational trends, so operators can understand their processes and become more proficient at identifying issues and troubleshooting problems before production suffers. Course content is customizable to client needs at no additional cost.

DESIGNED FOR

LNG facility operators who require a working knowledge of the various processes used in LNG facilities, including the common operational difficulties that may arise and operational tactics used to resolve them. Also suitable for maintenance technicians, supervisors, and managers, as well as other non-engineering personnel who would benefit from an understanding of gas processing techniques that can be applied in their daily work activities.

YOU WILL LEARN

- Overview of oil and gas processing, including typical field operations
- The required feed quality specifications for LNG facilities, including issues with common contaminants
- Separation equipment with a focus on critical separation equipment in LNG facilities
- Operational aspects of acid gas removal units (AGRU) for LNG facilities
- Gas dehydration processes for LNG (including pre-cooling and molecular sieve)
- Mercury removal processes for LNG, and location/performance in the facility
- Centrifugal compressor operations and issues
- Refrigeration system operational principles (propane, cascade and mixed refrigerant)
- NGL stabilization and fractionation processes (regional)
- LNG COP Cascade® Process Overview
- LNG AP-C3MR™ Process Overview
- LNG storage operations and considerations
- LNG ship loading and boil-off gas management issues and considerations
- Application of hydrocarbon physical properties and phase behavior to understand the process operational issues within the overall facility
- Gas turbine operations and issues
- Hydrocarbon physical properties and phase behavior as the natural gas flows through the plant

COURSE CONTENT

Overview of oil and gas processing • Separation equipment • LNG feed quality requirements • LNG pre-treatment systems (AGRU)/molecular sieve/Hg removal • Fundamentals of centrifugal compression • Refrigeration principles (propane, cascade and mixed refrigerant) • NGL stabilization and fractionation (regional) • LNG COP Cascade® Process Overview • LNG APCI C3MR™ Process Overview • LNG storage operations and considerations • LNG shiploading operations and considerations • Boil-off gas management methods • *and more...*

See website for dates and locations.

Crude Oil Pipeline Operations – OT50

FOUNDATION 5-DAY

This course utilizes case studies and industry best practices for operating and maintaining onshore crude oil and liquid pipeline systems that maximize life cycle reliability; employee, public, and environmental safety; and operational cost effectiveness. It focuses on open discussions and troubleshooting techniques that may be applied to crude, HVL (High Volatility Liquids) and refined product pipelines and their associated infrastructure. The course aims to improve the operation profitability and communication with management and engineering staff. Course content is customizable to client needs at no additional cost.

DESIGNED FOR

Pipeline operations personnel who require a working knowledge of onshore liquid pipeline and terminal systems, including the common operational difficulties that may arise and operational tactics used to resolve them. Also suitable for maintenance personnel, metering technicians, lead supervisors, area managers, and engineering staff that need a working knowledge of field pipeline operations.

YOU WILL LEARN HOW TO

- Apply regulatory codes, standards, and industry guidelines (PHSMA 195, ASME B31.4, API-1173 and others) that control and guide the operation and maintenance of pipeline facilities
- Explain fluid properties and behavior of crude oils, wax behavior, temperature relationships and use of DRA in crude oil pipelines
- Explain pipeline hydraulics, pipeline pressure gradients and predict capacity on the system
- Identify pipeline MOP, surge and causes of overpressure and mitigation measures
- Explain pipeline facilities; pump stations, filtration, metering and LACT units, sampling and testing, pigging equipment, tank terminals and truck/rail loading facilities
- Explain liquid pipeline operations; commissioning and purging/filling, startup, stopping, pigging and pig receiver operations, measurement and sampling activities
- Identify principle causes of loss of containment and mitigating measures; corrosion, environmental cracking, overpressure, 3rd party damage and error
- Review regulatory compliance requirements for CFR 49, Part 195, to be better prepared in the case of compliance audits
- Explore emergency response measures to spills and loss of containment

COURSE CONTENT

Crude oil transportation systems • Industry codes and regulations, scope and applicability • Crude oils, waxes and DRA, fluid properties and behavior • Hydraulic analysis of pipelines and gradients • Pipeline pumps – components, operation, seal systems and seal leak detection • Pipeline surge and overpressure protection systems • Pipeline facilities – filtration, pressure controls, pigging equipment • Terminal facilities – tanks, truck/rail loading, metering, sampling and proving • Pigging goals, processes and activities • Pipeline repairs and maintenance • Corrosion overview and prevention • Leak detection methods • CFR 49, Part 195 review of documentation requirements and terminology

See website for dates and locations.



Turnaround, Shutdown and Outage Management – TSOM

INTERMEDIATE 3-DAY

Scheduled turnarounds are difficult to manage. Managing a surprise shutdown or outage is like firefighting. Firefighters succeed because they know what strategies work and are highly trained to handle complex, risky situations. Uncertainty and complexity abound when a plant is down. Extra work can appear when equipment is opened and inspected. Integrating project work increases the challenge. Experienced instructors show you how to control scope uncertainty, tackle the complexity of integrating project work, and get the facility restarted. Upon completion you will know how to deploy scarce resources (time, people and materials) to complete work on time and within budget; utilize best practices in TSO planning, execution and closeout; and manage engineering, maintenance, operations and project interfaces. A blend of instruction, guided discussion, and hands-on exercises using real world examples makes the sessions thought provoking. The exercises will include both single and group activities. Course content is customizable to client needs at no additional cost.

DESIGNED FOR

Managers, supervisors, engineers, schedulers in maintenance, operations, reliability, HSE, procurement and projects should attend. This course also helps business, commercial, finance and other non-technical personnel who want to know more about turnaround, shutdown and outage best practices.

YOU WILL LEARN HOW TO

- Establish targets to ensure support from all facility stakeholders
- Develop a robust resource plan and get the resources you need
- Integrate scopes for both maintenance and projects
- Establish turnaround scope selection criteria early
- Select a computerized work system
- Address key outage constraints and operations interfaces
- Develop a robust contracting plan
- Prepare an execution plan
- Measure and control shutdown progress

COURSE CONTENT

Six-phases of turnaround, outage and shutdown management • Issues and challenges • Quality control • Health, safety and environmental planning • Computerized systems benefits and choices • Integrating the plan • Managing stakeholders and resources • Procurement and contracting • Tracking progress and controlling change

Applied Maintenance Management – OM21

BASIC 5-DAY

No matter the price of oil, safe, efficient operations require well managed, integrated asset management. Effective, well organized maintenance management is the key. In this course, participants will receive a sound, integrated, basic knowledge of the maintenance function and how to progress towards world-class performance. Individual action plans will carry course learning into the work environment. A pre and post seminar self-assessment will be given to indicate delegates' competency improvements. The assessment is taken from the PetroSkills industry standard competency map for Maintenance Management. Course content is customizable to client needs at no additional cost.

DESIGNED FOR

Maintenance supervisors, team leaders, or managers needing to improve their maintenance programs. This course is a broad survey of essential aspects of maintaining a safe, efficient, and reliable facility asset.

YOU WILL LEARN

- World class maintenance standards and how to apply them
- Key performance indicators for your dashboard
- Essential elements of work planning and scheduling
- Optimization of preventive and predictive maintenance
- To focus your resources on critical equipment
- How to work with contractors more effectively
- Development of organizational competence

COURSE CONTENT

World class standards • Maintenance strategies • Planning and scheduling • Optimizing preventative and predictive maintenance • Identifying critical equipment • Developing organizational competence • Presenting your action plan

Maintenance Planning and Work Control – OM41

FOUNDATION 5-DAY

No matter what the price of oil is, safe facilities operations require effective maintenance work control. ISO 55000 (PAS 55) is the asset management standard everyone is moving towards. This course is designed to build competency in Work Control as a primary skill set required to achieve these new standards. It will focus on the six phases of work management: work identification, planning, prioritization, scheduling, execution, and history capture. These essential skills are the key components of integrity management, safety, efficient resource utilization, and reliable operation. A pre and post self-assessment will be used to measure competency improvement. In order to improve facility asset management, each participant will develop an action plan to help their organizations in the long-term effort to become more efficient and safe. Course content is customizable to client needs at no additional cost.

DESIGNED FOR

Maintenance managers, superintendents, supervisors, team leaders, and planners engaged in work management, planning, and scheduling.

YOU WILL LEARN

- To develop world class planning and work control
- To employ business process analysis techniques in work control
- How to use a gap analysis on your work management system
- Step-by-step work control from identification through using work history
- Optimization of preventive and condition-monitoring activities
- Techniques: critical equipment analysis, critical spares control, and emergency response work

COURSE CONTENT

Work identification • Planning prioritization • Scheduling execution • History records • Optimizing preventive maintenance • Predictive maintenance planning • Critical equipment focus • Emergency response

Process Plant Reliability and Maintenance Strategies – REL5

INTERMEDIATE 5-DAY

This course is designed to teach reliability engineering skills as they apply to improving process system reliability and developing maintenance strategies. You will use modern software and analysis methods to perform statistical analysis of failures and model system performance, plus develop maintenance and reengineering strategies to improve overall performance.

DESIGNED FOR

Maintenance, engineering, and operations personnel involved in improving reliability, availability, condition monitoring, and maintainability of process equipment and systems. Participants should have foundation skills in statistical analysis and reliability techniques for equipment.

YOU WILL LEARN

- Improving reliability in new facilities/systems
- Reliability design for maintainability
- Developing initial maintenance strategies
- Virtual equipment walk-down; criticality using simulation and modeling; developing baseline condition monitoring programs; developing lubrication programs; and developing process-specific maintenance strategies with reliability-centered maintenance (RCM)
- Improving reliability in existing facilities/systems
- Analyzing process reliability plots to determine the amount of opportunity
- Continuous improvement through failure reporting, analysis, and corrective action systems (FRACAS)
- Developing policies and procedures; developing failure reporting codes; statistical analysis of failures using Weibull; and developing root cause analysis (RCA) programs (triggers for RCA and analyzing recommendations)
- Developing maintenance strategies with condition monitoring
- Identifying applicable condition monitoring methods; using criticality to determine level of condition monitoring application; and reporting asset health
- Developing maintenance strategies with RCM
- Developing policies and procedures; identifying systems for analysis; analyzing recommendations with simulation and modeling; and implementing recommendations
- Monitoring results
- Understanding the true purpose of key performance indicators (KPIs)
- Developing appropriate reliability and maintainability KPIs

COURSE CONTENT

Criticality analysis • Availability simulation and modeling • Statistical analysis of failures using Weibull • Maintenance strategy development; condition monitoring; reliability-centered maintenance; and essential care • Process reliability analysis • Root cause analysis • Failure reporting, analysis, and corrective action systems • Key performance indicators • Reliability definitions

2021 Schedule and Tuition (USD)

HOUSTON, US 23-25 AUG \$3370

2021 Schedule and Tuition (USD)

HOUSTON, US 16-20 AUG \$4095

2021 Schedule and Tuition (USD)

HOUSTON, US 29 MAR-2 APR \$4195

2021 Schedule and Tuition (USD)

HOUSTON, US 26-30 APR \$4510

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Fractionation Operations for Early Career Engineers –

SIMFOE FOUNDATION 3-Day

NEW

This interactive 2-day course combines elements of high fidelity, generic process simulators as well as a student-driven learning model centered around the INSTO Methodology. The course allows early-career engineers an opportunity to explore the same system dynamics and process upsets that plant operators face. In this course each trainee will have access to their own generic simulators including a Heat Exchanger, Flash Drum, and Fractionation simulator. Trainees will have an opportunity to startup each piece of equipment as well as spend time troubleshooting common malfunctions relating to exchanger and separating units. Tower operations that promote both safety as well as optimization are stressed throughout the course. The material of the course is applicable to refineries, petrochemical sites, chemical plants, and any other facilities that operate distillation columns.

DESIGNED FOR

Early-career process or controls engineers that would benefit from an operations bootcamp

YOU WILL LEARN

- Manually operate and optimize a cascade loop in a counter current shell and tube heat exchanger
- Determine the effects of product yields and product purities in flash drums as well as distillation columns
- Identify key operating points in a distillation column including the effects of changing throughput, operating temperature, operating pressure and reflux ratio have on product specifications
- Analyze trends and relate this information to various normal and abnormal situations for exchangers, flash drums and distillation columns
- Utilize the Think EQ.U.I.P.P.E.D.? method to expand troubleshooting options while operating a distillation column
- Discuss and simulate HAZOP analyses on common troubleshooting scenarios with exchangers and distillation columns focusing on specific mitigation techniques
- Assess critical safety concerns during the startup or restart of exchangers and distillation columns as well as simulate these startup procedures
- Practice techniques for distillation column optimization including dynamically adjusting column operating conditions to meet new specifications determined by simulated changes in feedstock or market conditions

COURSE CONTENT

A complete startup procedure for a heat exchanger and distillation column • Operating an outlet temperature to hot side flow cascade loop including manually engaging these controls • Simulating the effects of varying flow characteristics (flow rate, temperature, density) within a shell and tube heat exchanger • Simulating changes to flow rates, operating temperature, and operating pressure of a flash drum and the resultant effects to product yields and purities • *and more...*

Simulator Training Courses

NEW

2-Day courses allow Operators to improve their skills using generic training Simulators. Simulation Solutions uses a unique blend of DCS Simulation, a Virtual Reality "Outside Operator," and comprehensive Laboratory Exercise Booklets in order to help Operators develop new Operating Mechanics as well as a new Operations Mindset.

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- [Batch Operations](#)
- [Furnace Operations](#)
- [Plant Utilities](#)
- [Power Plant Operations](#)
- [Pumps and Compressors](#)



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or email solutions@petroskills.com

2021 Schedule and Tuition (USD)

VIRTUAL 7-8 APR \$2395

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Spill Control and Remediation Engineering – SCRE

FOUNDATION 3-Day

NEW

The first part of this course reviews the basics of spill control response principles, organization, procedures, and equipment used. Attendees will be introduced to evaluation of spills, organization of response and communications, surveillance and tracking, data records and information. The second part of this course will review the basics of remediation engineering applicable to property contaminated by crude and hydrocarbons. It will review the various technologies to treat spill-contaminated waters and soils. The course will finish with a review of solids handling for permanent disposal.

DESIGNED FOR

Operators and field managers, pipeline operators, loading and unloading personnel, and those involved with crude and hydrocarbon transportation. It will also benefit personnel involved in treatment of contaminated property or hard-to-dispose contaminated wastes. This course will be useful to managers in completion and optimization of operations. The course is an important reference parameter for safety situations where there might be involvement of governmental or civil protection.

YOU WILL LEARN

On Spill Control:

- To understand and analyze spill causes and most common situations
- Factors to consider when faced with a spill situation
- Priorities in the three-tiered response consideration, personnel requirements
- Equipment to control spills, basic principles and design, applicability of technologies
- Personnel risks and protective equipment
- Environmental effects and information to all at stake (Government, Municipal-Regional or other authority, Health and Safety)
- Investigation of root causes, decontamination of equipment and waste management

On Remediation Engineering:

- To detect contaminated land, migration phenomena, phase distribution
- To assess hydrocarbon's biodegradability, use gas chromatography and UV light properties
- Technology of air sparging biodegradation, in-situ soil vapor extraction remediation
- Ex-situ soil washing, bioremediation and phytoremediation advantages
- Bioremediation of metal contaminated soils
- Composting and vermiculture
- Electro kinetics, stabilization and solidification for final disposal

COURSE CONTENT

Spill causes, detection, response and communication derived from the incident • Equipment used to control spills, HSE Emergency Spill Response • Contaminated land remediation technologies • Bioremediation, phytoremediation, composting, and permanent solidification and disposal

HEALTH, SAFETY, ENVIRONMENT SKILL MODULES

ENROLL

- [Process Safety Risk Analysis and Inherently Safer Design](#)
- [Risk Analysis and Inherently Safer Design Fundamentals](#)
- [Process Hazard Analysis and Layers of Protection Analysis Techniques](#)
- [Process Hazard Analysis and Layers of Protection Analysis Fundamentals](#)
- [Leakage and Dispersion of Hydrocarbons](#)
- [Combustion Behavior of Hydrocarbons](#)
- [Sources of Ignition and Hazardous Area Classification](#)
- [Leakage and Dispersion, Combustion Behavior, Sources of Ignition Fundamentals](#)
- [Specific Plant Systems and Equipment](#)
- [Relief and Flare Systems](#)
- [Relief, Flare, and Depressurization Fundamentals](#)
- [Historical Incident Databases, Plant Layout and Equipment Spacing](#)
- [Fire Protection Systems](#)
- [SIS, Monitoring and Control](#)
- [Historical Incident Databases and Metrics, Bad Actors \(Specific Systems\) Fundamentals](#)



2021 Schedule and Tuition (USD)

HOUSTON, US 15-17 NOV \$3310

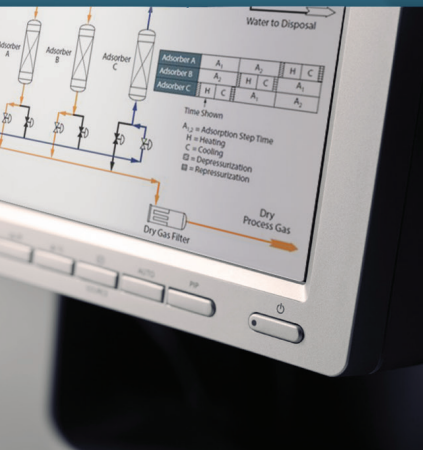
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Essential Leadership Skills for Technical Professionals – OM23

BASIC

5-Day

In the oil and gas industry, skillful and competent leadership is extremely important for safety, productivity, and asset management. The 21st century brings new emphasis on leaders, new communication technologies, increased focus on safety, information overload, workforce dynamics, asset integrity, and many other concerns which challenge even the most proficient leader/manager. How do we blend these new challenges with tried and true wisdom of success? There are skills to learn that will help you be more effective, with less stress. In this seminar/workshop you will explore your internal drivers and learn how to combine them with new skills for greater effectiveness. This seminar/workshop will include self-assessment, discussion, lecture, readings, role-playing, games, video examples, and creation of participant action plans. This course will help you unleash natural motivation in your team. Your stress level can be lowered by working more efficiently and effectively by tapping the emotional intelligence of your team and co-workers.

DESIGNED FOR

Anyone who has new responsibilities to lead a team. Supervisors, team leads, managers, and others interested in becoming a better leader and a contributing team member will greatly benefit from this one-week experience. Many may want to take this seminar/workshop more than once for continuous improvement.

YOU WILL LEARN HOW TO

- Become a more effective leader by overcoming the "tyranny of the urgent" with better time management
- Make better decisions by assessing when to make what kind of decisions
- Help others develop themselves by unleashing their career motivation
- Have more effective communications with technical and non-technical teams by developing the patience to let the team do its work
- Recognize and resolve conflicts before they get out of control by early detection of conflicts, when they're simpler and have less impact
- Develop the ability to lead an empowered team of technical professionals by more effective delegation
- Reduce your own stress level by teaching yourself how to lower your stress with clearer thinking
- Learn assessment techniques for yours and other's people skills by raising the competency levels of yourself and your team
- Walk your talk by getting buy-in for your ideas and vision
- Leading by example

COURSE CONTENT

The nature of teams • Leadership vs. management • Self-centering and tangential leadership • Listening • Motivation • Group dynamics • Conflict management • Team-building • Critical thinking and taking action

2021 Schedule and Tuition (USD)

HOUSTON, US	20-24 APR	\$4310
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Expanded Basic Petroleum Economics – BEC

BASIC

5-DAY

Could you answer the following three questions for your next project? What will it cost? What is it worth? Will it earn sufficient profit? Before undertaking any project, these questions should be answered. This course will provide the fundamentals necessary to enable you to do so. Budgeting and financing, accounting, and contractual arrangements, which also significantly impact the economic viability of a project, are covered. Participants practice cash flow techniques for economic evaluations and investigate frequently encountered situations. Participants are invited to submit their own economic problems (in advance), if appropriate. Each participant will receive Economics of Worldwide Petroleum Production, written specifically for PetroSkills courses.

DESIGNED FOR

Managers, engineers, explorationists, field accounting supervisors and other personnel who need to develop or improve their skill and understanding of basic economic analysis and profitability of petroleum exploration and production.

YOU WILL LEARN

- How to evaluate the economic viability of a project
- Cash flow techniques applicable in economic evaluations
- Models to weigh risk and uncertainty
- Techniques to determine expected value
- The effect finance, budgeting, and contractual agreements have on a project
- The basic principles of accounting

COURSE CONTENT

Forecasting oil production • Defining: reserves, operating expenses, capital expenditures, inflation, factors effecting oil and gas prices • Cash flow techniques • Economic criteria: interest, hurdle rate, time value of money, selection, ranking criteria • Risk, uncertainty: types of risk, mathematical techniques, probabilistic models, uncertainty in economic analysis • Financing, ownership in the oil and gas industry: business arrangements between operators, between mineral owners • Accounting versus cash flow: accounting principles and definitions, differences between accounting cash numbers, depreciation, depletion, amortization • Budgeting: types, processes, selecting of projects for the budget • Economic analysis of operations • Computer economics software • Tips on economic factors in computer spreadsheet analysis • Ethics in economic analyses

2021 Schedule and Tuition (USD)

HOUSTON, US	18-22 OCT	\$4310
LONDON, UK	13-17 SEP	\$5035+VAT
VIRTUAL	16-27 AUG	\$3890



Managing Non-Technical Risks

– MNTR

BASIC 4-Day

Non-technical or societal risks have become the main source of business delays and budget overruns in the oil and gas industry. Non-technical risks typically are related to political, regulatory, health, safety, security, environmental, and social issues. Mitigation requires good external awareness and stakeholder engagement skills, but also the willingness of technical and commercial teams to work closely together with the non-technical disciplines to accommodate non-technical perspectives in project designs and plans. This course looks at both the internal and the external challenges that a company may face related to stakeholder engagement. On the external side, we look at current trends in western and non-western societies, we study key stakeholder groups, in particular those seen as 'difficult to deal with,' and then cover the practicalities of creating and maintaining effective relationships. However, a company will not be effective in its response to the external world if it is not well organized internally. Therefore, this course will also look at processes and tools to ensure internal alignment and cooperation with the aim to link external perspectives to business decision making. A key methodology is the quantification of non-technical risks because it helps prioritization and focusing of resources and mitigating activities.

DESIGNED FOR

All oil and gas business professionals who are directly or indirectly involved in the management of non-technical risks. Specifically, managers with accountability for business delivery, that is, projects or operations; managers of technical and commercial teams that support projects or operations; and professionals in Health, Safety, Security & Social Responsibility; Government Relations; and Communications.

YOU WILL LEARN

- About important trends in the relationship between business and society
- To make the business case for active management of non-technical risks
- Essential concepts of stakeholder engagement, including dealing with activist stakeholders
- How to set up the internal structure and collaboration model to respond effectively to the external world
- How to apply the tools to identify, assess, quantify, and mitigate non-technical risks
- How to integrate non-technical risks into business decision-making processes

COURSE CONTENT

Trends in western and non-western societies affecting oil and gas companies • The business impact of non-technical risks: the case for action • An overview of modern stakeholder engagement models • Methods to deal with NGOs, activist investors, and communities • Insight in the power and limitations of multi-stakeholder initiatives • Internal organizational and cultural complexities and challenges and practical solutions • Leave with a blueprint for implementation in your own company • Essential international standards as required by international lenders and institutions • *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US	16-19 AUG	\$3890
VIRTUAL	19-29 JUL	\$3510

Cost Management – CM

FOUNDATION 5-DAY

Few problems threaten the petroleum businesses more than uncontrolled costs. Economic realities have made it necessary for most companies to operate with a "lean and mean" philosophy. As the price of our products fluctuates widely, the most vulnerable companies are those that are ineffective in understanding and managing their costs. The ability to properly manage costs is now paramount in a company's success and even their ultimate survival. As the energy industry goes through its most monumental changes since the 1970s, the companies that can identify efficiencies and inefficiencies will be able to react to the challenges of the global market place, thus generating higher profits. This seminar is an introduction to Practical Cost Management techniques designed to help the participant better understand the underlying dynamics of cost using recent events and trends, using relevant exercises, timely case studies and role-playing techniques.

DESIGNED FOR

Operating managers, field personnel, project managers, technology managers, budget managers, or anyone wanting to manage costs more efficiently and effectively. A familiarity with finance is helpful but not required.

YOU WILL LEARN HOW TO

- Understand the different cost classifications and cost drivers
 - Determine and monitor the behavior of costs
 - Build your own activity dictionary
 - Design management control system that works
 - Understand the principles of Activity Based Cost Management (ABCM) and its development and implementation
 - Analyze capital projects using the proper tools and techniques
 - Manage and not mismanage costs
 - Develop tools to use for managing costs
- Evaluate costs for effectiveness

COURSE CONTENT

Defining costs, classifications and terminology for an E&P company • Determining cost objects, cost drivers and their behaviors • Analyzing different types of cost management systems • Using Activities Based Management (ABM) to monitor costs and processes Building and using an activity dictionary • Using value added costs versus non value-added costs for improvement Distinguishing between cost effectiveness and cost efficiencies • Developing productivity measurements that work • Operating Cost Management using the budgets efficiently and effectively Using GAP analysis in measuring productivity of costs • Support departments cost allocations Transfer pricing • Determining the break-even cost and volumes • Using variance analysis budget for monitoring performance • Optimizing the supply chain • Developing and analyzing capital investment projects Replace versus maintain • Life Cycle Costing • Using different scenarios to more effectively manage costs Performance • Measurement using capacity management techniques

2021 Schedule and Tuition (USD)

HOUSTON, US	29 NOV-3 DEC	\$4410
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Economics of Worldwide Petroleum Production – EWPP

FOUNDATION 5-DAY

In the area of corporate and international petroleum production, do you know how to choose the best investments? Can you properly evaluate investment opportunities? Do you know what investment criteria really mean and which criteria to use for best results? Answers to these questions will greatly improve your ability to make profitable decisions. Techniques for predicting profit, production, operating costs, and cash flow enable the analyst to evaluate decision alternatives for optimum results. Understanding cost of capital, financial structure, risk and uncertainty, present worth, rate of return, and other economic yardsticks enhances the quality and the value of economic analysis. Discussion of real-life examples with participants from many different countries enhances the value of the course.

DESIGNED FOR

Managers, supervisors, and operating personnel concerned with costs, profitability, budgets, the company bottom line and other aspects of economic analysis of petroleum production on a project, corporate, and worldwide basis, who have had some previous experience in this area. Due to similarity in content, PetroSkills recommends that participants take this course if they have some previous experience in this field as the course content is more advanced than Expanded Basic Petroleum Economics. Take one or the other, but not both courses.

YOU WILL LEARN HOW TO

- Use cash flow techniques in economic evaluations
- Evaluate and choose investment opportunities
- Use models to weigh risk and uncertainty
- Evaluate decision alternatives using predictive techniques
- Evaluate how projects effect the corporation

COURSE CONTENT

Pricing: natural gas, marker crudes, OPEC, spot and futures markets, transportation • Production rate: mathematical models • Cash flow: revenue, capital and operating costs, spreadsheet exercises • Economic evaluation: present value concepts, sensitivity and risk analysis, decision trees, royalty, sources of capital, incremental economics, sunk costs, inflation • Budgeting: examples and exercises, long-range planning • Cash versus write-off decision: depreciation, depletion, and amortization • How to read an annual report: statements, financial ratios, what is and is not included, reading between the lines • Worldwide business operations: concessions, licenses, production sharing contracts, joint ventures, cost of capital, sources of funding, debt and equity • Performance appraisal: buy/sell assessments • Computer economics software • Tips on format and inclusion of economic factors in computer spreadsheet analysis • Ethics in economic analyses

2021 Schedule and Tuition (USD)

LONDON, UK	6-10 SEP	\$5135+VAT
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Petroleum Finance and Accounting Principles

– PFA

FOUNDATION 5-DAY

Making the most efficient use of your resources is critical to the success of any company. Finance and accounting comprise the universal business language and help you manage those resources effectively. Planning and decision making that occur in an informal financial context permit better application of resources and promote competitive advantage. The aim of this course is to improve delegates' job performance by enhancing their understanding of current international practices in finance and accounting within the E&P industry. The latest issues are discussed.

DESIGNED FOR

Personnel new to the oil and gas accounting industry - accounting, finance, or economists, others desiring to understand or refresh their knowledge of basic petroleum accounting concepts, financial personnel needing to understand unique issues as they relate to the petroleum industry, and technical or asset team members looking for the basic concepts of accounting and finance. Participants are encouraged to bring their company's financial reports. This course may qualify for up to 34 hours of CPE for US CPAs.

YOU WILL LEARN HOW TO

- Understand financial reporting requirements for oil and gas companies under IFRS and U.S. GAAP
- Apply basic concepts and terminology for accounting and finance in oil and gas
- Create accounting statements, including a cash flow statement from data accumulation to audited financial statements
- Distinguish between the different financial statements and their roles
- Distinguish between financial, managerial, and contract (joint operations) accounting
- Recognize the different oil and gas accounting methods
- Determine the difference between profits and cash flow
- Apply capitalization rules and depreciation methods
- Recognize accounting treatments of joint ventures such as Production Sharing Agreements
- Evaluate capitalized assets using a ceiling-test
- Read and understand those confusing footnotes
- Prepare, read, and use the disclosures for oil and gas companies
- Recognize how accounting decisions can affect earnings, cash flows, and operational decisions
- Calculate, understand, and analyze financial reports and basic oil and gas ratios

COURSE CONTENT

Getting started: financial terms and definitions, the language of business; accounting rules, standards, and policies • Constructing the basic financial statements • Classifying revenues, assets, liabilities, and equity • Comparing different accounting elements • Accounting for joint operations • Accounting and reporting

2021 Schedule and Tuition (USD)

HOUSTON, US	24-28 MAY	\$4460
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Petroleum Risk and Decision Analysis – PRD

FOUNDATION 5-DAY

Good technical and business decisions are based on competent analysis of project costs, benefits and risks. Participants learn the decision analysis process and foundation concepts so they can actively participate in multi-discipline evaluation teams. The focus is on designing and solving decision models. About half the problems relate to exploration. The methods apply to R&D, risk management, and all capital investment decisions. Probability distributions express professional judgments about risks and uncertainties and are carried through the calculations. Decision tree and influence diagrams provide clear communications and the basis for valuing each alternative. The complementary Monte Carlo simulation technique is experienced in detail in a hand-calculation exercise. Project modeling fundamentals and basic probability concepts provide the foundation for the calculations. The mathematics is straightforward and mostly involves only common algebra. This is a fast-paced course and recommended for those with strong English listening skills. This course is intended as the prerequisite for the Advanced Decision Analysis with Portfolio and Project Modeling course.

DESIGNED FOR

Geologists, engineers, geophysicists, managers, team leaders, economists, and planners.

YOU WILL LEARN HOW TO

- Describe the elements of the decision analysis process and the respective roles of management and the analysis team
- Express and interpret judgments about risks and uncertainties as probability distributions and popular statistics
- Represent discrete risk events in Venn diagrams, probability trees, and joint probability tables
- Solve for expected values with decision trees, payoff tables, and Monte Carlo simulation (hand calculations)
- Craft and solve decision models
- Evaluate investment and design alternatives with decision tree analysis
- Develop and solve decision trees for value of information (VOI) problems

COURSE CONTENT

Decision Tree Analysis: decision models, value of information (a key problem type emphasized in the course), flexibility and control, project threats and opportunities • Monte Carlo Simulation: Latin hypercube sampling, portfolio problems, optimization, advantages and limitations • Decision Criteria and Policy: value measures, multiple objectives, HSE, capital constraint, risk aversion • Modeling the Decision: influence diagrams, sensitivity analysis, modeling correlations • Basic Probability and Statistics: four fundamental rules including Bayes' rule (the easy way), calibration and eliciting judgments, choosing distribution types, common misconceptions about probability • *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US	6-10 DEC	\$4410
VIRTUAL	7-18 JUN	\$3990
	20 SEP-1 OCT	\$3990

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Advanced Decision Analysis with Portfolio and Project Modeling

– ADA
SPECIALIZED 5-DAY

Quality forecasts and evaluations depend upon well-designed project and portfolio models that are based upon clear decision policy, sound professional judgments, and a good decision process. In this course participants learn to build good models. We use the familiar Microsoft Excel spreadsheet as the platform for project and risk assessment models. Add-in software provides Monte Carlo and decision tree capabilities. The course emphasis is on the evaluation concepts and techniques, rather than particular software programs.

DESIGNED FOR

Evaluation engineers, analysts, managers, planners, and economists. This course is intended for professionals involved with developing project evaluation, portfolio, and other forecasting and assessment models. Prior background in decision analysis is expected. Before registering, please visit <http://www.decisionapplications.com/ada-pre-read/> to review a course prerequisites list and to take a short self-assessment quiz. You may login using 'ada' (no quotes) as the password.

YOU WILL LEARN HOW TO

- Frame, build, and evaluate decision models and extract key insights
- Apply the exponential utility function for risk policy
- Design investment portfolio optimization models that include constraints, requirements, and typical interrelationships between projects
- Use decision tree software for value of imperfect information analysis
- Use Monte Carlo simulation software with optimization
- Develop quality Excel models for projects and portfolios

COURSE CONTENT

Decision Modeling: application of DA process for modeling; influence diagrams; judgements and biases; sampling error bias; sensitivity analysis; documentation and good modeling practices; real options overview • Monte Carlo Simulation: multi-pay prospect risk (similar to play analysis); calculating probabilities and distributions with simulation; modeling and optimizing investment portfolios; valuing added control and flexibility; stopping rules; ways to model correlation • Decision Tree Analysis: value of information review; sensitivity analysis; solving with utility for risk aversion • Decision Policy: portfolio optimization to maximize economic value; efficient frontiers; multi-criteria decisions; risk policy as a utility function; calculating expected utility and certain equivalent; insurance and hedging; optimizing working interests • Implementation: eliciting a decision maker's or organization's preferences for trade-offs among objectives, time value, and risk attitude; decision analysis presentation agendas and formats; special topics from the instructor's own research and experience

2021 Schedule and Tuition (USD)

HOUSTON, US	13-17 DEC	\$4610
LONDON, UK	11-15 OCT	\$5335+VAT

* plus computer charge

+1.800.821.5933 (toll free North America)



Any course is available in-house at your location. Contact us today.



Contracts and Tenders Fundamentals – SC41

FOUNDATION 3-Day

This three-day course is designed to help companies award the right contracts to the best providers. Contracting involves many roles that must work together to negotiate, document, and ensure a reliable supply of goods and services for capital projects and ongoing operations. Everyone involved in contracting with suppliers and service providers must understand the entire process, the keys to success, and what is required of their role if contracts are to be effective in managing supply risks. Materials and exercises in this course are specifically built around oil and gas industry issues.

DESIGNED FOR

Individuals involved in any aspect of sourcing, tendering, selecting, forming, and executing contracts with suppliers of goods and services to the oil and gas industry. Included are project technical roles such as facilities engineers, drilling engineers, project engineers, commissioning engineers, contracts engineers, and planning engineers.

YOU WILL LEARN

- How to better manage project and legal risks with the contracting process
- How to successfully manage disputes and contract performance issues
- *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US 13-15 SEP \$3310

Inside Procurement in Oil and Gas – SC61

INTERMEDIATE 3-Day

This course will expand the industry understanding of supply chain professionals and increase their value-added in a global, fast changing environment. Participants will learn what each industry segment requires from procurement and be given insights to maximize value delivery and increase their contribution. The course includes an online, interactive forum with the instructor, and pre-read materials designed to familiarize course attendees with relevant issues. Attendees will leave better prepared to create and support procurement strategies that meet stakeholder needs, whether for projects or operations support.

DESIGNED FOR

Supply chain professionals with 2-7 years' experience either inside or outside the oil and gas industry.

YOU WILL LEARN

- How industry is structured, including host country and strategic relationships
- Business drivers and interface issues to be supported by procurement
- The role of industry economics in dictating procurement good practices in cost management
- Industry global compliance needs and how procurement can add value
- *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US 16-18 AUG \$3370

Strategic Procurement and Supply Management in the Oil and Gas Industry – SC62

INTERMEDIATE 3-Day

The development and implementation of carefully crafted strategies for the procurement of all goods, equipment, materials, and services has become a critical issue for all those in the oil and gas industry wishing to reduce operating cost while improving quality and productivity. This program explores key concepts forming the basis of strategic supply management, and moves today's supply management organization from its typical tactical focus to the strategic focus needed to successfully implement the processes and methods needed to reach world-class performance.

DESIGNED FOR

Managers and professionals in supply management, procurement, purchasing, contracts, materials, inventory control, projects, maintenance, operations, finance, as well as all other professionals interested in lowering total cost and increasing productivity and profit contributions from better supply management operations.

YOU WILL LEARN

- Stages to world class supply management
- Skill sets in supply management
- Organizing the spend profile
- Greater abilities in leading continuous improvement programs
- Ways in dealing with economic uncertainties
- Questions for internal surveys to enhance purchasing performance
- How to develop a "Purchasing Coding System"
- Steps in the development of a Composite Purchase Price Index
- How to get more time to work on strategic issues
- Negotiation planning and strategies
- To understand the elements of cost that make up a supplier's price
- Categories in a purchased materials/services strategic plan outline

COURSE CONTENT

Stages to world class supply management • Change and becoming more strategic • Supply management skill sets • Defining supply management • Examples of job descriptions for supply management • Developing the spend profile • Creating time to be strategic • The ABC (Pareto) analysis and what to do with it • Material/services purchasing code development • Elements of cost that make up the price • Developing "should cost" • Producer price indexes • Requesting supplier's cost and pricing data • Dealing with economic uncertainties, when, where, and how to use "Economic Price Adjustment" clauses • Internal surveys to improve purchasing performance • Total cost of ownership concepts • Cost containment methods • Cost reductions and cost avoidance • Savings reporting procedure • Developing purchased materials/services strategic plans • Developing the purchase price index for your organization • Negotiation skill sets • Steps in negotiation preparation • Positional negotiations • Final points before the negotiation

2021 Schedule and Tuition (USD)

HOUSTON, US 27-29 SEP \$3370

Cost/Price Analysis and Total Cost Concepts in Supply Management

– SC64
INTERMEDIATE 3-Day

Managing and reducing cost continues to be one of the primary focal points of PSCM in oil and gas today. In many organizations, more than half of the total revenue is spent on goods and services, everything from raw material to overnight mail. Maintaining a competitive position and even survival will depend on the organization's ability to use all of the continuous improvement strategies that have been developed to reduce cost across the entire supply chain for the life of the product or service. Fundamental to developing and implementing these strategies is knowledge of cost/price analysis, value analysis, and total cost of ownership concepts. This course provides the concepts that are essential skill sets in developing and implementing the strategies required to achieve the high levels of cost reductions possible from the supply chain. SC64 is also available as a 5-day in-house course with expanded content.

DESIGNED FOR

Managers and professionals in purchasing, procurement, and contracts as well as those involved in operations, engineering, maintenance, quality, projects, and other company activities that expose them to suppliers and buying activities for production, maintenance, equipment, MRO, services, and other outside purchased requirements.

YOU WILL LEARN

- Importance of price/cost analysis in continuous improvement programs
- The difference between price and cost analysis
- Methods of price analysis
- How to manage volatile markets
- Use of Producer Price Indexes
- Methods of cost analysis
- Development of "Should Cost"
- Types of TCO models

COURSE CONTENT

Use of price indexes • Cost/price analysis • Total cost of ownership • RFQ/tendering as a price analysis tool • Cost estimating relationships • Purchasing savings impact on the bottom line • Developing the spend profile • Sources of spend data • How to perform the ABC analysis • Examples of using pivot tables in Excel for data mining • Continuous improvement skill sets • Difference between cost and price analysis • Selection tool • Methods of price analysis • Historical analysis • Developing company purchase price • Index methods of cost analysis • Major elements of cost • Requesting supplier cost info • Sources of cost information • What and how important are supplier overheads • How much profit should the supplier make economic • Price adjustment clauses • Total costs of ownership models • How to combine price and performance to obtain TCO

2021 Schedule and Tuition (USD)

HOUSTON, US 4-6 OCT \$3370

Effective Materials Management – SC42

FOUNDATION 3-Day

This three-day course covers practical considerations essential to achieve major improvements in planning, buying, storing, and disposing of the vast array of materials and spare parts needed in the oil and gas industry. Evolving best practices by major oil and gas companies are explored under three inter-related modules - inventory management, warehousing, and investment recovery.

DESIGNED FOR

Professional and management personnel who have responsibility for materials, spare parts, and supplies needed to support any refinery, gas plant, onshore/offshore production, or other industry operations.

YOU WILL LEARN

- How to provide better customer service for long lead or critical materials and spare parts essential to the success of any well field operation, offshore platform, refinery, gas plant, or chemical processing facility
- How to establish the best methods of inventory analysis and create performance measures for min/max and order point systems
- How to use supplier stocking programs, consigned inventory, and integrated supply agreements
- *and more...*

See website for dates and locations.

Supplier Relationship Management – SC63

INTERMEDIATE 2-Day

Continuous improvement in all aspects of the supply chain is necessary to remain competitive in today's global economy. The traditional adversarial relationship and transactional focus of buyers and suppliers cannot meet this demand for continuous improvement in lead-time, quality, and overall supplier performance. As a result, significant changes are occurring in the philosophies and approaches that define the relationship between purchasers and sellers in world-class organizations. This focus reduces the lead-time and total cost of acquisition, transportation, administration, and possession of goods and services for the benefit of both the buyer and seller, and as a result, provides a competitive advantage and improved profits.

DESIGNED FOR

Managers and professionals involved in purchasing, projects, contracts, supply management, operations, maintenance, engineering, quality, and other activities.

YOU WILL LEARN

- The Supplier Relationship Management Maturity Model
- Importance of SRM in continuous improvement
- *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US 30 SEP-1 OCT \$2685



Petroleum Project and Program Management Essentials – P3ME

FOUNDATION 3-DAY

NEW

Petroleum companies often use projects to develop the skills of early career project professionals. This course covers the essential skills of petroleum project and program management and provides an opportunity to apply those skills to your project. You will be able to utilize fit-for-purpose prioritization techniques and control tools to facilitate successful outcomes. The specific training received in planning, scheduling and risk management will help the early career professional make the best decisions possible. Participants will learn how the project management, HSE, engineering, operations, maintenance, procurement/ supply chain, and transportation disciplines relate to one another and what tools are available to ensure interfaces among key stakeholders are managed. The course is taught using a combination of instruction, facilitated discussion, and team exercises using real-world examples related to facilities, drilling, and maintenance. The exercises will include both individual and group activities that will provide each participant with a hands-on application of the principles and practices discussed throughout the course.

DESIGNED FOR

Project managers and engineers, facility engineers, operations and maintenance representatives, schedulers, cost controllers, and purchasing personnel who plan, manage, or participate on multi-discipline teams. This course also addresses the essential requirements associated with managing programs whose timely completion is essential to the success of regional operations.

YOU WILL LEARN HOW TO

- Apply essential work management techniques to a variety of tasks
- Identify key constraints and interfaces and develop action plans to address them
- Develop charters, scopes of work, schedules and cost estimates
- Prioritize the work to best meet evolving operations needs
- Prepare petroleum project execution plans and procedures
- Utilize progress measurement and control techniques
- Use dashboards to track progress of larger programs and identify areas that need attention

COURSE CONTENT

• The petroleum project delivery system • Organization and resources • Engineering, maintenance and operations • The execution plan • HSE and risk management • Procurement and contracting • Cost management • Planning and scheduling • Progress measurement • Program management essentials

2021 Schedule and Tuition (USD)

HOUSTON, US	23-25 AUG	\$3310
VIRTUAL	29 NOV-3 DEC	\$2995

Petroleum Project Management: Principles and Practices – PPM

INTERMEDIATE 5-DAY

Successful petroleum operations need a blend of technology, business savvy, and people skills. If you have a firm grasp of exploration or production technology, boost its impact by applying project management techniques. Running a staged program that integrates reservoir modelling, production estimating, drilling, and facility design is challenging. The tools and techniques covered in this course will help you meet that challenge. Upon completion you will know how to make better decisions in field development that lead to high value and low cost; develop integrated plans to run the overall program; and develop key deliverables for each stage of development to reduce uncertainty. Instruction, guided discussions and in-depth work tasks are used. You may choose a case study from several real-life situations that are based on the instructor's petroleum experience. Or you may bring the details of one of your own current programs.

DESIGNED FOR

Exploration and production personnel with a background in geoscience, petroleum engineering or drilling should attend. If you are a facilities engineer, we refer you to our Project Management for Engineering and Construction (FPM22) and Project Management for Upstream Field Development (FPM2) courses.

YOU WILL LEARN HOW TO

- Navigate the staged development process
- Manage the interfaces among exploration, drilling and facility groups
- Properly define a scope of work
- Create a realistic, integrated schedule
- Find and reduce petroleum development risks
- Develop a high-performance team
- Capture lessons learned

COURSE CONTENT

The staged development process • Scope definition • Scheduling tools • Manpower resources • Finding and mitigating risks • Learning, continuous improvement, and quality control • Project team management • Petroleum case studies and exercises

2021 Schedule and Tuition (USD)

HOUSTON, US	25-29 OCT	\$4510
LONDON, UK	8-12 NOV	\$5235+VAT

* plus computer charge

Project Management for Engineering and Construction – FPM22

INTERMEDIATE 5-DAY

Many petroleum projects fail to meet their authorized cost, schedule or operability targets. To be successful, today's project leader needs a comprehensive set of technical, business and interpersonal skills. This course addresses those critical skills. Seasoned instructors tackle the issues and challenges found in concept selection, development planning, facility design, procurement, and construction activities. The specific training received in schedule and cost management, risk mitigation, and the proper use of scarce resources (people and materials) will help you make better decisions. Upon completion you will know how to improve engineering and service discipline work relations, use execution plans to integrate the work, and effectively employ cost and schedule control tools. This course is taught using a combination of instruction, facilitated discussion, and indepth exercises based on the instructor's petroleum development successes and failures. The exercises will include both individual and group activities that provide you with a practical application of the principles and practices necessary to keep your project on track.

DESIGNED FOR

Project managers, facility engineers, construction representatives, schedulers, cost controllers, operations personnel, and supply chain specialists including team leaders and others who participate on or consult with multi-discipline development teams. This course is also suitable for business development, finance and land specialists as well as other non-engineering personnel who would benefit from an understanding of oil and gas project management.

YOU WILL LEARN HOW TO

- Define development stages and skillfully execute them
- Develop scopes of work and execution plans
- Utilize project control techniques and earned value analysis
- Develop engineering design checklists to ensure key deliverables for each phase are addressed
- Guide teams through technical reviews and secure needed approvals
- Measure progress during construction

COURSE CONTENT

Project development systems for the oil and gas industry • The stage-gate system • Key knowledge areas for leaders • Leadership • Design engineering • Contracting • Execution planning for design, procurement, and construction • HSE management • Risk identification and mitigation • Organization types and resource deployment • Work breakdown structure • Planning and scheduling • Progress measurement • Cost estimating • Change control • Reviews and approvals

2021 Schedule and Tuition (USD)

HOUSTON, US	25-29 OCT	\$4510
VIRTUAL	10-21 MAY	\$4090
	25-29 OCT	\$4090

Managing Brownfield Projects – FPM42

INTERMEDIATE 5-DAY

Why is it so difficult to manage projects inside operating facilities? Keeping the scope from growing is a constant battle. Operations priorities and maintenance needs hamper work productivity. To be successful, brownfield projects need strong control, effective liaison, and good interface management. They must be managed differently than greenfield projects. Experienced instructors will share tools and techniques that will help you work in this dynamic, operations-centric project environment. Upon completion you will know how to examine existing documentation and confirm field conditions to improve scope control; frame a project and select the best concept for development; and coordinate the work effectively with operations, maintenance and shipping. Instruction, guided discussion, and in-depth work tasks based on the instructor's brownfield project management experience are used. Offshore and onshore examples are used. The sharing of experience in this course make the sessions challenging and insightful.

DESIGNED FOR

This course is for team members that work projects installed in existing facilities. Engineers, operations leads, and maintenance reps should attend. Services personnel in cost, schedule, procurement, and quality functions will also benefit. This course helps business, commercial and finance and other non-engineers who want a greater awareness of brownfield project challenges.

YOU WILL LEARN HOW TO

- Deal with competing priorities
- Stage development to manage plant complexity
- Minimize surprise work with due diligence surveys
- Resolve issues using an oversight board
- Tailor contracting strategy for brownfield projects
- Tackle unique brownfield constructability issues
- Ensure operations staff buy into objectives

COURSE CONTENT

Brownfield stage gate system • Staffing the team • Communications needs in an operating facility • Challenges in concept choice • Key value improving practices • Due diligence in the existing facility • Quality in engineering, procurement, and construction • Increased brownfield risks • Change management • Contract strategy • Procurement, logistics, and material management • Construction management and HSE • Managing cost/ schedule expectations • Performance reporting • Commissioning and startup • Roles and qualities of successful project managers

2021 Schedule and Tuition (USD)

HOUSTON, US	29 NOV-3 DEC	\$4510
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Project Controls for Capital Projects - PC21

INTERMEDIATE 3-Day

This course addresses project controls principles and practices as they relate to providing project leaders and key stakeholders the information they need to support project success for upstream, midstream, and downstream energy projects. The focus of the course is using project controls effectively to manage engineering / procurement / construction, improve project profitability, make schedule, and deliver a quality and safe project. Upon completion of this course, the participant will understand the critical success factors for cost estimating, scheduling, and progress measurement and be able to utilize these best practices to effectively manage their project. Participants will understand all of the steps necessary to develop and implement an effective project controls plan. Project controls activities throughout the entire project life cycle (FEED, engineering, construction) are addressed. In particular, participants will learn the steps that a project leader should take during each stage of the project life cycle to effectively manage their project and their contractor.

DESIGNED FOR

This course addresses the special requirements associated with project controls for project professionals. It is intended for project managers, project engineers, project team members, project controls professionals, planner/schedulers, and project discipline team leads.

YOU WILL LEARN

- The elements of a robust cost estimate plan
- Methods to develop early and mid life cycle project cost estimates
- The critical role that project controls plays in developing a well-planned and executable project for both cost and schedule
- The role that project definition, scope management, contracting strategy, project execution, procurement, etc. play in impacting project controls and the methods used to measure progress
- Critical progress measurement metrics using earned value or value of work done so that stakeholders understand the potential to meet project cost and schedule
- The different estimate classes and the deliverables required to support each type of estimate
- The different schedule levels and when is it appropriate to use each level
- How to develop an estimate basis and schedule basis and why they are critical to developing an achievable cost estimate and schedule
- How to develop a robust Project Controls Plan and associated staff with roles and responsibilities to support the plan
- How to effectively manage project changes and understand the impact on overall cost and schedule
- Challenges and issues associated with forecasting final project cost and final project completion using progress measurement or earned value
- *and more...*

2021 Schedule and Tuition (USD)

HOUSTON, US 2-4 AUG \$3370

Turnaround, Shutdown and Outage Management - TSOM

INTERMEDIATE 3-DAY

Scheduled turnarounds are difficult to manage. Managing a surprise shutdown or outage is like firefighting. Firefighters succeed because they know what strategies work and are highly trained to handle complex, risky situations. Uncertainty and complexity abound when a plant is down. Extra work can appear when equipment is opened and inspected. Integrating project work increases the challenge. Experienced instructors show you how to control scope uncertainty, tackle the complexity of integrating project work, and get the facility restarted. Upon completion you will know how to deploy scarce resources (time, people and materials) to complete work on time and within budget; utilize best practices in TSO planning, execution and closeout; and manage engineering, maintenance, operations and project interfaces. A blend of instruction, guided discussion, and hands-on exercises using real world examples makes the sessions thought provoking. The exercises will include both single and group activities.

DESIGNED FOR

Managers, supervisors, engineers, schedulers in maintenance, operations, reliability, HSE, procurement and projects should attend. This course also helps business, commercial, finance and other non-technical personnel who want to know more about turnaround, shutdown and outage best practices.

YOU WILL LEARN HOW TO

- Establish targets to ensure support from all facility stakeholders
- Develop a robust resource plan and get the resources you need
- Integrate scopes for both maintenance and projects
- Establish turnaround scope selection criteria early
- Select a computerized work system
- Address key outage constraints and operations interfaces
- Develop a robust contracting plan
- Prepare an execution plan
- Measure and control shutdown progress

COURSE CONTENT

Six-phases of turnaround, outage and shutdown management • Issues and challenges • Quality control • Health, safety and environmental planning • Computerized systems benefits and choices • Integrating the plan • Managing stakeholders and resources • Procurement and contracting • Tracking progress and controlling change

2021 Schedule and Tuition (USD)

HOUSTON, US 23-25 AUG \$3370

Advanced Project Management - FPM62

SPECIALIZED 5-DAY

Mega projects are complex. A program composed of these super projects is highly complex. For a very large project, addressing linked issues is key to improving the chances of success. In a larger program, these key issues interact producing unexpected results. Instructors will explore critical issues in contracting, decision making, and facility design. Interface control and risk reduction are examined. Non-technical problems in stakeholder relations, partner ventures, and approvals, are also tackled. Upon completion you will know how to deal with the program complexity and surprise effects; improve program strategies and deliver the projects on time; address both project and program resource concerns. Instruction, guided discussion, and in-depth work tasks based on the instructor's petroleum experience are used. The work will include both single and group activities.

DESIGNED FOR

Experienced project and program personnel. Directors, managers, and team members in engineering, procurement and construction will benefit from attending. Project services personnel in the cost, schedule, contracts, procurement and quality functions are encouraged to attend. This advanced course is suitable for business, commercial, and finance and other non-engineers who want a greater awareness of mega project challenges.

YOU WILL LEARN HOW TO

- Improve complex decision making
- Develop contracts for prompt work completion
- Evaluate risks in technology and design
- Address key stakeholders needs
- Establish a process to manage critical interfaces
- Lessen the impact of risks on cost, schedule, and operations
- Navigate approvals challenges to advance your project

COURSE CONTENT

Key aspects of a stage-gate process • Effects of markets on contracting • How governance affects decision making • How limited resources affect technology and design • Advanced methods for influencing stakeholders • Challenges with partners • Critical factors in interface control • Risk methods that preserve mega project value • Managing peer reviews, assists, and approvals

2021 Schedule and Tuition (USD)

HOUSTON, US 20-24 SEP \$4610

Advanced Project Management II - FPM63

SPECIALIZED 5-DAY

This five-day, advanced level course for experienced project management professionals addresses the fundamental principles and techniques of project management and how to apply them on large international projects. This course will cover all the project phases, with hands-on content directly supported by practical case studies.

DESIGNED FOR

Experienced project managers, project engineers, project controls managers, and construction managers who are working on large international projects or about to start new assignments on international projects. Practical case studies will cover the entire spectrum of a large international project and will include offshore and onshore capital investment.

YOU WILL LEARN

- Why international projects fail and the early warning signs to look for
- The principles of project management that ensure project success
- How to build a strong and effective Project Management Team (PMT)
- How to identify and manage project stakeholders
- How to conduct business and yourself in the international arena
- How to select an effective contracting strategy and the appropriate negotiation style
- The practical approach for global engineering, procurement, logistics, fabrication, construction, and commissioning
- How to conduct project risk management throughout the entire project lifecycle
- How to apply effective leadership and strategy on your international project

COURSE CONTENT

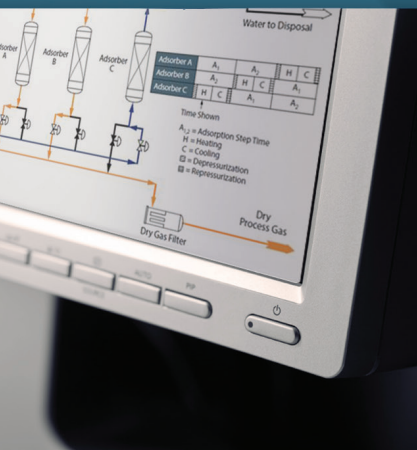
Why projects fail • Project Management principles (PMT, scope, cost, schedule, safety, and quality) • Stakeholders management on international projects • Host country - business and culture contracting • Strategies and negotiations • Global engineering - from concept through detailed design procurement and logistics • Fabrication, construction and commissioning • International project risk management • Leadership and strategy

See website for dates and locations.



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Advanced Project Management Workshop

– APMW

SPECIALIZED 3-Day

This course will not follow the traditional lecture-style format, instead it will be an interactive hands-on workshop where the participants will work on several case studies directly related to the selected topics. This workshop will take an EPC contractor perspective while also highlighting how Owner companies (NOCs & IOCs) interact with their EPC contractors to develop and execute their projects. The workshop material covers both onshore and offshore projects. The main objective of this workshop is to present several real-life scenarios of different types of project issues encountered by contractors and work through these issues to show how they should be addressed to arrive at an optimum resolution. This workshop will focus more on practice and less on theory. In addition to the case studies created and provided by PetroSkills, it is recommended that attendees provide a few scenarios from their current or past projects to be used in the workshop as case studies.

DESIGNED FOR

This course is designed for senior project management staff of EPC contractors working on large international projects in the energy industry with a focus on the Middle East Region. It is recommended for experienced project managers, project engineers, project controls managers, construction managers and discipline leads.

YOU WILL LEARN HOW TO

- Allocate contract risk between owner and contractor
- Address terms and conditions at bidding stage
- Handle owner-provided FEED as basis of bid
- Finalize terms and conditions before contract signing, contract administration, and records keeping
- Understand and negotiate liquidated damages applied to project milestones
- Handle change orders, suspension of work by owner or contractor, and contract termination for cause or convenience
- Prepare for dispute resolution and claim by contractor
- Determine when negotiation, mediation, arbitration, and litigation are necessary
- Identify governing laws in the contract
- Determine cost of claims and who is responsible for payment
- Protect yourself from claims by owner against contractor
- Prevent claims where possible
- Identify project risks and determine their impact during engineering, procurement and construction phases
- Apply risk management on a project at the right time
- Identify, assess, and mitigate project risks
- *and much more...*

COURSE CONTENT

Why projects fail • EPC contracts • Dispute resolution and claims • EPC risk management • Scope changes • Cost and schedule management • Project planning and execution • Working with owner (client) and their PMC

2021 Schedule and Tuition (USD)

DUBAI, UAE 26-28 SEP \$4285+VAT

Construction Management for the Project Professional – FPM64

SPECIALIZED 3-Day
NEW

This course addresses the skills necessary to interface with and effectively manage field construction. While construction projects are addressed, the project engineer that must manage engineering, procurement, and especially field construction, will find the course particularly useful. The course addresses how to effectively manage field construction to deliver the project on time and on budget. While many projects do front end loading effectively, projects ultimately fail due to poor execution or engineering/construction. With a focus on construction, this course provides the tools necessary to establish the proper field organization to manage engineering and procurement, which are two key inputs to construction success. The case study focuses on a construction project that is challenged in the field (due to prior poor decisions) that the project leader must address to be successful. Exercises, the case study, and class discussions provide learnings that the participant can immediately apply upon returning to work.

DESIGNED FOR

This course is designed for project managers, project engineers, facilities engineers, construction managers, discipline engineers, operations staff, and all disciplines that work on integrated project teams for onshore and offshore projects.

YOU WILL LEARN

- How the construction schedule should drive engineering and not vice versa
- How to manage the construction contractor and influence their field supervisors to deliver a successful project
- Methods to establish the appropriate owner's construction team given the construction strategy and construction challenges to ensure a successful project
- How to interface with the home office and engineering contractor to ensure field requests for information, engineering drawings, timing of material delivery, etc. support project success
- Root causes of poor craft field productivity and what the owner can do to improve productivity to support aggressive project cost and schedule targets
- The 'Fatal Four' issues associated with construction personal safety
- How to use field project controls and progress monitoring to ascertain construction areas that are challenged and require immediate attention
- Methods to manage the contractor to minimize construction claims and how to handle a claim once it occur
- *and much more...*

COURSE CONTENT

The role that construction management plays during FEED and detailed engineering to support success in the field • Field project controls, earned value, buildup of field indirect charges, determination of 'all in' field labor costs, etc • Temporary construction facilities, construction infrastructure, field equipment, etc. and the role they play in construction success • *and much more...*

2021 Schedule and Tuition (USD)

HOUSTON, US 15-17 NOV \$3430

Petroleum Project Changes and Claims Workshop – PPCC

SPECIALIZED 3-Day
NEW

This course will cover all key aspects of project changes and claims encountered throughout a project lifecycle. The focus will be on how to manage and control changes, take steps to prevent disputes and claims, and how to prepare claims. Different contract types will also be covered along with the required terms and conditions for project changes, disputes and claims. This course will not follow the traditional lecture-style format, instead it will be an interactive hands-on workshop where after a brief slide presentation for each agenda topic the participants will work on several real-life case study scenarios directly related to the selected topics. The workshop will cover both onshore and offshore projects.

DESIGNED FOR

Project managers, project controls managers, project engineers, discipline leads, procurement managers, contract managers, and construction managers and supervisors working on large onshore or offshore oil and gas projects.

YOU WILL LEARN

- What causes changes, disputes and claims on a project
- How to manage changes to minimize their impact on project scope, cost and schedule
- How to control the cost and schedule impact on a project using earned value
- An overview of contract types, negotiations and alternate dispute resolutions
- Key steps to take for claim prevention
- How to prepare a claim - type of claim, main elements, and the PMT role

COURSE CONTENT

What causes change on a project and can change be avoided • Change management and controls • Cost and schedule management of changes using earned value • Types of contracts and relevant terms and conditions - from tender to award • Negotiation techniques and alternative dispute resolution • How to avoid disputes on a project • Types of project claims and their characteristics • Claims prevention • Claims preparation • Case Study Problems - will cover topics listed in the agenda and will include both onshore and offshore scope

2021 Schedule and Tuition (USD)

HOUSTON, US 29 NOV-1 DEC \$3430

ADD 'PEOPLE SKILLS' TO YOUR TECHNICAL SKILLS

PetroSkills Petroleum Professional Development courses provide the people skills to help you and your team maximize your capabilities. These courses are tailored specifically to the oil and gas industry, and are available worldwide.



ESSENTIAL LEADERSHIP SKILLS FOR TECHNICAL PROFESSIONALS-OM23

Skillful and competent leadership is extremely important for safety, productivity, and asset management. The 21st century brings new emphasis on leaders, new communication technologies, increased focus on safety, information overload, workforce dynamics, asset integrity, and many other concerns which challenge even the most proficient leader/manager. How do we blend these new challenges with tried and true wisdom of success? There are skills to learn to help you be more effective, with less stress. (See page 24.)

ESSENTIAL TECHNICAL WRITING SKILLS-ETWS

Writing for work-related purposes ought to be brief, clear, informative and, above all, readable. In this practical hands-on course, you gain a solid foundation in technical writing skills. The primary theme for the course is that a writer must think constantly about their readers. Examples and exercises provide hands-on experience.

MAKING CHANGE HAPPEN: PEOPLE AND PROCESS-MCPP

Attendees will work in teams to overcome the problems encountered when making changes in their organizations. You will learn how to develop the ability to effectively handle organizational changes by examining the eight-step change process and understanding your own, and others, needs and responses to each step.

MANAGING AND LEADING OTHERS-MLO

The first-line and mid-level supervisor has more direct effect on employees and the productivity of a work group than any other single entity in the organization. This course increases the confidence and productivity of leaders, supervisors and managers who may be scientific or technical specialists, but have minimal training in the science and art of leading others.

MEETING MANAGEMENT AND FACILITATION FOR THE PETROLEUM INDUSTRY-MMF

Meetings remain a boon or curse to corporate communication. Properly planned and managed, meetings are extremely positive and dynamic ways to exchange ideas, shape policy, resolve problems, effect change, etc. However, when poorly designed and implemented, meetings become virtual breeding grounds for confusion, tension, frustration, boredom, and negativity. During this interactive 2-day session, participants will learn how to perfect meeting facilitation skills; master meeting agenda design skills; and polish meeting communication skills so that they'll be able to run meetings efficiently, effectively, and smoothly.

NEGOTIATION SKILLS FOR THE PETROLEUM INDUSTRY-NSPI

This course helps you to develop strong interpersonal skills in the art and science of negotiation. You will learn to apply these skills to complex organizational issues and individual needs. The course includes a Negotiating Style Profile self-assessment to determine your preferred negotiation style(s). Various tools and techniques are used to negotiate differences and disagreements to produce positive results. A group workshop conducting a collaborative negotiation, allows attendees to engage in, comment on, and improve their competencies in negotiation skills.

PRESENTATION SKILLS FOR THE PETROLEUM INDUSTRY-PSPI

One of the prime requisites for oil and gas professionals is to be able to deliver presentations in as clear, concise, and well-designed a way as possible. With the proper training and practice, any oil and gas professional can learn to make a convincing and persuasive presentation, and do so in a confident, assured, comfortable, and relaxed manner.

TEAM BUILDING FOR INTACT TEAMS-TB

This workshop is most effective when attended by an entire team. Team members will develop and refine the skills essential for high performance teams. Emphasis is placed on learning more effective ways to enhance total team functionality and maximum team productivity.

TEAM LEADERSHIP-TLS

This course has been constructed to maximize opportunity to improve both knowledge and practical skills in leading a team and being a team player. Emphasis is placed on the leader's role in effectively enhancing total team functionality and maximum team productivity.





Basic Petroleum Technology Principles – BPT

BASIC 20 HOURS

PetroSkills® PetroAcademy™

BLENDING LEARNING

This course will be delivered virtually through PetroAcademy providing participants with the knowledge they need at their convenience.

This course provides the participant with an understanding of basic petroleum technology in the context of the Petroleum Value Chain, from exploration to abandonment. The participant will understand how and when geoscience and engineering professionals use technology to find, then determine and optimize the economic value of an oil and gas field. This enables the participant to maximize their professional and administrative contribution in their organization.

DESIGNED FOR

Those who need to achieve a context and understanding of E&P technologies, and the role of technical departments in oil and gas operations. An understanding and use of oilfield terminology is developed.

YOU WILL LEARN

- Historical petroleum occurrences and usage
- The objectives and processes of the exploration phase of the E&P asset life cycle
- The objectives, processes, and economic metrics of the appraisal phase of the E&P asset life cycle
- Basic reserves and production value concepts
- The Earth's structure, continental drift, and plate tectonics role in oil and gas exploration
- Rock types and classification in an oil and gas context
- The relationship between depositional environments and geological settings
- Exploration concepts
- Elements of a successful petroleum system
- Key differences between unconventional and conventional petroleum systems
- Features of structural contour and isopach maps
- The basic reservoir rock properties and the significance of core samples
- The roles involved in exploration
- Rig type classification and selection for onshore and offshore drilling
- *and more...*

COURSE CONTENT

E&P industry and asset life cycle • Petroleum geology • Hydrocarbon reservoirs • Rock and fluid properties • Surface/subsurface exploration • Drilling operations and well completions • Production operations

**Self-paced, virtual course
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PETROSKILLS.COM/BPTONLINE

Basic Petroleum Technology – BPT

BASIC 5-DAY

This course provides the participant with an understanding of basic petroleum technology in the context of the Petroleum Value Chain and Asset Management, from exploration to abandonment. Unconventional shale (tight oil and gas) and conventional oil and gas are covered. The participant will understand how and when geoscience and engineering professionals use technology to determine and then optimize the economic value of an oil and gas field. This enables the participant to maximize their professional and administrative contribution in their organization. Participants first learn and understand why various global oil and gas production types and plays (unconventional and conventional) have different value. The participant learns which technologies are used by the geoscience and engineering departments during each stage of the asset life cycle and WHY! This E&P lifecycle context accelerates an understanding of basic petroleum technologies and the oil industry. This learning is achieved through guided discussions, videos, animations, and progressive team exercises utilizing 'Our Reservoir' and 'Our Well' as working models.

DESIGNED FOR

This course is appropriate for those who need to achieve a context and understanding of E&P technologies in conventional and unconventional fields, and/or the role of technical departments in oil and gas operations, and/or be able to understand and use the language of the oilfield.

YOU WILL LEARN

- The E&P Process and how it differs in conventional vs unconventional plays, the role of each technical department and specialist, and the technologies used
- The economic value and properties of reservoir fluids
- Petroleum geology for exploration and production
- About oil and gas reservoirs, both conventional and unconventional, and understand the key differences
- Exploration and appraisal technologies
- Drilling operations for exploration, development and production
- Production - well completions and production technology
- Reservoir recovery mechanisms through primary, secondary, and tertiary recovery
- Surface processing of produced fluids

COURSE CONTENT

World hydrocarbon production and consumption review including reserves, benchmarks, and the impact of shale resources • Reservoir fluid properties • Petroleum geology • The petroleum reservoir, conventional and unconventional • Exploration technologies for conventional and unconventional reservoirs including initial reserve estimates and consequent field development • Drilling and operations • Well completions and workovers • Production operations • Reservoir recovery mechanisms • Surface processing

2021 Schedule and Tuition (USD)

HOUSTON, US	27 SEP-1 OCT	\$4310
	6-10 DEC	\$4310
LONDON, UK	8-12 NOV	\$5035+VAT
VIRTUAL	26 APR-7 MAY	\$3890

Overview of the Petroleum Industry

– OVP

BASIC 2-DAY

OVP presents an overview of the Petroleum Industry from the point of view of the Asset Life Cycle. Participants will gain an understanding of Exploration, Appraisal, Development and Production phases with particular emphasis being placed on actions they can personally take within each phase to support value creation. Through use of lecture, multimedia and class interactive exercises, a breadth of upstream business acumen will be delivered covering economic, business, geoscience and engineering topics. Discussions will include topics related to all types of resource plays including deepwater, shale oil/gas and enhanced oil recovery technologies.

DESIGNED FOR

Both technical and business oriented professionals who are either new to the upstream oil and gas industry or experienced in one part, but could benefit from a wider point of view. OVP will likewise deliver for non-industry personnel a broad, basic knowledge set of multiple E&P topics. Legal, Financial, Accounting, Management, and Service Company team members will certainly benefit.

YOU WILL LEARN

- The critical importance the industry plays on the world's economic stage, including discussions of pricing, global reserves and key short/long-term energy trends.
- Business and exploration elements critical to the success of organizations in search of new reserves
- Methods by which new field prospects are evaluated and risk factors assessed (Geology, Geophysics, Petrophysics)
- How exploration rights are acquired (Land themes, International Concessions)
- The basic process for drilling and evaluating an exploration well (Drilling, Petrophysics, Testing)
- Major steps required to appraise a new discovery and estimate its commerciality (Reservoir Engineering)
- Strategies to maximize the value of an oil or gas field asset
- How geology and reservoir management plans are used to guide new field development
- Major steps in the design, construction, and commissioning of facilities
- Basic technical and operational steps required to produce an oil or gas field (Production Engineering)
- Types of opportunities to optimize older fields and increase production

COURSE CONTENT

The business of E&P • Hydrocarbon origin • Exploration - acquisition of exploration/development rights • Exploration - prospect generation and evaluation • Appraisal - asset characterization and reserve quantification • Development - drilling, completion, and facilities • Produce Asset - recovery optimization strategies

2021 Schedule and Tuition (USD)

HOUSTON, US	25-26 OCT	\$2605
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Operations Crew Resource Management

– OCRM

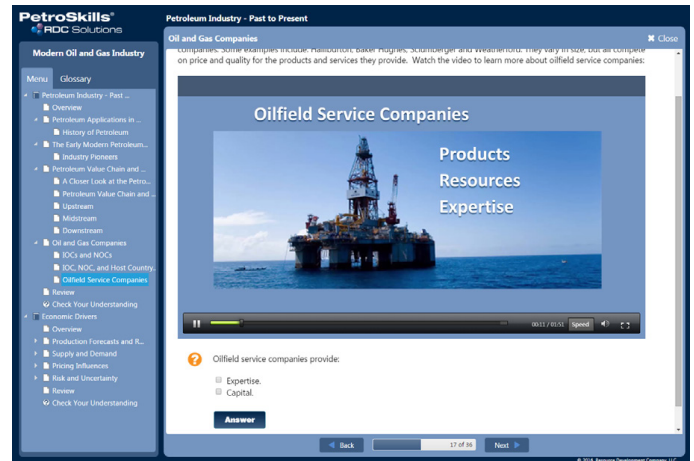
INTERMEDIATE 3-DAY

Why do experienced, competent personnel make mistakes during the planning or implementation of operations? How does an organization address these potential mistakes? High-risk industries introduce and practice non-technical skills (NTS) coined as Crew Resource Management (CRM) to address human errors. In the late 1970s, the airline industry was plagued with many crashes and resulting fatalities. Often investigations yielded no evidence of design or mechanical failures, rather poor or inconsistent decision making was the major contributing factor to the incident (e.g. poor communications, distractions, leadership actions, lack of teamwork, changing situation without knowledge, stresses, and fatigue played a role in the incidents). The industry came together focusing on six non-technical skills, naming the effort CRM. After 40 plus years, CRM is still a major component of all airline industry training. Other high-risk industries began to incorporate CRM into their organizations to reduce the number of incidents. However, of recent, those and other industries have seen performance improvements with the incorporation of CRM. Introducing and practicing NTS has reduced nonproductive time thus improving performance delivery. The oil and gas industry has only recently started to introduce CRM skills. Initially the industry introduced CRM/NTS into well control training post the Deepwater Horizon (DWH) incident, as several DWH investigations and reports referenced human factor causes. IADC and IWCF have accredited enhanced well control training which requires CRM/NTS components. Several operators and contractors have started to include CRM/NTS in their "drill the well on paper" or "drill the well on simulator" exercises, recognizing non-productive time improvements.

COURSE CONTENT

Situational Awareness (gather information, share understanding, possible consequences, problems and contingencies) • Decision Making (define situation and goal, previous experience, risks, options, check) • Communications (exchange information, explain context, clear and concise, relevant inclusion) • Teamwork (responsibilities, co-ordinate tasks, resolve gaps/duplications, working relationships, support efforts) • Leadership (take charge, provide direction, prioritize tasks, delegate, organizational process) • Stressors/Factors that Impact Human Performance (identify, mitigate, practice resilience, recognize efforts)

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- Production Operations
- Refinery Operations
- Refinery Process Units
- Rotating & Reciprocating Equipment
- Stationary Equipment
- Turnaround Planning

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ePetro™ is ideal for both technical and business-oriented professionals who are either new to the petroleum industry or could benefit from an industry overview. The series incorporates information for geosciences, reservoirs, production, drilling, completions, and field development and includes:

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- Reservoir Fluids
- Exploration & Appraisal
- Development & Production
- Mature Assets & Abandonment
- Midstream
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- Refining
- Petrochemicals

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 or email solutions@petroskills.com

GP GAS PROCESSING

PF PROCESS FACILITIES

ME MECHANICAL ENGINEERING

IC&E INSTRUMENTATION, CONTROLS & ELECTRICAL

PL PIPELINE ENGINEERING

OS OFFSHORE & SUBSEA

P&C PRODUCTION AND COMPLETIONS ENGINEERING

O&M OPERATIONS & MAINTENANCE

HSE HEALTH, SAFETY, ENVIRONMENT

PB PETROLEUM BUSINESS

SC PROCUREMENT/SUPPLY CHAIN MANAGEMENT

PM PROJECT MANAGEMENT

PPD PETROLEUM PROFESSIONAL DEVELOPMENT

MDT MULTI-DISCIPLINE TRAINING

DR. FRANK ASHFORD has over 50 years' experience in oil and gas reservoir engineering, downhole and surface design and operations, as well as oil and gas conditioning and producing facilities. He has been with PetroSkills since 1988 and has worked extensively in most energy producing countries. He provides instruction fluently in English, Spanish, or Portuguese. He worked with Gulf Research (GR&DC) in Houston, Texas where he developed many reservoir engineering laboratory techniques for the determination of applicable oil/gas/water relative permeability correlations, and choke performance prediction techniques still in application today. Dr. Ashford was a Professor of Petroleum and Natural Gas Engineering at the Central University of Venezuela in Caracas, where he taught various courses in natural gas engineering technology. He was a founder of the Petroleum Engineering Department in INTEVEP, the research Institute for PDVSA (Venezuela). He was a participant in the initial gas lift optimization operations held in Venezuela, and developed many field, and numerical techniques and correlations for downhole, and surface choke performance with Otis Engineering (US, and Venezuela), and Compania Shell de Venezuela (CSV). He has authored technical articles published in World Oil, JPT, SPE, Intevp Pub., PDVSA, Pacific Oil World, AAPG, SP&LAC, and GPA. He holds a BS (1961) and MS (1963) in Petroleum Engineering and a PhD in Engineering Sciences (1970) from the University of Oklahoma. He was one of Dr. John M. Campbell's graduate students from 1962-1968, and participated in the initial data collection and organization for the original John M. Campbell technical textbooks Gas Conditioning and Processing, Volumes I and II. **GP PF PL**

DR. OMAR BARKAT is a registered and licensed Professional Engineer and the Executive Director for Upstream Operations with PetroProTech. He has been a training specialist and technical consultant for OGCI-PetroSkills since 1997. He has over 28 years of combined industrial and academic experience in the USA, North Africa and Europe. He has been an active international oil and gas consulting engineer since 1993 involved in projects related to surface production operations, upstream facilities, field development, oil and gas production systems performance optimization, equipment selection, petroleum fluids treating and processing and fluids disposal management. From 1980 to 95, he worked on several oil and gas production technical issues and led research and development projects in areas such as: cement slurries, hydraulic fracturing fluids, proppant transport, emulsions, drilling muds, formation damage, cutting transport, H₂S/CO₂ corrosion, fluid flow and rheology, drag and pour point reducing agents and petroleum processing. He has successfully designed and delivered several short courses, seminars and lectures in a variety of oil and gas topics throughout the world. He is a former tenured university full professor in Louisiana and Oklahoma, a current member of several international societies including SPE, AIChE, ACS and ASEE, and a member of the US National Engineering Honor Society Tau Beta Pi. He is an invited Adjunct Professor of Petroleum Engineering at the University of Tulsa and a member of its Industrial Advisory Board. He is the author of numerous technical publications, the recipient of several professorship, research, teaching and merit awards and listed in the Who's Who in Science and Engineering. He received a Chemical Engineering State Diploma from the

National Polytechnique School of Algiers, an MS and a PhD from the University of Tulsa. **MDT P&C**

MR. PAUL M. BARRY is a petroleum engineering consultant specializing in production technology, production operations, and project evaluations. Mr. Barry has over 42 years of international and domestic USA upstream oil and gas production and reservoir engineering and management experience in conventional and unconventional reservoir development. Assignments include working and residing in South America, SE Asia, the Middle East, the North Sea region, and the USA. Earlier industry experience was as field production engineer and field production engineering manager of an onshore oilfield re-development project for PDVSA and partners in Venezuela which required a combination of new development well and well re-completion designs for gas lift, submersible pump, and rod pump artificial lift technology, and frac pack and gravel pack sand control well completions. Previous Indonesia experience was in the design and completion of dual string, multiple selective, underbalanced, tubing conveyed perforated high pressure gas wells, exploration well testing and evaluation for Pertamina and Atlantic Richfield, Huffco, Virginia Indonesia, and joint venture contract partners for both oil operations and Bontang LNG gas supply operations. As district reservoir engineer for Pertamina and Arco partners in Indonesia, Mr. Barry was responsible for the plan of development and reserves determination and certification for a 1.3 TCF offshore gas field. He has also worked as field engineer in Saudi Arabia, responsible for a 1.2 MMBWD reservoir pressure support injection well system, injection water quality assurance, producing well gravel pack completions, internal and external well and flowline corrosion control systems, and as Mobil Oil facilities engineer in the Arabian American Oil Company (Aramco) Gas Projects department. He has represented company technical and commercial interests in both UK and Norwegian North Sea sectors oil and gas producing fields. Mr. Barry has served as an officer in the Jakarta and Dubai SPE sections. He holds a BSCE from the University of Notre Dame and an MSCE from Marquette University, and is a registered Professional Engineer in Colorado, USA. **P&C**

MR. ROBI BENDORF, CPSM, MCIPS, CPM, M.Ed., has over 35 years of purchasing and sales experience, involving domestic and international activities, for a broad range of manufacturing and service businesses. He has extensive experience in consulting and training in purchasing, contracts, reengineering the supply management process, the management of procurement functions, global sourcing of materials and components, reducing cost of purchased materials and services, and negotiation of complex transactions and contracts. He has held purchasing and contracts management positions in high volume manufacturing, subcontract, job shop, and service operations, involving gas turbine manufacturing, power generation, nuclear and fossil power plants, electrical distribution and control, air conditioning equipment and global sourcing services. He served as Manager of Customer and Supplier Development for the Westinghouse Trading Company. He has given presentations on numerous purchasing and contract management topics to the Institute for Supply Management (ISM/NAPM), major universities, and numerous in-house seminars for industrial and services clients in the US and

over 170 public seminars internationally. He was selected to present seminars at the last 17 Institute for Supply Management International Conferences and is the contributor of numerous articles published in Purchasing Today and Inside Supply Management. Robi was selected as ISM's National Person of the Year in both Global Resources and in Education/Learning. Robi is a lifetime CPM, and has received ISM's new certification, the CPSM, and also holds the MCIPS Certification as awarded by CIPS. He has an undergraduate degree from the University of Texas, and a Master's Degree from Penn State University. His energetic and enthusiastic style, combined with extensive functional experience, makes him an excellent consultant, trainer, and facilitator of change. **SC**

MR. ROBERT BOMBARDIERI has almost 30 years in the oil and gas industry. His expertise is the use of process engineering to optimize operating facilities economics via addressing availability, product recovery and bottleneck issues. As such, Robert has tested, identified, designed, project managed and lead implementation of numerous molecular sieve, NGL recovery, sulfur recovery and debottleneck projects in several countries. He also has had roles in operations, business development and management. Mr. Bombardieri co-authored a paper on molecular sieve dehydration that was selected 'Best Paper Award' at the 2008 Gas Processor's Association annual convention and was published in the Oil and Gas Journal. He has a B.Sc. in Chemical Engineering from the University of Alberta and an M.B.A. from Tulane University. **GP PF**

MR. MARK BOTHAMLEY has experience that covers the areas of design, operation, troubleshooting and optimization of offshore and onshore oil and gas production and treating facilities. Prior to joining PetroSkills he was with BP/Amoco for 24 years, in several locations around the world. Mr. Bothamley is a past chairman of the SPE Facilities Subcommittee and a former member of the GPSA Data Book Editorial Review Board. Mr. Bothamley holds a BS in Chemical Engineering from Lakehead University in Thunder Bay, Ontario, Canada, and a Diploma in Natural Gas and Petroleum Technology from the British Columbia Institute of Technology in Vancouver, BC Canada. **GP PF PL**

MR. JOHN C. BOURDON has more than 29 years' experience in hydrocarbon processing and specializes in sulfur recovery processes for the petroleum refining industry. Mr. Bourdon has been involved in the development of several sulfur-related technologies and mechanical innovations, has authored several papers and made presentations worldwide. He has experience with several E&C firms including extensive start-up and troubleshooting activities. He consults for both North American and international clients. He is a registered professional engineer and member of Chi Epsilon Sigma Honor Society. Mr. Bourdon is fluent in English and Spanish. Mr. Bourdon has a BS in Chemical Engineering from the Georgia Institute of Technology and advanced degrees in other fields. **GP PF PL**

MR. FORD BRETT is recognized worldwide as a leader in the area of Petroleum Project and Process Management. A registered Professional Engineer, Mr. Brett has consulted in over 45 countries on five continents. Formerly, Mr. Brett worked with Amoco Production Company where he specialized in drilling projects in the

Bering Sea, North Slope of Alaska, Gulf of Mexico, offshore Trinidad, and Wyoming. He has received many honors, including the 2000 Crosby Medallion for Global Competitiveness by the American Society for Competitiveness for its work in global competitiveness through quality in knowledge management, best practices transfer, and operations improvement. For his work on improved drilling techniques he was also honored in 1996 with a nomination for the National Medal of Technology, the US Government's highest technology award. In 2010, Mr. Brett advised the US Department of Interior as one of seven reviewers of the 30 Day Study immediately following the BP Gulf of Mexico Tragedy, and in 2011-2012 he served on the National Academy Committee to advise the US Bureau of Safety and Environmental Enforcement (BSEE), charged with evaluating the Effectiveness of Safety and Environmental Management Systems for Outer Continental Shelf Oil and Gas Operations. From 2015-2017, he served on the National Academy's Gulf Research Program Advisory Board. Mr. Brett has authored or co-authored over 30 technical publications, and has been granted over 30 US and International patents - including several patents relating to elimination of 'Drill Bit Whirl' (which the Oil and Gas Journal Listed as one of the 100 most significant developments in the history of the petroleum industry). In 1999 the Society of Petroleum Engineers honored him as a Distinguished Lecturer. He served on the SPE International Board of Directors 2007 to 2010 where he served as Drilling and Completions Technical Director. Mr. Brett holds a BS in mechanical engineering and physics from Duke University as well as an MS in Engineering from Stanford University and an MBA from Oklahoma State University. **PM**

MR. PAUL CARMODY has more than 34 years of experience in the petroleum industry. During his 32 years with Hess Corporation and its predecessor, Amerada Hess Corporation, Mr. Carmody has been involved in nearly all aspects of oil and gas engineering from the reservoir sand face through the outlet of gas plants. He is a registered Professional Engineer in North Dakota where his experience includes Bakken oil development, production engineering, pipelines, and compressor station installations. West Texas experience includes CO₂ EOR flood gas gathering, CO₂ pipelines, and gas plant engineering. His gas plant experience includes three expansions of a CO₂ Gas plant, cryogenic gas plants, and lean oil plant processes where he has supplies process and design engineering services. He has served as a board member of the CO₂ Conference in Midland. Mr. Carmody graduated from the University of Connecticut with a degree in Mechanical Engineering. **PF PL**

MR. JOHN CURRY is a recognized authority on the ASME Boiler and Pressure Vessel Code, pressure vessel design, fabrication and metallurgy. He founded and was President of Gulfex, Inc. for more than 37 years. This firm is a major producer of pressure vessels for the refining, natural gas, oil production and petrochemical industries. Since 2003, he has been a lecturer on Section VIII, Div.1 of the Code teaching engineers worldwide on pressure vessels. He consults in the field of upgrading and rerating existing pressure vessels for new service. He continues to be a volunteer for the Boy Scouts of America promoting high adventure programs for older scouts. He has been teaching Biblical History for over 25 years. After completing his mechanical engineering training, he completed an MBA from the University of Texas at Austin. He spent two years in night school studying metallurgy at Rice University. **ME**

DR. ISKANDER DIYASHEV is a director and a co-founder of Petroleum and Energy Technology Advisors, Inc., an engineering and consulting firm based in Houston, Texas, focused on drilling, completion and stimulation (www.1penta.com). Prior to that Dr. Diyashev was an officer and a board member with Independent Resource Development Corporation, based in Moscow with operations in Western Siberia Russia. Dr. Diyashev was responsible for the planning of field development, reserves evaluation and addition, planning of exploration activities, as well as engineering and technology. In 2001-2006 Dr. Diyashev served as a Chief Engineer for Sibneft,

one of the largest integrated oil companies in Russia with a daily production of 700,000 BOPD. During his career, Dr. Diyashev worked in R&D, consulting, and the service and production sides of the business both in Russia and internationally. Prior to his work with Sibneft, Dr. Diyashev was one of the key Schlumberger specialists to start the horizontal drilling project in Noyabrsk Western Siberia. He holds a PhD in Petroleum Engineering from Texas A&M University, and advanced degrees in Physics and Mathematics from Moscow Institute of Physics and Technology. He has authored 30 technical papers. Dr. Diyashev is a member of the Russian Academy of Natural Sciences, and served on the Board of Directors of the Society of Petroleum Engineers (SPE International), and on the boards of various private E&P, service and engineering firms in the petroleum industry. Twice in his career Dr. Diyashev was elected to serve as a Distinguished Lecturer of the SPE, in 2005-06, and in 2017-18. **P&C MDT**

MR. WILLIAM (BILL) DOKIANOS has over 35 years' experience in engineering, production and pipeline. He is a Professional Engineer in the states of Louisiana and New Mexico, and holds a General and Commercial Contractor License in the State of New Mexico. Over the last 7 years he has been instructing for PetroSkills | John M. Campbell. He instructs the PF4 course, 'Oil Production and Processing Facilities'. He has actively consulted over the past 10 years with ExxonMobil, Shell Exploration and Production, Sandridge Energy, Repsol and Chevron. Mr. Dokianos' onshore consulting has focused on optimizing production utilizing casing gas systems, vessel and battery design, revising gun barrel design for better separation, production optimization and production troubleshooting (bad oil and or bad water). His offshore experiences include analyzing and solving poor platform up time at GB 128, GC 65 and other offshore locations. Activities included process control changes due to stacked separator vessels, revising safe charts, operating settings and reconfiguration of pipeline export pumps. He managed a subsea tieback project in which the platform modifications included high pressure vessel redesign, dehydrator expansion, adding a second vapor recovery unit, restaging high pressure and intermediate gas compressors and modifying bulk oil process design. He has been responsible for DOT compliance activities and reporting. This compliance responsibility has included development and implantation of federal risk programs and smart pigging. Mr. Dokianos holds a Bachelor of Science in Electrical Engineering from Wayne State University in Detroit, Michigan. **GP PF**

MR. BILL FINCH is a passionate operations leader for onshore oilfield, gas plant, and pipeline operations. He is driven to deliver results through an action bias, is committed to safety, and strongly believes in engineering and leadership operational presence in the field or plant. Bill's strengths include engaging people in the workplace and building competencies. He uses a pragmatic, practical approach to engineering support and work processes. Regarding operational discipline, Bill uses continuous improvement principles that often exceed business goals. His core competencies include a strong process engineering background, leveraging human capacity, operational know-how, building competency, decision making, translating strategy to delivery, system integration, teacher/coach, and risk management. Bill is a registered Professional Engineer in Louisiana, Montana, and Texas. He has a BS in Chemical Engineering from Montana State University and post graduate work toward a MChE at University of Houston. **O&M**

MR. WOLFGANG FOERG has over 20 years' experience in plant system design, control system design and selection, procurement, engineering management, and installation and commissioning of vendor proprietary equipment. His experience includes assignments as project engineer, rotating equipment specialist, lead engineer for major EPC contractors, as well as experience in construction, module design, commissioning and startup of plants. The types of plants include air separation plants, gas plants, gas storage facilities, power generation, MTBE plants, refinery wastewater treatment facilities,

phenol plants, polypropylene plants, crude oil treating facilities and crude oil pipelines, LNG/NGL liquefaction plants, and LNG receiving terminals. Specific equipment experience includes gas turbines, steam turbines, cryogenic expanders, centrifugal compressors, reciprocating compressors, centrifugal pumps, positive displacement pumps, polymer extruders, refrigeration systems, diesel engines, motors, generators, dryers, chemical injection systems, cooling towers, boilers, and loading arms. Mr. Foerg holds a MS, Mechanical Engineering from Stevens Institute of Technology and a BS, Mechanical Engineering from Cornell University. He is a Registered Professional Engineer in Wyoming, Colorado, Alberta, and Texas and is a CCHST Safety Trained Supervisor (STS). **ME**

DR. THEODORE (TED) FRANKIEWICZ has over 30 years of experience in the oil industry with Occidental Petroleum, Unocal Corp., Natco Group (now Cameron), and currently, SPEC Services, Inc. He has a Ph.D. in Physical Chemistry from the University of Chicago, holds 15 patents, and has authored over 25 professional publications. At Unocal, he was responsible for developing the water treatment systems, which were installed in the Gulf of Thailand to remove mercury and arsenic as well as residual oil from the produced water. At Natco Group he developed an effective vertical column flotation vessel design and used CFD to diagnose problems with existing water treatment equipment as well as to design new equipment. He was an SPE Distinguished Lecturer on Produced Water Treatment in 2009-10, and serves on the SPE Steering Committee for their Global Workshop Series on Water Treatment. His field/operational experience in oilfield chemistry, design of process equipment, and the development of process systems has provided him with unique insights into the issues that challenge operators as their water production and water treatment complexity and cost escalates over time. **PF**

MR. RONALD FREND is a registered engineer, and has extensive engineering and management experience in the oil and gas sector. He rose to a senior position in Shell International (Middle East) before opening a worldwide engineering consultancy based in England. His entire career has been concerned with practical applications of maintenance and engineering from a solid business foundation. Ron is experienced in a variety of maintenance analytical techniques as well as possessing management skills suitable to a large multinational corporation working in the oil and gas industry. Ron has also undergone specialized training on the following topics: management techniques, non-destructive testing, oil tanker cargo operations, instrumentation and control, resistance and gas welding, vibration analysis, infrared thermography, and ultrasonics. He is a Registered Engineer with an MSc from Huddersfield University in England as well as being a certified Chief Engineer Officer (marine). Ron is currently Technical Director of Facilities Training for PetroSkills with special responsibility for Mechanical Engineering training. **PF ME PL**

MR. RICHARD (RICK) GENTGES has over 36 years' experience in the design, construction, and operation of underground natural gas storage facilities. His experience includes assignments in operations, technical support, engineering management, and project management. Most recently (2010-2012) he served as Senior Project Manager for Cook Inlet Natural Gas Storage Alaska, LLC, and was responsible for overall construction of the first commercial underground gas storage facility in Alaska. From 1982-2010 he worked for ANR Pipeline Company where he held various technical and managerial positions involving gas storage assets. His technical experience includes performing and analyzing well tests, reservoir performance analysis, reservoir simulation, and overall storage facility optimization. During his career he managed construction projects that involved enhancements to existing gas storage facilities and construction of new gas storage facilities. The scope of construction included the drilling and completion of vertical and horizontal wells, upgrades to gathering systems, new compression, and gas

processing equipment. Mr. Gentges is a past Chairman of the Underground Gas Storage Committee of the American Gas Association (1994). He also served as Chairman of the Underground Gas Storage Research Committee for the Pipeline Research Council International (1998-2003), and served on the National Petroleum Council Gas Storage Team (2003-2004). Mr. Gentges holds a BSc in Chemical Engineering from the University of Michigan (1981). **PF**

MR. ANDY GIBBINS is an experienced and highly motivated oil, gas and petrochemicals consultant, with experience in upstream and downstream. Andy worked for many years in Operations Management and Technical positions with Shell and NOVA and has significant experience in Operational Excellence and Process Safety. He has excellent planning, organizational, project and people skills, resulting in effective project coordination and successful achievement of business improvement goals. Andy has excellent interpersonal, communication and presentation skills; he is diplomatic, with the ability to influence at all levels within an organization. He has thorough knowledge of and experience with change management. Andy has over 20 years of industrial experience and 12 years of consultancy and training experience in safety and leadership, project and change management. He holds a BEng (Hons) in Chemical Engineering from University of Bradford, UK. **GP**

MR. DAN GIBSON is a consulting engineer with over 35 years of experience in production, completions, and well integrity issues from oil and gas fields all over the world. After working as a roughneck and roustabout through college, he started his professional life as a facility engineer in Alaska. He has worked his way through the value stream from facilities to completions with jobs in Anchorage, Denver, Houston, Gabon, Congo, Egypt, Scotland, Russia, and Australia. He is currently a consulting engineer, working on completions and well integrity problems for a wide range of independents and majors. He has worked as a Wells Technical Authority for a large international independent with a varied portfolio of offshore oil and gas wells. He was the first Senior Completion Advisor for a super major. As part of this role, he worked with teams on both major technical incidents and on planning and assurance of high profile projects around the world. These experiences have given him a unique viewpoint of how fields are developed; how wells are designed, constructed, and produced; how things can go wrong with a well during construction and production; and how best to mitigate and manage well problems. He has authored and co-authored a number of papers, ranging from polymer flood management to ice mechanics and most recently a design of an innovative ICD system for a high rate water injection well. Dan graduated from Oklahoma State University, Stillwater and Studied Arctic Engineering at the University of Alaska, Anchorage. His teaching style focuses on first principles and developing an understanding of why things happen which then dictates an appropriate response. **P&C**

MR. JOSH GILAD, P.E., has 40 years of domestic and international experience in the engineering, analysis, inspection, troubleshooting, forensic investigation and expert witness for marine liquid bulk terminals for oil (crude, products) and gas (LNG, LPG), cargo handling and storage facilities, prime movers, piping and pipelines. His experience includes pipeline flow and hydraulic transient analysis, pipe stress analysis, pipeline on-bottom stability, pipeline integrity & fitness for service assessment. Throughout his years with Brown & Root (now KBR), Han-Padron Associates (now CH2M-Hill), and as an independent consultant, Mr. Gilad has been involved in the design and installation of numerous single point mooring (SPM) systems and other offshore petroleum terminals, fixed-berth and offshore cargo transfer systems, oil and gas pipelines, Pipeline End Manifolds (PLEMs), pig launching/receiving and oil storage facilities. Mr. Gilad holds a BS and MS in mechanical engineering from the Technion, Haifa and is a registered Professional Engineer in the States of TX, NY and CA. He is one of the original authors of the California

State MOTEMS, and presently a member of PIANC working group, WG153, that is developing recommendations for the design of marine oil terminals. **GP ME PL**

MR. GERALD GUIDROZ started out as a vibration test engineer for the space shuttle main engines. He then moved into the oil and gas industry on the North Slope on the production side of the business. He worked as a rotating equipment engineer for several years as well as getting involved with projects involving well pads, pipelines, waterflood, and gas injection before moving over to the pipeline side of the business. He was able to transfer some of his vibration experience into solving complex piping and equipment problems. Mr. Guidroz worked with the Trans-Alaska pipeline on pipeline and tank corrosion monitoring and repairs and worked as a construction engineer at the Valdez Marine terminal. He then transferred to the refinery side of the business working for multiple clients as an engineering consultant. He has been involved with major refinery upgrades, multiple turnarounds and greenfield projects. He has acted as owner's engineer on projects including a new spill response barge for drilling in the arctic. Mr. Guidroz has been involved with all phases of projects from FEL1/ Conceptual Design to Detailed Design on through construction. His areas of expertise are in piping specification and design, welding, pressure vessels, heat exchangers, fired heaters, pumps, compressors, drivers, valves, pipelines, and stress analysis. Mr. Guidroz has a broad knowledge base from over twenty 28 of experience in the oil and gas business. **ME**

MR. ROGER HADDAD, P.E., PMP, is a practicing project manager with Occidental Petroleum and has over 25 years of design and project experience in the Oil and Gas and Chemical Industries. He started his career as a structural engineer and progressed from design to construction to project management. He gained his project management skills while working on fast-track projects in North America where he held various positions in project and portfolio management. For the last 10 years, Roger has been managing large offshore and onshore oil and gas projects in the Middle East. With his extensive experience in design, construction, risk management and project controls, he has been managing large project teams and contractors and working with JV partners as well as national oil companies. Roger earned a MS in Structural Engineering and a BS in Civil Engineering from the University of Buffalo, New York. He is currently based in Abu Dhabi, United Arab Emirates. **PM**

MR. GERARD HAGEMAN is based in The Hague (The Netherlands), where he settled after 33 years in the downstream oil and gas business (including LNG). He is equipped with thorough knowledge and experience in LNG, gas and refinery operations, start-up, design, process technology, teamwork, change processes, and competency assessment. He started his career with the Gulf Oil refinery in The Netherlands as a process engineer, followed by a job as economic analyst for Gulf Oil Chemicals in London, after which he joined Shell for 29 years. During his career with Shell, Mr. Hageman has worked in numerous countries including Malaysia, Thailand, Saudi Arabia, Oman, United Arab Emirates, United Kingdom, Denmark and, of course, The Netherlands. He has been responsible for Process Engineering, Design, Operation, Start-up, Process Safety (Integrity), Interface Management, Change Processes, Competency Assurance and Training. He holds an MS in Chemical Engineering from Twente University in The Netherlands. He is a member of KIVI, i.e. The Royal Dutch Institute of Engineers. Mr. Hageman joined PetroSkills | John M. Campbell in 2012. **GP PF**

DR. JAMES L. HANER is the head of Ultimate Business Resources (UBR) Consulting, specializing in "Building Better Businesses." UBR is an independent firm offering business consulting and project management services to Fortune 500 companies in the US, Europe, Africa, and China. James has more than 30 years of experience in business and IT. His responsibilities have included establishing a corporate web presence for a

Fortune 500 company, creating a successful organization-wide employee development plan, and developing the IT infrastructure for a start-up company in both project management and leadership roles. He completed his PhD work at the University of Idaho and Coriellins University. He earned an MA degree in Management/Leadership from the Claremont Graduate School and took classes with Peter F. Drucker, "the father of modern management." James is a contributing author of 140 Project Management Tips in 140 Words or Less, 2010; Making Sense of Sustainability in Project Management, 2011; and Program Management: A Lifecycle Approach (2012). **PPD**

MR. MALCOLM HARRISON graduated in Chemical Engineering in 1981 and completed an MBA in 1995. He has worked mostly in the areas of oil and gas, cryogenics and gas monetization. Mr. Harrison has worked for BP, BOC, Foster Wheeler and BG. He was Director of Process Engineering for Foster Wheeler and, most recently, was BG's Chief Process Engineer. He has travelled a lot, worked on all the continents except Antarctica, visited more countries and encountered more cultures than he can remember. While his foundations are in process engineering, the MBA sparked an interest in corporate strategy, in changing organizations and building high performing teams. **GP**

MR. RON HINN is the EVP for Sales and Member Engagement for PetroSkills. He is a people oriented manager, possessing strong leadership and communication skills. A registered professional engineer, Ron's 39-year career has spanned numerous roles including staff engineering, engineering supervision, corporate knowledge management and professional staffing and competency development. Ron is an active supporter of global engineering accreditation activities, having served in multiple roles for ABET up to and including Executive Committee of the ABET Board. Ron received a BS degree from the University of Tulsa in petroleum engineering. **MDT**

DR. RODNEY JACOBS is recognized as a worldwide leader in the field of Instrumentation, Automation and Process Control. He has been involved in instrumentation for the last 35 years, and has presented a great deal of workshops in many countries around the world (with most of them being in countries that have an interest in the oil and gas industries). Apart from in-house and public workshops, he has also presented hundreds of internet-based (e-learning) sessions, primarily related to process control and safety. His main area of focus includes PLCs, SCADA, DCS, loop tuning, instrumentation and other areas related to the control of processes. Although his primary focus has always been instrumentation, he does have qualifications in electrical heavy current aspects, and has lectured this at university level. In addition to presenting international seminars, he is also actively involved as a consulting engineer, in his area of expertise. He is a past recipient of the N&Z award, which is one of the highest awards, in the field of instrumentation, in South Africa. Apart from a Doctorate in Electrical Engineering, Light Current, he also has an Honors degree in Psychology, and is internationally certified in training and assessment. **IC&E**

MR. ROBIN JENTZ has 38 years of oil and gas processing experience. His work has included most process areas of oil and gas production, including design and testing of low dewpoint glycol dehydration units, analysis of flare and relief systems using dynamic simulation programs, retrofitting gas/liquid separators to increase capacity and eliminate entrainment, and upgrading oil dehydrators. Mr. Jentz has worked for both operating and engineering contracting companies. He is a Registered Professional Engineer in Alaska and Washington. Mr. Jentz received his BS in Chemical Engineering from California State University Long Beach in 1974. **PF**

MR. STEPHEN JEWELL is an independent oil and gas consultant and advisor with 30 years' experience in the upstream sector. He was previously the Managing Director and co-founder of Xodus Subsurface Ltd, the Wells and Subsurface company within the Xodus Group

of technical consultants. He was also Chief Operating Officer and a founding shareholder of Composite Energy Limited, a European Unconventional Gas company, growing the company from seed capital of \$500k to an ultimate sale value of over \$60 million in 5 years. He has over 16 years' experience with Amerada Hess starting as petroleum engineer and progressing to Acting General Manager of its North Sea Operations Base. He received a BEng (Honors) degree in Electronic Engineering from the University of Sheffield and speaks Norwegian and French.

MDT

DR. SATISH K. KALRA is a petroleum engineer with over 25 years of management, operations, teaching, research, and consulting experience with national and private oil companies. As an Associate Professor of Petroleum Engineering, he taught graduate and undergraduate students at the University of Southwestern Louisiana, Lafayette. He also worked for the University of Texas at Austin. His career includes assignments with ONGC (National Oil Company of India), ARCO Offshore (now BP), BJ Services, Agio Oil and Gas, Schlumberger / Holditch, Miller and Lents and SKAL-TEX Corporation. He is widely published in technical literature and was the Chairman of the National SPE Committee on Monographs. His technical expertise includes the design and supervision of production and well completion operations, formation damage and sand control, reservoir management, technology transfer and contract negotiations. He actively participated in several technology transfer agreements with various Indian, Chinese, and Russian companies. He is fluent in English, Russian and several Indian languages. Recently he was nominated as a member of the Russian Academy of Natural Sciences US Section. He received an M.S. and Ph.D. in petroleum engineering from the Gubkin Oil Institute, Moscow, Russia and a degree in law from Gujarat University, India. P&C MDT

DR. MOHAN G. KELKAR is a professor of petroleum engineering at the University of Tulsa in Tulsa, Oklahoma. His main research interests include reservoir characterization, production optimization, and risk analysis. He is involved in several research projects, which are partially funded by various national and international oil companies, the US Department of Energy, and Oklahoma Center for Advancement of Science and Technology. He has taught various short courses for many oil companies in Canada, Indonesia, Singapore, Nigeria, Kuwait, Abu Dhabi, Scotland, India, Denmark and across the United States. He has been a consultant to many oil companies, as well as to the United Nations. He received a B.S. in Chemical Engineering from the University of Bombay, an M.S. in Petroleum Engineering and a Ph.D. in Chemical Engineering from the University of Pittsburgh, and a J.D. from the University of Tulsa. P&C

MR. BILL KEMP has 40 years of oil and gas industry experience in engineering, operations, product development and commercialization, business development, sales, and marketing. Bill is responsible for strategic member/client interaction in workforce development, consulting and software solutions in the upstream, midstream and downstream segments. Previously, Bill was manager, sales and marketing, for the Oilfield Technology Group of Hexion in Houston, beginning in 2004. At Hexion Bill was responsible for new stimulation technology commercialization as well as managing strategic relationships with customers and industry organizations. He began his career with Halliburton in 1977 as an engineer-in-training. He had numerous field engineering, sales, product marketing and business development positions at Halliburton. As global marketing manager for stimulation in the late 1990s, he led the introduction of various innovative acidizing and fracturing technologies. He left Halliburton in 2000 to start a consulting company specializing in oilfield market research and new technology commercialization. Bill has been active in SPE and served numerous roles at both the local and national level. Bill has a BSEE from the University of Texas at Austin. MDT

MR. DALE KRAUS has over 30 years of progressive responsibility from staff to management

positions within the Upstream Oil and Gas Industry. Mr. Kraus has obtained a sound basis in Facility/Processing Engineering with an emphasis on Plant and Field Operations in Oil and Gas Production, both sweet and sour. He is also the President of D. Kraus Oil & Gas Consulting Corp., a member of APPEGA and holds a BS in Chemical Engineering from the University of Saskatchewan. He currently resides by the lake in Wakaw, Saskatchewan. GP PF

MR. JAMES LANGER is a registered professional chemical engineer in Texas and California. Jim worked for Hess as a Senior Process Engineering Advisor for 8 years. He is retired from Shell having worked 28 years as a Senior Staff Process Engineer, and Principal Technical Expert for Shell / Shell Global Solutions. He has had a global job for the past 20 years and had experience in offshore / onshore, shallow water / deepwater, heavy oil / light oil, water treating, and natural gas processing. He has been a project manager working field development projects through all the phase gates and stages. He frequently travels the globe assisting operations with process issues, and showing them how to unlock additional barrels through the application of production optimization. This has delivered over \$2 billion in value to sponsors. Jim installed Shell's smallest, most expensive gas plant. The project took 8 years and is located on Pacific Coast Highway in Huntington Beach California. Jim graduated with a BS in Chemical Engineering from UCLA and has an MBA from Pepperdine. GP PF

MR. PERRY LOVELACE, CMRP, is a Senior Instructor/Consultant for Pathfinder Learning Solutions LLC. He specializes in Maintenance Management and Competency-based Training Programs and has over 35 years' experience in industrial training and consulting. After graduate studies, he worked for a large consulting mechanical/electrical engineering firm applying rigorous systems analysis to industrial facility design and construction. He has dedicated his career to providing high quality learning experiences, keeping in tune with the changing economic and technological environment, especially as applied to long-term facilities and equipment management. He has assisted many organizations through on-site consultation and training. Clients include petroleum, industrial and utility organizations of different types and sizes in the United States, Kingdom of Saudi Arabia, United Arab Emirates, Qatar, Nigeria, Angola, Canada, New Zealand, Australia, Thailand, Malaysia, Singapore, Trinidad/Tobago, UK, Romania, Austria and Mexico. An engaging and popular speaker/facilitator, Mr. Lovelace continually receives high marks from participants. A CMRP member of the Society for Maintenance and Reliability Professionals, Mr. Lovelace holds a BS in Science Education and an MS in Botany from the University of Oklahoma, with pre-doctoral studies in Plant Ecology at the University of California. In March 2016, Mr. Lovelace was inducted into the University of Oklahoma, College of Education Hall of Fame for his 50 years of innovative education and outstanding teaching. O&M PPD

MR. PETE LUAN has over 25 years of international upstream project management experience. He has also consulted for the past 10 years helping energy companies improve their management of capital projects. He has an extensive track record of helping E&P companies improve their capital project performance. He has been particularly successful with those clients who are faced with large capital projects and require a step-change in organizational capabilities. Pete is a facilitator and advisor to top management, many of whom continue to seek his advice even after the development of their project organizations has been completed. He has worked with numerous strategy, project execution plan development, risk management, Lessons Learned, stakeholder alignment, etc. Pete worked for Amoco Production Co. managing major capital projects in Azerbaijan, the Middle East, and Latin America. He holds a BS and an MS in Mechanical Engineering with higher honors from Rice University and has completed management training at Harvard Business School. He is PMP certified. PM

MR. CHRISTIAAN LUCA is associate partner in Community Wisdom Partners, a consultancy specialized in the creation of mutually beneficial relationships between business and societal actors. He has 32 years prior experience in the oil and gas industry with Shell starting as a petroleum engineer in various countries around the world before moving into senior corporate positions in technical and commercial strategy. In his latest role he was responsible for the design and implementation of Shell's global practice in non-technical (or societal) risk management. This included training hundreds of advisors, engineers, managers, and executives in the practicalities of delivering a timely and proactive response to pressures and challenges from the external world. His experience across technical, commercial, and non-technical disciplines allows him to communicate easily across all professional boundaries. Christiaan has a broad toolkit at his disposal to improve governance, streamline processes, and create the cultural change needed for proactive management of non-technical risks in capital projects and operations. He has a BSc in Mining Engineering and a MSc in Petroleum Engineering (Honors), both from Delft University of Technology in The Netherlands. PB

MR. KEN LUNSFORD is the Project Management Discipline Manager for PetroSkills. He has more than 38 years' experience in engineering and management of oil, gas, chemicals and plastics development. During his 32 years with ConocoPhillips, he led development teams on projects in the United States, Norway, Qatar, and United Arab Emirates. His diverse engineering and project management background includes sour gas plants, oil, gas and petrochemical pipelines, engineered plastics processes and materials handling, batch sulfur chemical processes, liquefied natural gas projects and pilot plants. Additionally, he was corporate project controls manager for Phillips Petroleum with responsibility for developing business processes and training for asset development, value improving practices, project controls, contracting strategy, risk management, reviews and assists and joint venture non-operated project assurance. He received his BS and MS degrees in Mechanical Engineering from the University of Missouri-Columbia. He is a registered professional engineer in the State of Texas. ME PM

MR. HARVEY MALINO is an Instructor/Consultant for PetroSkills | John M. Campbell. He has more than 40 years' experience in the chemical and hydrocarbon processing industries. During his 28 years with Union Carbide Corporation/UOP, he held both technical and commercial positions. These included: Molecular Sieve Technical Manager- Design and Field Service; Licensing Manager for the Ethylene Oxide business; Area Sales and Marketing Manager for Southeast Asia; Business Manager for the Gas Processing Business Group; and, World Wide Sales Manager for the Gas Processing Business Group. Mr. Malino has lived and worked in New Hampshire, Maine, New York, Singapore and Chicago. He is currently based in Sullivan's Island, South Carolina where he is President of his own consulting business. Mr. Malino is a registered Professional Engineer in the State of New Hampshire. He is a Senior Member of the Advisory Board of the Laurance Reid Gas Conditioning Conference in Norman, OK. Mr. Malino earned a BS in Chemical Engineering from the City College of New York; and, an MBA from Pace University in New York. GP

DR. ANDREA MANGIACACCHI is currently involved in international deep-water offshore projects on behalf of major oil and gas operators. He is also an active member of work groups involved in the development of US and international standards for offshore structures. After an early academic career with the University of Rome, Italy and with Rice University in Houston, Andrea joined Brown & Root (today KBR), where over the next 25 years he was involved in a number of major international offshore oil and gas projects (Gulf of Mexico, North Sea, South America, West Africa, Asia-Pacific). He also held a number of corporate positions in the area of deep water technology, fixed and floating offshore structures, and engineering systems. Andrea has

extensive experience in conceptual field development projects, structural analysis and design, hydrodynamics, naval architecture, Computer Aided Engineering and Design. Andrea holds a MSc in Nuclear Engineering and a PhD in Aerospace Engineering, both from the University of Rome. He has authored or co-authored over 30 technical papers, and holds two patents. **PL OS**

DR. HOWARD L. MCKINZIE is a petroleum consultant from Sugar Land, Texas. His prior experience includes 21 years with Texaco, Inc. and Getty Oil Company in areas of production and completions engineering. Specialties include sand control, downhole oil/water separation, compact surface oil/water separation, artificial lift with progressive cavity pumps, formation damage, water shutoff, drag reduction techniques for fluid flow, and well stimulation by acidizing and fracturing. He worked in the area of surface well logging, and was one of the co-developers of QGM (Qualitative Gas Measurement) and QFT (Qualitative Fluorescence Technique). Prior to Getty, he was employed by GTE Labs in Waltham, Massachusetts, where he worked primarily in the areas of catalyst development research and developing photo-catalytic techniques. He was the Chairman of the Completion Engineering Association in 1991-1992, after being Vice Chairman in 1989-1990. He was a member of the research team that received the Special Meritorious Award for Engineering Innovation from Petroleum Engineer International in 1999. He was a member of the team that received the Hearst Newspapers Energy Award for Technology in 1998. He has twice received Texaco's Corporate Technology Innovation Award and holds numerous patents. He held a post-doctoral appointment in Chemistry at Brown University, and subsequently taught engineering there for several more years. He received a BS in Chemistry and Mathematics from Central Oklahoma University, and a PhD in Physical Chemistry from Arizona State University. **P&C**

MR. D. JOHN MORGAN is based in Denver, Colorado, and is the Chairman Emeritus of PetroSkills/John M. Campbell. He has over 50 years' experience in the design, startup, and troubleshooting of oil and gas facilities. He has published extensively on sour gas treating, sulfur recovery, CO₂ treating, materials of construction, LNG training, and cryogenic gas processing. Mr. Morgan consults for both North American and international clients in the gas processing industry. He performs training in LNG facilities, oil and gas production facilities, and gas plants around the world. Mr. Morgan has served as an SPE Distinguished Lecturer on LNG in 2005/06, 2008/09, and 2014/15. He is very active in the industry, including the Senior Advisory Committee of the Laurance Reid Gas Conditioning Conference; Brimstone Sulfur Symposium Technical Committee; International Committee of GPA/GPSA, and has served as Adjunct Professor of Petroleum Engineering at Colorado School of Mines. Mr. Morgan is a recipient of the 2019 Donald L. Katz Award for excellence in engineering education from GPA Midstream. For 30 years, he was a member of the Editorial Review Board of the Gas Processors Supplier's Association. Mr. Morgan has many years of experience training non-native English speakers. He holds a BSc (Honors) in Chemical Engineering from London University; and an ME in Chemical and Refinery Engineering from Colorado School of Mines, USA. **GP**

DR. MAHMOOD MOSHFEGHIAN is a Senior Technical Advisor and Senior Instructor for PetroSkills. He is the author of most Tips of the Month and develops technical software for PetroSkills. He has 40 years' teaching experience in universities as well as for oil and gas industries. Dr. Moshfeghian joined John M. Campbell & Co. in 1990 as a part time consultant and then as full time instructor/consultant in 2005. Dr. Moshfeghian was Professor of Chemical Engineering at Shiraz University. Dr. Moshfeghian is a senior member of AIChE and has published more than 125 technical papers on thermodynamic properties and process engineering. Dr. Moshfeghian has presented invited papers at international conferences. He is a member of the Editorial Board for the International Journal of Oil, Gas, and Coal Technology. He holds a BS (74), an MS (75) and a PhD

(78) in Chemical Engineering, all from Oklahoma State University. **GP PF ME**

MR. MANICKAVASAKAN (MANICKAM) S. NADAR is a consultant Principal Petroleum engineer with 27 years of experience in the upstream oil and gas industry and 6 years in petrochemical process operations. With a strong background in Production Technology, Well Operations, Well Completions & Workovers, Artificial Lift, Asset Modeling and Optimization, he has specialized in artificial lift technologies, well and system designs, analysis, trouble-shooting, reliability improvement and production enhancement. He has made significant contribution in the artificial lift selection, design, operation, surveillance and optimization of large volume gas lifted and ESP wells for many operators. Mr. Nadar has worked for major international operating companies and handled various responsibilities in production engineering operations and artificial lift systems, onshore and offshore. In the service sector, he has delivered many challenging well and network modeling and optimization projects that helped clients achieve substantial increase in production, operation efficiency and cost savings. Recently he has helped companies to implement real-time surveillance and optimization systems that allows operators use collaborative work environments for achieving their KPIs. A university topper and gold medalist, Mr. Nadar holds a BSc degree in Chemistry from Madurai University, India and a degree in Chemical Engineering from Institution of Engineers (India). With several SPE papers and text book publications to his credit, he has conducted many workshops, training seminars and short courses for SPE and other organizations. **P&C MDT**

MR. JOHN ROBERT (BOB) NICHOL is President of Petrobob Consulting Limited, located in Sherwood Park, Alberta, Canada. He has over 35 years' experience in a broad range of petroleum engineering roles including field operations, reservoir engineering, and engineering research. Bob received a BSc in Electrical Engineering, an MEng in Mineral Engineering, and a PhD in Petroleum Engineering, all from the University of Alberta. He is currently employed at the Alberta Government, Department of Energy in Edmonton. **P&C**

MR. TIM NIEMAN has 30 years of experience as a risk and decision analyst, economist and petroleum scientist. His professional experience includes 20 years in leading and conducting projects of various sizes and scopes involving the application of decision and risk analysis methodologies in the energy and environmental sectors, and 10 years as a practicing petroleum geophysicist. His background includes work in decision analysis, risk analysis, business modeling, financial forecasting, strategic planning, R&D portfolio management, software development, geology, and geophysics. He has also taught numerous training seminars in decision analysis, economics and quantitative modeling. He has a BS in geology, an MS in geophysics from Michigan State University, and an MBA from Rice University. **PB**

MR. RONNIE NORVELL was Director of Instructional Design and Quality at PetroSkills 2009-2012. Prior to joining PetroSkills, Ronnie served as a Sr. Consultant and frequent appointments as Director of Continuing Excellence with the Saudi Aramco E&P Continuing Excellence Department. Prior to joining Saudi Aramco in 1998, Ronnie Norvell was the President and Managing Partner of Management Paradigms, a U.S. based consulting firm specializing in management and leadership development. Over the past forty years he has provided senior management consulting to a large spectrum of U.S. and foreign industries, managed the training functions of two major corporations, and served as a college administrator and instructor. Ronnie has served on the Board of Directors of three international organizations including the American Society for Training and Development and PetroSkills. He has also served on the continuing education faculty of the University of Texas at Dallas and on the adjunct faculty of Amber University's MBA program. Ronnie has authored numerous publications, designed and conducted a variety of

programs targeted at enhancing management and employee productivity. He co-authored The Internal Outplacement Handbook and A Trainer's Guide to Performance Appraisal. His peers have recognized him on numerous occasions. The American Society for Training and Development recognized Ronnie in 1997 for his contributions to the profession by awarding him with one of their highest honors, the "Torch" award. The Dallas Chapter of ASTD recognized him as the "Professional of the Year" in 1989 and his alma mater, Texas A&M University at Commerce, selected him as a "Distinguished Alumni" in 1990. **PPD**

DR. PHIL NOTZ is an offshore industry consultant for flow assurance issues. He worked as a chemical engineer for DuPont from 1968 to 1971, a research scientist and reservoir engineer for Getty Oil Company/Texaco/Chevron from 1978 to 2002. He worked for offshore engineering and construction firms, Doris Inc. (2002-2004) and Technip USA (2004-2008) as flow assurance manager. While at Getty/Texaco, Dr. Notz taught courses in surfactant polymer flooding, reservoir engineering, carbon dioxide flooding, reservoir fluid properties and flow assurance to operations in the US, UK, Ecuador and Saudi Arabia. He was Texaco's representative on the GPA research committee, the Colorado School of Mines Gas Hydrates Consortium and the DeepStar Flow Assurance Committee. Dr. Notz has a BS from the University of Wisconsin in Chemistry (Chemical Engineering minor) and a PhD from Michigan State University in Analytical Chemistry. **OS**

MR. WILLIAM K. OTT is an independent petroleum consultant and is the founder of Well Completion Technology, an international engineering consulting and petroleum industry training firm established in 1986. Before consulting and teaching, he was division engineer for Halliburton's Far East region based in Singapore and a research field coordinator for Halliburton in Oklahoma. He works regularly with and on wells requiring various well completions techniques, principally in East Asia. He has conducted technical petroleum industry courses worldwide and written numerous technical papers relating to well completion and workover operations. He is a registered professional engineer in Texas, and a 25-year member of SPE. He received a B.S. in Chemical Engineering from the University of Missouri. **P&C**

DR. CARLOS PALACIOS is a National Association of Engineers (NACE) certified Chemical Treatment Corrosion Specialist and Internal Corrosion Specialist, and is the author of numerous technical publications on the subject of corrosion. He has a BS, an MSc, and a PhD in Mechanical Engineering, and Post-Doctoral studies in Erosion/Corrosion from the University of Tulsa. His 30 years of experience in the oil and gas industry have resulted in his becoming a subject matter expert on internal corrosion, erosion, chemical treatment, material selection, water treatment, oil treatment, and corrosion monitoring in fields in Colombia, Bolivia, Peru, Ecuador, Mexico, Argentina, Venezuela, Kuwait, and the US. Dr. Palacios has been an instructor for about 20 years and has extensive experience in leading seminars, and developing and teaching industry courses in: Saudi Arabia, Malaysia, Turkey, USA, Mexico, Colombia, Spain, UAE, Vietnam, Venezuela, and India. He has served as a professor for both undergraduate and graduate courses at the University of Tulsa and various universities in South America. Dr. Palacios holds a US Patent # 7,942,200 for a Downhole Chemical Dispersion Device. He leads technical committees in NACE International to develop Standard Practices. He is a recipient of the NACE Distinguished Service Award in March 2013. He was International Director for the NACE Foundation from 2005 to 2013. **PF ME**

DR. DAVID PELTON has been a professional communicator for over 35 years and has performed for and spoken to audiences in the United States, Central and Western Europe, Armenia, Azerbaijan, Russia, The Ukraine, Africa, The Middle East, and Southeast Asia. He has taught at major colleges and universities and has been an active seminar/workshop facilitator for petroleum

and non-petroleum businesses in many US states, and in Canada, England, Holland, Ireland, Wales, the Czech and Slovak Republics, Benin, Nigeria, The United Arab Emirates, Malaysia, and Singapore. Today he is a member of numerous training institutes and societies and enjoys a national and international reputation as a communications consultant, lecturer, trainer, and coach. He received degrees from Cornell University, The New England Conservatory of Music and the University of Cincinnati. **PPD**

MR. JASON PINGENOT has worked in the oil and gas industry since 1994 with broad and deep expertise in automation and power system planning, design, engineering, system integration, management, electrical safety, commissioning, and operations for a wide range of oil and gas facilities including production facilities, gathering systems, compressor stations, processing plants, metering facilities, and loading stations for projects worldwide. In his career he has served the industry as a drafting instructor and engineering consultant, and led the IC&E central engineering group at Encana Oil & Gas (USA) to execute capital projects and develop technical and safety standards. Recently, Mr. Pingenot was an owner, Vice President of Engineering and IC&E Manager at a mid-sized consulting firm, GWD Design & Engineering based in Denver, Colorado. STV Energy Services has since acquired GWD Engineering and Mr. Pingenot continues to perform a similar function as IC&E Engineering Chief and Senior Associate. In 2012 Mr. Pingenot joined PetroSkills | John M. Campbell and now functions as an instructor, consultant, content developer, and discipline manager for the IC&E discipline. Mr. Pingenot is a registered professional engineer in the states of Colorado, New Mexico, Utah, North Dakota, Wyoming, Texas, and Oklahoma. He has a bachelor's degree in Electrical Engineering (with Special Honors) from the University of Colorado. **IC&E**

MR. WILLIAM (BILL) E. POWELL is an oil and gas professional with over 30 years of experience in field operations, technical sales, marketing, and management with autonomous operations and profit and loss responsibility. Prior to entering the oil and gas industry with Schlumberger, he served as a commissioned officer in the US Marine Corps. Bill holds BS and MS degrees in Physics. He is a member of the SPE, AAPG, SEG, and EAGE. Over the course of his career, Bill has taught short courses and seminars on a variety of technical topics. Bill served as Vice President Marketing for S.A. Holditch & Associates Inc., a well-known petroleum consultancy where he played a key role in building the brand equity that was the basis of their successful acquisition and integration into Schlumberger. His most recent assignment with Schlumberger was as North America Business Development Manager for Data & Consulting Services where he maintained close relationships with numerous major and independent oil and gas companies. Bill currently performs the role of PetroSkills Integrated Disciplines Manager for Unconventional Resources. **MDT**

DR. JAY RAJANI worked in Amsterdam, The Hague and London for Royal Dutch Shell Group of Companies for 33 years. He started his career in the Shell Research Laboratories in Amsterdam where he was involved in the development of refinery burners/furnaces. He later moved to Separation Technology. He worked on the development of conventional as well as membrane based gas-liquid and liquid-liquid separators. From 1987 to 2005, he worked in the Gas/Liquid Treating and Sulphur Processes department as Principal Technologist, providing technical and operational excellence to all gas plants and LNG plants that were operated or advised by Shell. His last position (2005 to 2010) was as a Lead Process Engineer with Qatargas 3&4 LNG Project (first with EPC contractor in Japan and then in Ras Laffan in Qatar). The last three years of the project involvement was in the construction, commissioning and start-up of the 7.8 mtpy LNG trains. From 2011 to 2014 Jay worked with SBM Offshore in the Netherlands on the development of gas treating modules for FPSO and FLNG. Jay is now an independent consultant and an instructor with PetroSkills

| John M. Campbell. He holds BS and PhD degrees from the University of London and a Diploma in Management Studies from the University of Coventry. **GP PF**

DR. CLIFF REDUS is an independent petroleum engineering consultant who specializes in production system optimization and subsea flow assurance. Prior to starting his consulting business, he was an Associate Professor of Petroleum Engineering at the University of Tulsa. He has 35 years of petroleum industry experience, both in production research and field operations in the area of multiphase flow. His primary areas of interest are multiphase flow in well bores, flow lines and production equipment, multiphase meters and pumps, computational fluid mechanics, advance separation technology and paraffin and hydrate deposition in production flow lines and wells. He was in a supervisory capacity in production related industrial research for the last 10 years with Texaco's Upstream Technology Department in Houston Texas, with the last four years as Director of Texaco's live oil multiphase flows loop in Humble Texas. At Tulsa University, he was actively engaged in teaching, research in multiphase flow, and as executive director of Tulsa University Fluid Flow Projects. He received a B.S. in Mechanical engineering from Texas A&M University in Kingsville, Texas, an MS. and Ph.D., from the University of Houston, both in Mechanical Engineering. **P&C**

MR. GERRY H. ROSS has more than 39 years' formation evaluation and rock based Petrophysics experience. He has participated in global oil and gas operations from exploration through production. From 2002 until 2016, while at PetroSkills, he was an executive VP with responsibility for Alliance membership growth and engagement. He is course director for Basic Petroleum Technology and the online ePetro industry overview program. While with Core Lab, he provided training to both majors and independents on a worldwide basis. During this time, he was the instructor and co-coordinator of an extensive internal Petrophysics applications program. This multi-year program focused on the applications of rock and fluid data in log analysis, formation evaluation, reservoir engineering and production. He also worked with major research centers and universities globally to provide reservoir conditions instrumentation for reservoir engineering, reservoir description, and formation damage research. His international oil and gas knowledge was developed through extended assignments in South America, Asia, the North Sea and the US. He is a member of the SPE, SPWLA, PESGB, SEAPEX and a past president of the Aberdeen Chapter of the SPWLA. He received a BSc in Geology from Bedford College, London University. **MDT**

DR. KENT SAUGIER is a hands-on scientific, technology and business professional with 25 years' experience in upstream oil and gas, offshore technology, economics, economic modeling, international petroleum contracts, project management, software applications and technology including design, licensing and commercialization. He has domestic and international experience, excellent presentation skills and strong customer awareness. He received both a B.A. and a Ph.D. in Chemistry from the University of California. **PB MDT OS**

MR. RICHARD H. SCHROEDER is founder and President of RHS Management, specializing in technical and management consulting for the petroleum industry. He has more than 45 years of experience in engineering, international operations, management and teaching experience in all phases of exploration, production, research and corporate development. He specializes in reservoir management, production optimization, drilling, operations, completion and workover capabilities, personnel development, communications and multi-discipline team building. His professional experience includes: 9 years in engineering, research and supervision with Exxon; 8 years as Senior Vice President with May Petroleum, an independent drilling fund company; 8 years as President of Rosewood Resources, a privately-owned international integrated oil company; and 7 years as President/Vice Chairman/Consultant of Harken Energy Corp., an international

exploration company. He has authored articles and manuals on various phases of petroleum engineering and personnel management. He is a member of API, SPE, IPAA, and TIPRO, is a Tau Beta Pi Fellow, and has various outstanding lecturer awards. He received a BS in Engineering Science and an MS in Petroleum Engineering from the University of Texas at Austin. **P&C**

MR. JOHN SCHUYLER, CAM, CCE, CMA, CMC, CPIM, PMP and PE, is a decision analyst, evaluation engineer, and investor. He founded his consulting practice, Decision Precision, in 1988. He has over 37 years of experience in analysis, consulting, training and management, primarily in the energy industry. His focus has been in feasibility analysis, appraisals, corporate planning, and evaluation software. He has presented over 290 courses in 34 countries since 1989. He was vice president and petroleum engineer with Security Pacific National Bank, planning and evaluation analyst at Cities Service Oil Co., manager of business systems for Cities Service's Petrochemicals Division, and senior management consultant with a national accounting firm. He is a member of eight professional organizations and is an author and speaker on modern analysis practices. He is the revision author of Decision Analysis for Petroleum Exploration, 2nd Ed., author of Risk and Decision Analysis in Projects, 2nd Ed., and has written over 40 articles, papers and handbook chapters. He received BS and MS degrees in mineral-engineering physics from the Colorado School of Mines and an MBA from the University of Colorado. His website is www.maxvalue.com. **PB**

MR. STEPHEN SCOTT is a Chemical Engineer by qualification and an Atmospheric Storage Tank and Sludge Processing Specialist by experience. He is a member of the Institution of Chemical Engineers and the Energy Institute, and is qualified as an API Certified Tank Inspector (API 653). On leaving full time education, Steve joined ICI, and was involved as a key player in the development of improved operational performance across a broad range of chemical manufacturing plants. In 1985, Steve became a member of the Institute of Petroleum team charged with the production of its 'Tank Cleaning Safety Code,' which has become the definitive document worldwide. In 1992, Steve became Managing Director of Progressive Technical Services specializing in the preparation for inspection of large diameter black oil storage tanks and the subsequent processing of the resultant hydrocarbon waste for oil recovery, recycling and waste minimization. As a recognized industry expert, Steve decided to offer his services to a wider audience and in 1997, formed Bro Nant International. As an independent, Steve can work for both contractor and industrial major alike and has built up an enviable reputation both in the UK and overseas. Strategic alliances formed with leading oil industry service companies allows Bro Nant International to offer a full turnkey capability from a single managed source. A comprehensive knowledge of the relevant industry standards including BS, EEMUA, and API ensures that all projects are undertaken with a high degree of professional integrity, all participants having been independently audited by Bro Nant International. During the past 20 years, Steve has provided training in Atmospheric Storage Tank Management to literally hundreds of industry professionals worldwide. **PL**

MRS. KINDRA SNOW-MCGREGOR is the Technical Director of Oil and Gas Processing with PetroSkills | John M Campbell. She has a master's and bachelor's degree in Chemical Engineering and Petroleum Refining from the Colorado School of Mines, and over 22 years of experience in the oil and gas industry. She has served as the technical lead on several significant projects in the industry for clients such as BP, ExxonMobil, ConocoPhillips, Occidental, QatarGas, and XTO. Mrs. Snow-McGregor has been active in the gas processing / midstream industry for many years, and is on the Board of Directors for the GPSA. In addition, she serves on the GPSA Engineering Data Book Editorial Review Board. She has published 9 technical papers at international conferences, served as project coordinator for GPA research report 221, and is a coinventor on two

technology patents in the gas processing industry. **GP**

MR. KENNETH (KEN) SOURISSEAU has 34 years' experience with Shell. Assignments have been in front end development, process design, project engineering, operations technical support, and operations management primarily in the areas of sour gas and in situ heavy oil recovery. Mr. Sourisseau has worked throughout Alberta, in Abu Dhabi, and the Netherlands. He has authored a number of technical papers for international conferences, provided training for Shell in numerous countries, and has taught Gas Processing at the University of Calgary. He earned BSc and MSc degrees in Chemical Engineering from the Universities of Saskatchewan (76) and Minnesota (78) respectively. He is a registered professional engineer in Alberta. **GP PF**

MR. CHRIS SPRAGGON is a Chartered Mechanical Engineer with APM Level D qualifications and 15 years of mechanical and project engineering experience. The last 11 years has been spent specifically in the engineering and management of offshore work packages with flexible pipes and associated ancillary components to major clients in the UKCS, Middle East and West Australia. Chris is well versed in all aspects of design, manufacture, quality, installation and integrity of flexible pipelines to API and ISO standards including significant exposure to failure analysis and pipeline integrity, and the ongoing development of flexible pipeline integrity data and inspection technologies. Chris has a BEng with Honors in Mechanical Engineering from Northumbria University. **ME**

MR. DAVID TENHOOR, CPIM, has been consulting and teaching APICS (The Association for Operations Management) CPIM certification courses since 2005. He has taught in many different industries from chemical processing to discrete manufacturing. Companies include BASF, National Oilwell Varco, Halliburton, ExxonMobil Chemical and Cameron. David brings a well-rounded package of industry experience to PetroSkills/JMC. He has held positions in Inventory Control, Manufacturing Management, Strategic Sourcing and Transportation/Distribution Management. He also has experience in Finance and Product Development. David received his undergraduate degree in Geology from Hope College in Holland, Michigan and an MBA in Supply Chain Management from Michigan State University. He is a member of the Houston Chapter of APICS and served two terms on the Board of Directors as Treasurer. **SC**

MR. KYLE TRAVIS is a Petroleum Engineer with 32 years of diversified experience in the oil and gas industry. He has a proven track record of effectively building oil and gas companies from infancy to significance. His experience includes managing oil and gas companies from the initial formulation of a business plan and establishment of goals through the execution of such. He has built and supervised a staff of experienced oil and gas professionals, evaluated drilling prospects, acquired producing properties, managed the operations of drilling and the production of oil and gas properties. He is experienced in all phases of petroleum engineering including economics, drilling, log analysis, completion, production and reservoir. He has a BS degree in Petroleum Engineering from the University of Oklahoma. **P&C**

DR. KATINKA C. VAN CRANENBURGH is a founding partner of Community Wisdom Partners (CWP), a consultancy specializing in the creation of mutually beneficial relationships between business and societal actors. For over 16 years, she has contributed to Heineken's social performance policy and program, focusing on developing countries and complex environments. She created the Heineken Africa Foundation, a corporate philanthropic institution, and was responsible for the design and implementation of 45 health-care projects at a value of several million euros. In her last position as global employees' and human rights manager, she contributed to Heineken's global practice in non-technical (or societal) risk management. This included training commercial, human resources, public

affairs and business managers, and executives in corporate social responsibility and proactive response to pressures and challenges from the external world. Katinka's academic background, including her PhD dissertation on how multinational companies and religious institutions manage business ethics, provides a solid theoretical foundation to all the practical work she does. At CWP she focuses on online and in-house training and consultancy coaching of business managers. Katinka is a columnist at The Post Online and is authoring a book with the working title "Between Manager and Human Being." She has a PhD in Management from the Rotterdam School of Management and an International MBA from the HES, University of Amsterdam. **PB**

MR. PAUL VERRILL has over 25 years' experience working in the chemicals, petrochemicals, hydrocarbon processing and power sectors. He has held a number of technical and senior management positions including Mechanical and Piping Designer, Machinery Engineer, Project Manager, Engineering and Maintenance Manager and other Senior Plant and Business Management roles. He has worked for a number of international operating and engineering companies including ICI, Rolls Royce and Enron E & C. His experience includes piping and mechanical equipment design, rotating equipment engineering, project management, gas processing project development including FEED study management and operations and turnaround management. For the previous 3 years Mr. Verrill has been working in the senior management team of an 800mmscfd gas processing facility which has been developing the onshore assets for a new UK gas field. In 2011 Mr. Verrill started working with JM Campbell as an Instructor in addition to providing project development and asset management services through his own consultancy company. Mr. Verrill is based in Yorkshire, England and graduated with a BEng degree in Mechanical Engineering from Newcastle University and he is a Chartered Member of the Institute of Mechanical Engineers. **GP ME**

MR. COLIN WATSON has over 41 years' broad experience in petrochemicals, primarily in engineering support and process safety management. He joined PetroSkills as an instructor in 2014. His experience includes assignments in technical support, operations, turnarounds, project execution and HSE and engineering management. From 2006 he has worked as an independent Engineering and Process Safety Consultant working with oil and gas clients. He has worked primarily with BP to design, develop and facilitate their global Process Safety training and awareness programs both for engineering and operations teams. In a varied 28-year career in BP he latterly worked to develop strategic structures and governance systems to manage Process Safety and Integrity Management for the BP Grangemouth Complex and the European BP Chemicals Sites. His operations experience providing technical support and engineering management extends across a variety of petrochemical and refining processes. He holds a BSc in Engineering Science (Mechanical) from Edinburgh University (1978) and is a Chartered Engineer with the Institute of Mechanical Engineers. **HSE**

MR. STUART WATSON has over 18 years of experience in oil and gas processing. His experience has taken him to facilities around the world in regions including Australia, Africa, the Middle East and the US. Mr. Watson graduated with honors in 1995 from Curtin University, Perth, Australia, with a BS in Mechanical Engineering. After graduating he worked in Perth, Australia supporting Woodside's offshore facilities. In January 2000, Stuart accepted a position with Pearl Development Company of Colorado where he worked over the next eight years at many of the gas production and processing facilities in the western US. His work included expansions for Unocal Alaska, facilities engineering at the El Paso Field Service's 650MMscfd Chaco Plant and various other projects in Colorado and Wyoming. In 2008, he oversaw and commissioned a 92MMscfd amine sweetening and cryogenic NGL train for the Government of Ras Al Khaimah (UAE). Thereafter, he

started his own engineering consultancy supporting both mechanical and process disciplines. In 2009 he started instructing part time for John M. Campbell and Co. in mechanical engineering and operator training. Currently, Mr. Watson supports PetroSkills in a full time role to ensure technical and quality assurance in ICE, Pipeline, Mechanical and Offshore engineering. **ME PL O&M**

MR. PETER WILLIAMS has over 35 years of industrial experience, most of which were in oil and gas processing. His experience includes plant process engineering, operations supervision, project development and business case definition, project technical support, plant engineering management, and internal consulting, primarily with Saudi Aramco. Canadian experience includes plant engineering in phosphorus production, heavy water, and bitumen upgrading, and project engineering. He also has experience with benchmarking, implementation of a safety management system, and the application of lean Six Sigma methods to engineering management. He has Masters' degrees in Chemical Engineering and in Economics, is a Professional Engineer in Alberta and is a certified Six Sigma Black Belt. **GP**

MR. WES WRIGHT has 32 years' experience in oil and gas producing facilities. Mr. Wright began teaching with PetroSkills in 2004 where he has been delivering courses in CO₂ Surface Facilities, Oil and Gas Processing and Operator Training world-wide. Previously, Mr. Wright was the lead on-site engineer at the Weyburn CO₂ Miscible flood where he was closely involved in the development, design, construction, start-up and operations. Through the 1980's, Mr. Wright performed contract research at the University of Calgary in Enhanced Oil Recovery and was a consultant on a wide range of sweet and sour oil and gas projects throughout Western Canada. Mr. Wright graduated in 1983 with a BSc in Engineering from the University of Calgary. He is a Professional Engineer in Alberta, Canada and is a member of the SPE. He has been published in the ASME-OMAE, CSCE, IAHR, and in Carbon Sequestration and Related Technologies (Wiley, 2011). **PF**

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