NEW in 2019-20

- Accredited H&S Professional: GradIOSH, CMIOSH and ASP by Applied Learning (pg 47)
- Construction Management for the Project Professional (pg 58)
- Introduction to Fiber Optics for Well Surveillance (pg 26)
- Introduction to Geomechanics for Unconventional Reservoirs (pg 25)
- Operations Crew Resource Management (pg 7)
- Petroleum Project and Program Management Essentials (pg 56)
- Petroleum Project Changes and Claims Workshop (pg 58)
- Spill Control and Remediation Engineering (pg 47)
- NEW PetroAcademy Virtual/Blended Learning Options:
  - Production Logging (pg 44)
A competent workforce has always been critical for our industry’s success, but it is even more important with challenging product prices. Doing more with less is how we can thrive in hard times, but that requires a very competent workforce.

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.

NEW courses to look for in this edition include:
- Accredited H&S Professional: GradIOSH, CMIOSH and ASP by Applied Learning (HSP) - page 47
- Construction Management for the Project Professional (FPM64) - page 58
- Introduction to Fiber Optics for Well Surveillance (IFOS) - page 26
- Introduction to Geomechanics for Unconventional Reservoirs (IGUR) - page 25
- Operations Crew Resource Management (OCRM) - page 7
- Petroleum Project and Program Management Essentials (P3ME) - page 56
- Petroleum Project Changes and Claims Workshop (PPCC) - page 58
- Spill Control and Remediation Engineering (SCRE) - page 47

In addition to our instructor-led programs, our digital training solutions and professional services continue to lead the industry. This guide outlines our electronic solutions ePilot™, ePetro™, ActiveLearner®, Compass® and PetroCore® - see page 4 for more details.

We are also 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.

The following blended/virtual courses are available now, and we will be adding more throughout 2020. For more information, see the back cover, or petroskills.com/blended.
- Applied Reservoir Engineering – page 29
- Basic Drilling, Completion, and Workover Operations - page 6
- Basic Geophysics - page 15
- Basic Petroleum Technology Principles - page 5
- Basic Reservoir Engineering - page 29
- Casing Design Workshop - page 20
- Completions and Workovers - page 37
- Foundations of Petrophysics - page 24
- NODAL Analysis Workshop – page 39
- Production Logging - page 44
- Production Operations 1 – page 37
- Production Technology for Other Disciplines - page 38
- Scale Identification, Remediation, and Prevention Workshop – page 43

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.

Message from the CEO

Aerial view of Zhange Rainbow Landform, in Gansu Province, northwestern China, displaying true colorful patterns. The colorful sandstone and siltstone layers were deposited during the Cretaceous, about 80 million years ago. The rock layers were subsequently tilted and exposed about 23 million years ago during the Oligocene to Miocene by tectonic events related to the formation of the Himalaya Mountains. Wind, rain, and time have sculpted the extraordinary shapes. Iron and other trace minerals contained in the sandstone and siltstone layers, provide the distinctive coloration visible today.

Cover Image:

MULTI-DISCIPLINE TRAINING
- Basic Drilling, Completion and Workover Operations – BDC (Also available as a Virtual/Blended course) - page 6
- Basic Petroleum Engineering Practices – BE
- Basic Petroleum Technology – BPT
- Basic Petroleum Technology Principles (virtual/Blended course) - BPT
- Evaluating and Developing Heavy Oil Resources – HOED
- Evaluating and Developing Shale Resources – SPE
- Field Study – Heavy Oil Resources – HOFS
- Operations Crew Resource Management - OCRM
- Overview of Heavy Oil Resources – HOID
- Overview of the Petroleum Industry – OVP

GEOLOGY
- Geology Progression Matrix
  - Analysis of Structural Traps in Extensional Settings – ESS
  - Basin Analysis Workshop: An Integrated Approach to the Exploration and Evaluation of Conventional and Unconventional Resources – BA
  - Carbonate Reservoirs – PCR
  - Compositional and Transpositional Structural Styles – CPTST
  - Computer-Based Subsurface Mapping - CSIM
  - Deep-water Turbidite Depositional Systems and Reservoirs – DWT
  - Development Geology – DG
  - Geochemical Techniques for Solving Reservoir Management and Field Development Problems – GTS
  - Geochronology: Tools for Effective Exploration and Development – MGT
  - Geological and Geophysical Characterization of Heavy Oil Reservoirs – HORC
  - Geomechanics for Heavy Oil – HOGM
  - Integrated Carbonate Reservoir Characterization – ICR
  - Mapping Subsurface Structures – MSS
  - Naturally Fractured Reservoirs: Geologic and Engineering Analysis – FR
  - Operations Geology – OG
  - Petroleum Systems Analysis - PSA
  - Production Geology for Other Disciplines – PGD
  - Prospect and Play Assessment – PPA
  - Sandstone Reservoirs – SR
  - Sequence Stratigraphy: An Applied Workshop – SSQ
  - Structural Styles in Petroleum Exploration – ST

GEOPHYSICS
- Geophysics Progression Matrix
  - 3D Seismic Attributes for Reservoir Characterization – SARC
  - Advanced Practices in Exploration and Development of Unconventional Resources - BEUR
  - Advanced Seismic Stratigraphy: A Sequence – Wavelet Analysis Exploration – Exploitation Workshop – ADS
  - Applied Seismic Anisotropy for Fractured Reservoir Characterization – ASA
  - AVO, Inversion, and Attributes: Principles and Applications – AVO
  - Basic Geophysics – BGP (Also available as a Virtual/Blended course)
  - Introduction to Seismic Stratigraphy: A Basin Scale Regional Exploration Workshop – ISS
  - Seismic Imaging of Subsurface Geology – SSD
  - Seismic Interpretation – SI
  - Seismic Positioning Data Management – SPD
  - Seismic Velocities and Depth Conversion – SVD
  - Use of Full Azimuth Seismic and Microseismic for Unconventional Plays – FANS

WELL CONSTRUCTION / DRILLING
- Drilling Progression Matrix
  - Advanced Drilling Progression Matrix – ADP
  - Basic Drilling Technology – BDT
  - Basic Drilling Technology – BDT
  - Cementing Practices – CEM II – CEP
  - Deepwater Well Engineering – DWE
  - Directional, Horizontal, and Multilateral Drilling – DHD
  - Drill String Design and Optimization – DSO
  - Drilling Fluids Technology – DFT
  - Drilling Practices – DPT
  - Fundamental of Casing Design – FCD
  - Managing Wellsite Operations – MWC
  - Offshore Drilling Operations - ODO
  - Primary Cementing – PCG
  - Stick Pipe Prevention – Train Wreck Avoidance™ – SPP
  - Well Design and Engineering – WDE
What Sets PetroSkills Apart? The Alliance.

Created in 2001 by BP, Shell, and OGCI, the PetroSkills Alliance provides “important but not unique” high quality, business-relevant, competency-based training. Through its growing membership, the Alliance has successfully evolved into an industry-driven and approved program that spans the value chain.

Mission: Build competent petroleum professionals by delivering learning and development when, where, and how customers need it.

OBJECTIVES:

- Provide the highest quality, business relevant programs that span all technical processes, and give management assurance they have the skilled people needed to maximize asset value
- Offer added value to employees via new, broad-reaching courses that fill gaps, deliver the ability to perform, and provide the assurance to prove it
- Ensure PetroSkills instructors are the best available
- Develop and continuously improve PetroSkills Competency Maps and progression trees; continue to align Competency Maps with corporate business goals
- Lower internal training costs by reducing administrative burdens, improving economies of scale, and/or eliminating marginal courses
- Increase the availability of courses in both the number of offerings and the number of delivery locations, thereby delivering competencies at the lowest total cost

For more information on membership, go to petroskills.com/membership
In-house courses deliver private, on-site training to your group, whenever, wherever, and however you need it.

Save time, money, and travel hassles by bringing our course to your site, or to any location that suits you.

If you do not have enough participants for an in-house session, we may be able to schedule an on-demand public session in your location.

For more information, or to reserve training for your team, go to petroskills.com/inhouse
How do you meet the challenges of competency development?

PetroSkills Solutions

**PetroAcademy™**
Blended Learning Skill Modules. Integrating live classroom activities, online learning and technical coaching.

**Competency Maps**
Industry Benchmarks. Developed with industry-leading Alliance members.

**ActiveLearner™**
Learning and Compliance Management System. Online, on-the-job access to learning programs, progress tracking, and curriculum development.

**Compass™**
Competency Management. Web-based software that builds, manages, and assures competency.

**ePilot™ and ePetro™**
e-Learning. Online learning libraries deliver effective training anytime, anywhere.

**PetroCore™**
Technical Reference. Online, on-demand access to technical knowledge, documents, and articles.

petroskills.com/solutions
PetroAcademy Blended Learning Programs may include activities such as reading assignments, self-paced e-Learning, virtual instructor-led sessions, discussion forums, group exercises, case studies, quizzes, field trips, and other activities. These continuous development activities increase knowledge retention, reduce time to competency, and provide just in time learning at the point of need.

Blended Learning Program Example:

- Reduced time to competency
- Eliminated travel expense
- Flexibility—less time away from work
- Learning applied at point of need

For more information, visit petroskills.com/blended
### 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 oils 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

### Basic Petroleum Engineering Practices – BE

**BASIC** 5-Day

This course is a basic introduction to most aspects of the Petroleum Engineering discipline, which includes reservoir, production, and drilling engineering as well as related topics. This course lays the groundwork for further specialized training in advanced courses for oil company and service company personnel. The course focuses on the field and application approach and includes classroom exercises, fundamental engineering problems, and basic field exercises. Basic Petroleum Engineering Practices will set the foundation for technical professionals with regards to technology and its engineering applications. The course starts out with a brief introduction of the history and current state of the oil and gas industry. Next, reservoir fluids, petroleum geology, and petroleum reservoirs are discussed. Then, various facets of exploration technology, drilling engineering and operations, well completion technology, and production technology are covered before finishing with surface processing of produced fluids.

**DESIGNED FOR** Engineers, engineering trainees, technical managers and assistants, technicians, geologists, geophysicists, chemists, physicists, service company personnel, sales representatives, and data processing personnel.

**YOU WILL LEARN**
- Basic petroleum geology
- Reservoir fluid and rock properties
- Fundamentals of reservoir fluid flow
- Oil and gas reservoir classification, definition, delineation, and development
- Unconventional resources
- Fundamentals of drilling, well completion, and production operations
- Basics of casing design and primary cementing
- Primary and enhanced recovery mechanisms
- Surface operations

**COURSE CONTENT**
- Reservoir fluid properties
- Petroleum geology
- Reservoir properties and evaluation
- Unconventional resources
- Exploration technology
- Drilling engineering
- Well completion, stimulation, and workover
- Well testing and formation damage
- Production operations
- Recovery methods
- Surface processing

### Basic Drilling, Completion and Workover Operations – BDC

**BASIC** 5-Day

This course presents the basics of drilling and completion operations, plus post-completion enhancement (workovers). Participants will learn to visualize what is happening downhole, discover what can be accomplished, and learn how drilling and completion can alter reservoir performance. Learn to communicate with drilling and production personnel. No experience or prerequisites are required.

**DESIGNED FOR**
- Technical, field, service, support, and supervisory personnel desiring to gain an awareness of field operations. Excellent for cross-training of other technical disciplines such as reservoir and facility engineers, geoscientists, supervisors, service personnel, and anyone who interacts with drilling, completion or workover engineers.

**YOU WILL LEARN**
- How to comprehend drilling and workover reports
- What can be done within open-hole and cased wells, as a part of reservoir management
- How drilling practices can optimize cash flow and ultimate recovery
- How to communicate with drilling and production personnel

**COURSE CONTENT**
- Overview of the drilling process
- Language of drilling, completing, and well intervention
- Drill string components: bits and accessories
- Drilling fluids and hydraulics
- Hole problems, stuck pipe, side-tracking and fishing
- Cores and coring
- Electric logging, MWD, LWD
- Casing design and installation
- Primary and remedial cementing
- Directional, horizontal, multilateral and under-balanced drilling
- Workover equipment and tools
- Options for completions and workovers
- Tubing, packers and completion equipment
- Safety and flow control devices
- Open hole completions
- Perforating
- Coiled tubing operations
- Wireline techniques
- Well stimulation - surfactants, solvents, acidizing, hydraulic fracturing
- Formation and sand control - mechanical retention, chemical consolidation, and gravel packing
- and more...

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### Basic Drilling, Completion and Workover Operations – BDC

**FIELD TRIP**

This course is an introduction to drilling operations and focused on basic well completions and the basics of drilling and workover operations. The course is designed for individuals who are new to the oil and gas industry or for those who need a refresher on the fundamentals of drilling and completion operations. The course content includes an overview of drilling, completions, and workovers, with a focus on practical applications and hands-on learning.

**YOU WILL LEARN**
- How to understand the depositional and stratigraphic framework of the McMurray Formation
- How to understand the structural setting and relationships of timing, emplacement and preservation of Alberta’s bitumen/heavy oil resource
- The complex lithologic heterogeneities of the McMurray and their effect on mining and in-situ production
- To appreciate the challenges and progress of environmental preservation efforts for the development and production of Alberta’s bitumen resource

**COURSE CONTENT**
- Overview of the geology, history and development of Canada oil sands
- McMurray oil sand stratigraphy
- Depositional details of the McMurray formation
- Overview of structural evolution and bitumen resources
- Oil mining and sand mining methodology
- Environmental challenges for Alberta’s bitumen resources
- Current status and future plans for reclamation mining activities

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### Field Study – Heavy Oil Resources – HOF5

**FIELD TRIP**

This field study is designed for individuals who are interested in heavy oil resources and the challenges and opportunities associated with their exploration and production. The course will provide an overview of the different types of heavy oil resources, including bitumen, oil sands, and other heavy oil deposits. Participants will learn about the latest technologies and practices used in heavy oil recovery, as well as the environmental and social considerations associated with these operations. The course will also include a field trip to a heavy oil site, providing hands-on experience and exposure to the latest field practices in the industry.

**YOU WILL LEARN**
- How to understand the depositional and stratigraphic framework of the McMurray Formation
- How to understand the structural setting and relationships of timing, emplacement and preservation of Alberta’s bitumen/heavy oil resource
- The complex lithologic heterogeneities of the McMurray and their effect on mining and in-situ production
- To appreciate the challenges and progress of environmental preservation efforts for the development and production of Alberta’s bitumen resource

**COURSE CONTENT**
- Overview of the geology, history and development of Canada oil sands
- McMurray oil sand stratigraphy
- Depositional details of the McMurray formation
- Overview of structural evolution and bitumen resources
- Oil mining and sand mining methodology
- Environmental challenges for Alberta’s bitumen resources
- Current status and future plans for reclamation mining activities

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### 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 oils 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
Overview of Heavy Oil Resources – HOOV

BASIC  2-Day
This course is sufficiently detailed and widely focused to appeal to a broad audience, including non-technical, administrative, and business groups, as well as scientists and engineers, seeking an introduction to the business of heavy oil. Heavy oil is a large component of the world’s oil resource. Commercial mining and current in-situ thermal production methodologies are important contributors to the world’s oil production. These technologies are reasonably recent commercial applications, and the future levels of production face uncertainty because of highly debated environmental challenges. This course takes an unbiased practical approach to the recent commercial applications of commercial mining and in-situ thermal production of heavy oil resources, citing benefits and limitations. The course provides an overview of the aspects of the geology, development and commerciality of heavy oil resources. This course contains exercises and class problems to support the presentation.

DESIGNED FOR
Anyone from any discipline who needs a better understanding of heavy oil resources.

YOU WILL LEARN
• The geologic and engineering challenges to finding, developing, and producing heavy oil resources
• About the importance of heavy oil resources in today’s world energy market
• How to evaluate the challenges and opportunities for understanding and improving the environmental footprint required to develop and produce heavy oil resources.
• The contrast between heavy oil resources versus conventional and other unconventional resources with aspects of finding, developing, and producing.
• The process and methodology to plan, design, implement, and evaluate heavy oil reservoirs
• About the geology and commerciality of the Canadian Oil Sands
• About the worldwide distribution and geologic setting of the more significant heavy oil occurrences including Venezuela

COURSE CONTENT
Comparison of conventional and unconventional reservoirs • Worldwide heavy oil resources and occurrences • Bitumen and heavy oil definitions and introduction • Geology, history, and development of Canadian oil sands. Oil sand characteristics and development strategies • Oil sand mining details and reclamation • Oil sands in-situ project review • Introduction of Steam Assisted Gravity Drainage (SAGD) • Other commercial thermal in-situ methodologies • Environmental challenges for heavy oil resources • Geology and overview of Venezuela and Trinidad heavy oil resources • Introduction of United States heavy oil occurrences (Utah, California and Texas) • Geology, history, and development of Canada heavy oil/sands • Heavy oil/sands characteristics and development strategies • Oil sands mining details and reclamation • Environmental challenges for oil sands resources • Heavy oil and in-situ oil sands recovery process review • Introduction to Steam Assisted Gravity Drainage (SAGD) • Other commercial thermal in-situ methodologies • Commercial application of Cold Heavy Oil Production with Sand (CHOPS) in Canada and other non-thermal heavy oil recovery methods • Field examples and development strategies • Cold heavy oil in and in-situ oil sands recovery projects • Overview of thermal well completions and production facilities • Reserves and economics

Evaluating and Developing Heavy Oil Resources – HOED

FOUNDATION  5-Day
Cold production, oil sands mining and in-situ thermal production methodologies are important contributors to the world’s oil production. The course takes an unbiased practical approach to the applications, citing benefits and limitations. The course provides an overview and details of specific occurrences of the geology, evaluation, development and commerciality of heavy oil/in-situ oil sands resources. Each attendee should come away with a great foundational knowledge of the business of evaluating and developing heavy oil resources.

DESIGNED FOR
Anyone from any discipline who needs a better understanding of heavy oil/oil sands resources, but more specifically designed for geoscientists or engineers with a need to better understand the challenges of evaluating and developing heavy oil/oil sands resources.

YOU WILL LEARN HOW TO
• Evaluate and develop heavy oil/oil sands resources
• Understand the importance of heavy oil/oil sands resources in today’s world energy market
• Contrast heavy oil/oil sands resources as compared to conventional and other unconventional resources with aspects of finding, developing, and producing
• Understand the geology, critical attributes, and commerciality of the Canadian heavy oil/oil sands resources
• Collect the appropriate data and evaluate the critical geologic and reservoir parameters of various types of heavy oil/oil sands resources
• Recognize and evaluate the environmental challenges required to develop and produce heavy oil/oil sands resources
• Understand the process and methodology to evaluate, select, plan, design, and implement a heavy oil/oil sands recovery project
• Become knowledgeable of the worldwide distribution and geologic setting of the more significant heavy oil occurrences

COURSE CONTENT
Bitumen and heavy oil introduction and definitions • Comparison of conventional and unconventional reservoirs • Worldwide heavy oil/oil sands resources and occurrences • Geology and overview of Venezuela and Trinidad heavy oil resources • Introduction of United States heavy oil occurrences (Utah, California, and Texas) • Geology, history, and development of Canada heavy oil/sands • Heavy oil/sands characteristics and development strategies • Oil sands mining details and reclamation • Environmental challenges for oil sands resources • Heavy oil and in-situ oil sands recovery process review • Introduction to Steam Assisted Gravity Drainage (SAGD) • Other commercial thermal in-situ methodologies • Commercial application of Cold Heavy Oil Production with Sand (CHOPS) in Canada and other non-thermal heavy oil recovery methods • Field examples and development strategies • Cold heavy oil in and in-situ oil sands recovery projects • Overview of thermal well completions and production facilities • Reserves and economics

Evaluating and Developing Shale Resources – SRE

FOUNDATION  5-Day
This course will cover current practices for evaluating, drilling, and completing these challenging reservoirs. Discussions and exercises will include a focus on the limitations of many of the current tools and technologies. Information and opportunities for many current and international shale plays will be described. The participant should leave the course with a foundational understanding of value-adding shale gas resource practices as an insight into determining the critical reservoir and stimulation parameters used to predict a potential commercial resource play.

DESIGNED FOR
Reservoir, production and completion engineers, petrophysicists, geologists, geophysicists, and other professionals who desire a thorough overview of shale resource development.

YOU WILL LEARN HOW TO
• Describe the resource potential and economic importance of shale gas and shale oil
• Describe the similarities/differences between shale gas, tight gas, and coalbed methane
• Recognize and describe shale play relationships and different reservoir properties to identify the sweet spots
• Estimate gas and oil in place
• Apply different reservoir evaluation techniques recognizing the advantages and disadvantages of each technique
• Apply drilling, completion, and stimulation technology to shale gas and shale oil formations
• Evaluate and forecast individual well and reservoir performance
• Determine how to estimate reserves in both P50 (proved developed proved) and PUD (proved undeveloped) categories

COURSE CONTENT
Current shale plays and their global impact • Reservoir characterization and evaluation: organic quality, rock quality and mechanical quality properties; geological setting; rock properties; petrophysical considerations; the role of seismic data in evaluation and modeling; vertical vs. horizontal wells; pilot holes; fluids; MWID and LVWD; wellbore sizes and lateral; drilling challenges; mechanical considerations; Competitions: cased vs. open hole; perforation schemes; stimulation design and considerations; case histories • Field trials and pilots: strategies for implementing a pilot program to optimize well drilling, completion, understanding Stimulated Rock Volume (SRV) using microseismic, fiber optic, production logs, and other resources • Production forecasting and reserve calculations: volumetrics; performance analysis; simulation; resource development; decline curve analysis; handling uncertainty in estimates • Logistics, pad design, field development, water resources and the social license

Operations Crew Resource Management – OCRM

INTERMEDIATE  3-DAY
NEW
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 aviation 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 (delegation and goal, previous experience, risks, options, check) • Communications (exchange information, explain context, clear and concise, relevant inclusion) • Teamwork (responsibilities, co-ordinate tasks, resolve gaps/petitions, 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 errors)

2019-2020 Schedule and Tuition (USD)

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>2019-2020 Schedule and Tuition (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOUSTON, US</td>
<td>10-14 AUG 2020</td>
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<td>LONDON, UK</td>
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See petroskills.com/ocrm for more information.
The Course Progression Matrix below shows how the Geology courses in this section are structured within each topic, from Basic to Specialized. On either side of the Geology section, you will see courses in associated disciplines for cross-training. These matrices are ideal for building training plans for early-career staff or finding the right course to build upon existing knowledge and experience.

As demonstrated by the FIELD TRIP icon next to our course titles, many of our courses include field trips. These courses bring material from the classroom into the field and allow participants to get an up-close view of geological concepts.

The following instructors have been selected and approved by the PetroSkills Curriculum Network:
Computer-Based Subsurface Mapping – CSM

FOUNDATION 5-Day

For geoscientists, contour maps have long been one of the most common tools used to convey information. In the modern petroleum industry, contour maps are generally derived from grids created in interpretation software packages. Maps, or the grids themselves, are used to evaluate prospectivity, estimate prospect volumes, pick drilling locations, and are the inputs for basin models, and static reservoir models. Despite the importance of these maps and the underlying grids, there is often a poor understanding of how the grids are generated and what the implications may be for the final map. The underlying theme in this course is to think about what you are mapping. Common gridding algorithms and parameters are reviewed, with an emphasis on their strengths and weaknesses for different geological problems and input data sets. Participants are asked to generate a variety of maps from different input data types, seeing the impact that varying parameters can have on a single input data set. Participants will also utilize various methods of quality control, grid editing, and grid manipulation (operations).

DESIGNED FOR
Geoscience professionals and support staff who generate structure, isochore, and other subsurface maps using interpretation or mapping software.

YOU WILL LEARN HOW TO
• Understand the impact of different algorithms on output maps
• Determine appropriate choice of algorithm and gridding parameters for different data types and geologic scenarios
• Create structure, thickness, and attribute grids using different techniques
• Quality control and edit grids and contours
• Use grid operations to manipulate existing grids and create new grids through simple and complex operations
• Generate Combined Risk Element Maps
• Generate detailed gross rock volume grids

COURSE CONTENT
Introduction to mapping • Contouring review • Coordinate system overview • Gridding introduction • Gridding algorithms overview • Creating structure maps from well data • Creating maps from seismic data • Incorporating faults in structure maps • Creating isochore/attribute maps from well data • Grid quality control • Grid editing • Grid operations • Creating and combining stolpight maps • Volumetrics

2019-2020 Schedule and Tuition (USD)

HOUSTON, US 4-8 MAY 2020 $4410
KUALA LUMPUR, MYS 28-30 SEP 2020 $3255
LONDON, UK 2-6 DEC 2019 $5535 + VAT
30 NOV-4 DEC 2020 $135 + VAT

Carbone Reservoirs – PCR

FOUNDATION 5-Day

This rigorous workshop is a must for geoscientists dealing with exploration for and exploitation of carbonate reservoirs. The seminar emphasizes the complexity of carbonate porosity, its modification and evolution will be discussed in a sea-level driven sequence stratigraphic framework. Case histories and exercises from around the world will be utilized throughout to illustrate important concepts. These exercises and case histories give the participant experience in developing viable exploration and exploitation strategies for carbonate terrains.

In 2013 a new book, Carbonate Reservoirs, was prepared by Drs. Moore and Wade specifically to accompany this course and is furnished to all course participants.

DESIGNED FOR
Exploration and development geologists, exploration and development managers, and geophysicists as well as engineers with some geologic background will benefit.

YOU WILL LEARN HOW TO
• Recognize basic characteristics of carbonates important to reservoir development
• Understand how sequence stratigraphy can be applied to carbonates and mixed carbonate-siliciclastic systems
• Understand the complexities of carbonate pore systems
• Recognize the nature of carbonate porosity modification during diagenesis and the role of sea-level and climate in porosity modification and gross reservoir heterogeneity
• Develop viable exploration and exploitation strategies in carbonate terrains by working with subsurface datasets

COURSE CONTENT
Basic nature of carbonates • Carbonate facies models • Basic concepts of sequence stratigraphy • Relationship of stratigraphic patterns to changes in subsidence rates • Sequence stratigraphic models including the ramp, the rimmed shelf, the escarpment margin, the isolated platform, and the mixed carbonate-siliciclastic shelf • Characteristics of carbonate pore systems • Diagenesis, porosity evolution, and porosity distribution at the time of burial • The fate of early-formed porosity during burial • The potential value of dolomitization, including by hydrothermal processes • The problem of H.S in carbonate reservoirs • Natural fractures in carbonates • Case histories and exercises from the Americas, Europe, and Asia • Exploration and exploitation strategies in carbonate and mixed terrains

Sandstone Reservoirs – SR

FOUNDATION 5-Day

This course is essential for geoscientists and engineers involved in the exploration and development of clastic reservoirs. It focuses on methods that can be used to improve the prediction of reservoir size, shape, trend, and quality through detailed analysis of depositional environments. The sedimentary characteristics of each of the principal clastic depositional systems are presented in detail, using examples from recent environments, outcrops, cores, wireline logs, and test/product data from oil and gas fields in various parts of the world (United States, North Sea/Atlantic, Africa, Middle East, Far East, etc.). Practical exercises are taken from each of the principal depositional settings and involve detailed mapping, interpretation of core and log characteristics, and integration of data from FMI logs. Emphasis is placed on the application of fundamental sedimentary principles (modern, ancient, and subsurface) to actual subsurface data so that the participants can immediately use the information in their exploration and development activities.

DESIGNED FOR
Geologists, geophysicists, petrophysicists, reservoir and production engineers, exploration-production managers, all team members involved in reservoir characterization, and technicians working with clastic reservoirs. The course provides a refresher in new concepts in this field for geoscientists at a foundation level.

YOU WILL LEARN HOW TO
• Interpret clastic depositional environments using data from cores, cuttings and wireline logs (including FMI)
• Apply new sequence stratigraphic concepts to clastic reservoirs
• Correlate wells using knowledge of depositional environment
• Predict reservoir size, shape, trend and quality

COURSE CONTENT
Genetic stratigraphic analysis • Depositional architecture • Basins and units • Wireline logs and conventional cores • Seismic and sequence stratigraphy • Recognition of depositional systems • Process-response facies models • Integrated genetic stratigraphy • Analysis of clastic depositional systems • Alluvial fan • Fluvial • Eolian • Deltaic • Shallow • Shelf • Deepwater systems • Incised sequences • Shelf margins and linked downslope systems • Characteristic log patterns • Flow units • Prediction of reservoir size, shape, trend, quality • How to select optimum well locations • Lateral continuity and quality of seals • Sedimentary controls on porosity, permeability, saturation • Reservoir exploration and production case histories • Exploration and production scaled case histories

Mapping Subsurface Structures – MSS

FOUNDATION 5-Day

Not just a collection of rules of thumb, this class presents the fundamental concepts and techniques required to accurately construct structure maps in 3D so that you will get the most from your maps. The procedures and techniques are illustrated by solving numerous exercises by hand (with drafting tools and a calculator) using strategies and workflows analogous to those that participants will use back at the office using computers. Participants will be prepared to develop more accurate structural models of reservoirs, avoid dry holes, find new traps in old fields, extract the maximum information from exploration wells, and validate or recognize errors in existing interpretations. Dr. Richard Gashong’s book, 3D Structural Geology, is included with the course materials.

DESIGNED FOR
Development geoscientists and those exploring mature areas; early-career geoscientists and technologists who make structure maps; those who need to judge the validity of maps and cross sections.

YOU WILL LEARN HOW TO
• Recognize common contouring pitfalls
• Find thickness in deviated wells
• Use simple and complex interpretation techniques
• Construct predictive cross sections
• Apply the best techniques for projecting data
• Make fault maps and integrate them with horizon maps
• Build a complete 3D interpretation
• Recognize valid and invalid fault surfaces
• Interpret folds and faults from dipmeters
• Construct juxtaposition (Allari) diagrams for fault trap and seal analysis
• Map structures with multiple overlapping faults

COURSE CONTENT
Manual and computer contouring techniques • Using dip in mapping • Different measures of thickness • Thickness in deviated wells • Thickness maps • Dip-domain cross sections • Data projection • Trend and plunge of folds on tangent diagrams • Composite-surface maps • Fault shapes and displacement distributions • Relationships between stratigraphic separation and heave & throw • Faults on isopach maps • Mapping across faults • Structural quality-control techniques • Multiple-surface map compatibility • Map validation using implied fault contours • Finding faults and fault orientations with SCAT analysis of dipmeters • Soft linked and hard linked faults • Relay and branching fault patterns • Mapping sequential cross-cutting faults

Any course is available in-house at your location. Contact us today.
+1.918.828.2500 | petroskills.com | +1.800.821.5933 (toll free North America)
Geochemistry: Tools for Effective Exploration and Development — MGT

FOUNDATIONS 5-Day

Undiscovered reserves in prolific, mature basins and bypassed petroleum in developed fields are key targets for increasing reserves at minimal cost. Geochemical tools can dramatically improve discovery and development success by identifying and characterizing these targets in both conventional and unconventional systems. Participants learn to interpret geochemical logs, map organic facies variations, identify petroleum systems using multivariate data, predict vertical and lateral variations in oil quality and gas-to-oil ratios, and how to integrate geochemical, geological and engineering data to identify reservoir compartments, allocate commingled production, identify completion problems, and monitor flood progression. The class gives special attention to three key applications of fingerprinting to unconventional reservoirs: (i) Characterization of frac height, (ii) Quantification of the contribution of multiple formations to commingled production contacted by the induced fractures and (iii) Identification of “cross talk” between wells completed in adjacent formations. The course also explains how to optimize development by predicting vertical and lateral variations in API gravity and viscosity.

DESIGNED FOR Exploration and development geologists, geophysicists, geochemists, petroleum engineers, managers, and technical personnel. No background in geochemistry is needed.

YOU WILL LEARN HOW TO
- Characterize exploration risk in conventional and unconventional petroleum systems
- Integrate geochemical, geological and engineering data to identify reservoir compartments, allocate commingled production, identify completion problems, and monitor flood progression to optimize field development
- Assess frac height in unconventional reservoirs, and identify “cross talk” between frac networks in adjacent wells
- Quantify the abundance of frac water vs. formation water in the produced fluids from recently drilled unconventional wells
- Use geochemical tools, including TOC, Rock-Eval pyrolysis, vitrinite reflectance, geochemical logs, gas chromatography, stable isotope ratios, biomarkers, mud gas isotopes data, and mud gas compositions
- Determine if hydrocarbon “stray gases” found in an aquifer are, or are related to petroleum drilling activities in a given area
- Design geochemical studies and collect samples
- Recognize pitfalls in geochemical interpretations

COURSE CONTENT
- Assess source rock quality, maturity, and petroleum-generating potential
- Applications of mud gas isotopes data and mud gas compositions
- Assess reservoir continuity, lateral and vertical changes in oil gravity and viscosity
- Geochemical assessment of frac height
- Geochemical allocation of commingled production
- Case studies
- Determining the origin of hydrocarbon gases found in aquifers

Geomechanics for Heavy Oil – HOGM

FOUNDATIONS 3-Day

This course introduces an integrated workflow for reservoir containment evaluation and caprock integrity assessment in thermal operations such as SAGD and CSS in heavy oil reservoirs. The essential fundamentals of petroleum-related rock mechanics will be presented, and the processes of data collection, geomechanical characterization, and building Mechanical Earth Models (MEMs) will be discussed in detail with an emphasis on data uncertainty. The course provides a comprehensive picture of the geomechanical behavior of heavy oil fields in response to thermal operations and shows how different modeling approaches may be implemented to predict behavior and its associated geomechanical risks. It presents the application of modeling in mitigating the adverse effects of these risks and determining safe-operating criteria such as maximum operating pressure. Different aspects of field monitoring and real-time updating are discussed.

COURSE CONTENT
- Reservoir containment evaluation
- Caprock integrity assessment
- SAGD and CSS in heavy oil reservoirs
- Fundamentals of petroleum-related rock mechanics
- Processes of data collection
- Geomechanical characterization
- Mechanical Earth Models (MEMs)

2019-2020 Schedule and Tuition (USD)

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Petroleum Systems Analysis – PSA

FOUNDATIONS 5-Day

This course addresses the fundamentals of the Petroleum System, and a holistic view of how it works, which is essential for geoscientists and engineers involved in today’s challenging conventional and unconventional exploration and development projects. The elements of the Petroleum System Charge, Trap, and Reservoir, are described systematically within the framework of play and prospect evaluation. The charge element begins with the deposition of the source rock and the establishment of its volumetric potential, or feedstock, for the system. Charge access involves converting this potential to expelled volumes, making, and then moving, the volumes from source bed to trap/reservoir. In the case of some unconventional reservoirs, this is within or adjacent to the source bed itself. A trap receives charge and petroleum columns build along its edges, until the container limit of the critical weak point is reached, or it spills. Reservoir rock storage and deliverability are modified by mechanical and chemical compaction, and fluid properties, fundamentally affecting project economics. Fluid properties further impact economics via the product value itself. This 5-day class uses new purpose-designed materials, and draws on a global database and familiarity with many different styles of producing basin, play, and accumulation.

DESIGNED FOR Geologists, geophysicists, and petrophysicists working on basin, play, prospect or reservoir evaluation, and reservoir engineers seeking a bottom-up understanding of the genesis of their reservoir, or field. The course provides a refresher in new concepts in this field for geoscientists at a fundamental level.

YOU WILL LEARN HOW TO
- Employ Petroleum System concepts as a holistic approach to risk and volume estimation in play, prospect, and reservoir evaluation
- Predict and confirm source rock distribution from rock and fluid data, and estimate volumetric potential
- Predict the temperature, timing, volumes, compositions and phases expelled from kitchens, and the controls exerted by hydrodynamics and capillarity on migration from source bed to trap/reservoir
- Describe a trap in terms of the critical weak points on its edges
- Estimate column heights containable by these edges
- Understand the Petroleum System controls on reservoir rock quality
- Understand reservoir and reservoir fluid properties that govern deliverability, well recovery, and economics (rate, product value)
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2019-2020 Schedule and Tuition (USD)

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Production Geology for Other Disciplines — PGD

FOUNDATIONS 5-Day

Have you ever wondered why it seems like Geologists rarely give you a straight answer? Are there never-ending qualifiers tacked to the answers they provide? Usually, for the most part, chances are, often almost all the time, maybe, could be, should be, can be, it depends… What do you do with the ranges of the interpretations offered? This course will clear these questions… you will understand what makes the production geosciences tick; you will be able to phrase the appropriate questions, and then you will be able to deal with the answers. This course assumes the participant has some understanding of elementary geology, but it will provide a review of key geological principles and environments of deposition, all keyeda to focus on the practical impact of geological models and uncertainty on appraisal and development. Without a common understanding between geologists, geophysicists, and engineers, there can be no real communication or teamwork in reservoir development and production activities.

DESIGNED FOR Production/completion/reservoir engineers, financial staff, professional staff from disciplines other than geology, and managers involved with reservoir management, and development/production, who might require an understanding of geological data, its variability, and the effects of the data, and its interpretation, on their projects and jobs. This course is also appropriate for geologists early in their career development or planning for production or development positions.

YOU WILL LEARN HOW TO
- Understand the sources of geological data and the interpretation of that data, including maps, cross-sections, electric logs, and seismic sections
- Recognize the relationships between paleo-environmental interpretations and the practical application of these interpretations to field development
- Recognize and appreciate uncertainty in geological and geophysical data/interpretation
- Understand the uncertainty surrounding the geologist’s interpretation
- Recognize ways in which geological data is presented for evaluation in integrated asset teams
- Understand and more realistically evaluate geological data and interpretation
- Understand geological interpretation impact on production and development... pro and con

COURSE CONTENT
- Correlation and stratigraphy
- Structural interpretation
- Seismology
- Clastic/carbonate deposition including an introduction to Unconventional Reservoirs
- Reservoir geology
- Reservoir characterization and modeling
- Volumes
- Well planning
- Reservoir appraisal
- Field development
- Uncertainty analysis
Sequence Stratigraphy: An Applied Workshop – SQS
FOUNDATION 5-Day FIELD TRIP
Sequence stratigraphy, based on sedimentary response to changes in relative sea level gives the explorationist and the development geoscientist a powerful new predictive tool for regional basin analysis, shelf to basin correlation, and reservoir heterogeneity. Perhaps most importantly, sequence stratigraphy gives the geoscientist a superior framework for the integration of geologic, geophysical, and engineering data and expertise. The particular strength of this seminar is the application of these basic principles to actual subsurface data sets gathered into a series of well-founded exercises. In recent courses the data sets included Miocene delta complexes in Venezuela, Cretaceous incised valleys in the US, Paleocene mixed carbonate clastic basin floor fans and low stand prograding complexes in the US, and Jurassic basin floor and slope fans in France.

DESIGNED FOR
Geologists, geophysicists, biostratigraphers, and engineers (with some knowledge of geology) needing a fundamental understanding of the principles and applications of sequence stratigraphy.

YOU WILL LEARN HOW TO
• Identify unconformities and sequence boundaries
• Identify parasequences and utilize in correlation
• Identify incised valleys
• Visualize and interpret deep water fans and their geometries
• Recognize seismic signatures of deep water deposits
• Relate sequence stratigraphy to basin architecture and relative sea levels
• Build predictive stratigraphic models
• Utilize sequence stratigraphy to develop exploration/production strategies

COURSE CONTENT
Seismic geometries • Unconformities • Relative sea level • Eustasy • Parasequences and their stacking patterns • Parasequences as a correlation tool • Relationship of stratigraphic patterns to changes in subsidence rates as driven by regional and earth scale tectonic processes • Cycle hierarchy • World-wide cycle chart and its application • The sequence stratigraphic model • LST sequence boundaries, incised valleys, slope fans, basin floor fans, and prograding complexes • TST incised valley fill, source rock and reservoir seal • HST alluvial, deltaic, shoreline complexes and shelf sands • Sequence stratigraphy in a mixed clastic/carbonate province • Exploration and production scaled case histories and strategies

Structural Styles in Petroleum Exploration – ST
FOUNDATION 5-Day FIELD TRIP
Even with the best data, the correct interpretation of a subsurface structure usually requires recognition of the fundamental characteristics of the assemblage in which it occurs and the range of trap styles to be expected. This course provides an overview of all hydrocarbon-bearing structural assemblages and their associated trap types. The processes that produce the structures and control their styles are interpreted in terms of basic rock and mechanical principles. Classic outcrop, physical models, 2D and 3D seismic, and mature-field log-based interpretations from around the world provide analog examples for practical interpretation. Participants will review the major structural trap geometries and the structural concepts for predicting the geometry where data are absent, misleading, or conflicting. The principles of section balancing and restoration are covered as tools for validating interpretations and for documenting structural evolution. Practical interpretation skills are developed in numerous exercises, most of which use seismic data.

DESIGNED FOR
Exploration geologists, geophysicists, engineers, and geoscience managers.

YOU WILL LEARN HOW TO
• Recognize all the different hydrocarbon-bearing structural styles in map and cross-section
• Distinguish the characteristics of each structural style on seismic reflection profiles
• Recognize the arrangement of structural styles and traps within structural families
• Apply mechanical-stratigraphic concepts to understand and predict trap geometry
• Use restoration and balance to validate an interpretation and show the structural evolution

COURSE CONTENT
Comparative structural geology • Structural families and styles • Mechanical principles governing fold and fault geometry • Predicting structure from stratigraphy • Folding vs. faulting • Palinspastic restoration of cross sections • Structural validation criteria • Sequential restoration and growth history • Regional arches and domes • Compaction and subsurface solution • Wrench faults: simple, convergent, and divergent • Conjugate and domino-style strike-slip regimes • Thin-skinned fold-thrust belts • Fault-related fold • Duplexes • Basement-involved contraction • Vertical and rotational block uplifts • Inversion: dip-slip to strike-slip • Thin-skinned extension • Basement-involved extension • Full-graben and full graben rift systems • Domino-style extension • Diapirs • Salt sheets • Reo and counterrotational pseudotensional fault systems • Plate-tectonic habitat of structural assemblages • Tectonic synthesis and exploration project

Analysis of Structural Traps in Extensional Settings – ESS
INTERMEDIATE 5-Day FIELD TRIP
External structural systems provide some of the world’s largest known oil reservoirs and remain one of the major frontier plays of the immediate future, both onshore and, particularly, in deep water offshore. 3D seismic has revolutionized structural mapping. However, the most realistic geologic interpretation of these structures is only as good as our ability to recognize and exploit the fundamental characteristics of the forms that are possible. This course presents outcrop, subsurface, seismic sections, and model analogs that will provide the starting point for structural interpretation in a wide range of extensional environments. Interpretations are validated by restoration and comparison to balanced models. This course covers the latest predictive kinematic models appropriate for rifting and other extensional and transtensional areas. The instructors of this course are happy to accept examples from your company for analysis in the class as one of the demonstration exercises. Please contact PetroSkills for a list of the information and support data required, as well as the necessary lead-time.

DESIGNED FOR
Exploration and development geologists, geophysicists, engineers, and managers responsible for the interpretation and drilling of extensional structures.

YOU WILL LEARN HOW TO
• Distinguish the characteristics of extensional and transtensional structural styles
• Recognize and interpret the basin-involved and thin-skinned styles
• Apply mechanical-stratigraphic principles governing the formation and evolution of extensional structures and apply restoration and balancing techniques
• Predict structural geometry from sparse or inconsistent data using kinematic models
• Recognize typical extensional and transtensional petroleum-trapping geometries

COURSE CONTENT
External structural systems and their plate tectonic habitats • Models for rifting and passive continental margin evolution • Transpressive structures • Detached and basin-involved styles • Map patterns • Half grabbers and full grabbers • Footwall uplift • Pre-inversion normal faults • Ramp-flat and listric-fault related structures • Rotated block with keystone graben style • Structural validation criteria • Selecting the best balancing and restoration technique • Flexural-slip restoration and predication • Vertical and oblique simple shear • Rigid-block restoration • Area-depth technique for section validation, depth to detachment, bed-length changes and fault prediction • Effect of detachment-zone thickness • Transition from horizontal to vertical displacement • Extensional drape folds • Tithonian drape folds • Sequential restoration of growth structures • Fracturing in extensional structures

INTERMEDIATE 5-Day
Basin analysis, whether for conventional or unconventional resource play analysis, demands an integrated approach from explorationists. It is both inappropriate and misleading to suggest that the tectonic-thermal sequence stratigraphic evolution of any one basin is an established fact, or even that all basins submit to the same simple and equivocal models. Therefore, this five-day course does not passively present an inventory of basins of the world. Instead, this workshop provides the theory, methods, and active practice for participants to develop and optimize their own individual basin evaluation and modeling models. Operated as a practical problem for workshop analysis and substantial team discussion list are cases. Historical and new findings from around the world utilizing geologic, geophysical, and geochemical data sets. In addition, students construct and interpret their own 2D and 2D models using BASIN/MOD, an industry standard of basin modeling software.

DESIGNED FOR
Geoscientists, especially those in New Ventures or in Asset Evaluation, who require a non-superficial but practical application of an integrated variety of state-of-the-art geological/geophysical tools for the regional to local evaluation of conventional and unconventional resource plays in sedimentary basins.

YOU WILL LEARN HOW TO
• Systematically assess the evolution of a basin’s conventional and unconventional petroleum system criticals through space and time through a practical application of geology, geophysics, and geochemistry
• Evaluate the geomechanical fundamentals controlling a basin’s burial history through tectonic subsidence analysis
• Relate organic source quantity and quality to sedimentary processes and environments
• Delineate migration pathways through space and time
• Evaluate seal/trap quality
• Geovalidate the kinetic model
• Rank and quantify a petroleum system risk both deterministically and stochastically using Monte Carlo methods
• Determine within a basin the optimal stratigraphic and spatial locations for exploring conventional and unconventional resources
• Work in an integrative team to generate and present a prospect from the team’s own crafted 2D basin model from both well control and seismic generated virtual wells
• and more...

COURSE CONTENT
Geomechanical fundamentals • Geothermal criticals • Geochemical criticals • Migration criticals • Reservoir criticals • Seal and trap criticals • Timing criticals • Risk and decision-making

Basin Analysis 2019-2020 Schedule and Tuition (USD)
2019-2020 Schedule and Tuition (USD)
LONDON, UK 20-24 APR 2020 $5235+VAT
PARIS, FRANCE 25-29 NOV 2019 $3135
SINGAPORE 6-10 JULY 2020 $5425
* plus computer charge

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**GEOLOGY12 – CPST**

**Deep-water Turbidite Depositional Systems and Reservoirs – DWT**

**DEEP-WATER TURBIDITE**

- Review of turbidite settings, processes, models
- Turbidite systems at outcrop
- Rock analogs for the subsurface (including in-situ sampling)
- Modern deepwater systems
- Alternative reservoir geometries
- Reservoir characterization
- Sandbody correlation
- Typical oil-field locations
- **YOU WILL LEARN HOW TO**
  - **Deepwater**
  - **Turbidite**
  - **Depositional**
  - **Systems**
  - **Reservoirs**

**Development Geology – DG**

**INTERMEDIATE** 5-Day

- Successful field appraisal, development, and management requires a fundamental understanding of the reservoir pore space distribution. Participants learn, through hands-on exercises, to compile a development plan that emphasizes optimal recovery. Emphasis is placed on rock, log, and test data to distinguish reservoir and non-reservoir rock properties. Structural, stratigraphic, depositional and diagenetic concepts are used to locate drill sites and describe reservoirs. The input required to construct a geologic reservoir model is reviewed. Participants learn the importance of modifying development plans as a field becomes more mature. Techniques for mature field rejuvenation are discussed through case histories.

**Geophysical Techniques for Solving Reservoir Management and Field Development Problems – GTS**

**INTERMEDIATE** 5-Day

- During field development and production, numerous problems can be solved through integration of geotechnical, geological, and engineering data. Geophysical approaches for solving these problems are appealing for several reasons. 1) They provide an independent line of evidence that can help resolve ambiguous geological or engineering data. Example: geophysical data can reveal whether small differences in reservoir properties reflect the presence of a barrier between the sampling points. 2) They are far less expensive than engineering alternatives. Example: geophysical allocation of commingled production costs only 1-5% as much as production logging. 3) They have applicability where other approaches do not. Example: geophysical allocation of commingled production can be performed on highly-deviated or horizontal wells and on wells with electrical submersible pumps - well types not amenable to production logging. This course explains how geomechanics complements other reservoir management tools.

**COURSE CONTENT**

- Use mud gas isotopes to identify and characterize pay zones
- Use the geochemistry of produced fluids (oil, gas, water) and/or core material to identify missed pay, assess reservoir compartmentalization, allocate commingled production, identify completion problems (lubing leaks, poor cement jobs, etc.), characterize induced fractures (e.g., fracture height), monitor the progression of floods (water, gas, or steam), predict vertical and lateral variations in fluid viscosity and gravity, and identify the geological processes which control fluid properties in a given field
- Use certain key software packages (including, PeakView, ReserView, OilUnmixer, excess Pressure calculations, etc.)

**COURSE CONTENT**

- Use fluid compositions as natural tracers for tracking fluid movement and compartmentalization
- Understanding processes that cause compositional differences between fluids (e.g., differences in source facies, source maturity, biodegradation, water washing, evaporative fractionalization, etc.)
- Integrating geophysical, geological, and engineering data to identify missed pay, characterize reservoir compartmentalization, allocate commingled production, identify well completion problems, predict fluid viscosity/ gravity, and monitor floods

**2019-2020 Schedule and Tuition (USD)**

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* plus computer charge
Integrated Carbonate Reservoir Characterization — ICR

INTERMEDIATE 5-Day

This course will review the controls on carbonate reservoir heterogeneity from the pore architecture scale to the geometrical attributes at reservoir-scale and how these parameters can be incorporated and integrated into the development of viable petrophysically-based reservoir models for carbonates. In-class exercises are used to reinforce the potential integration of various data sets to provide students with experience in carbonate reservoir characterization.

DESIGNED FOR
Exploration and development geoscientists, petrophysicists, reservoir engineers, geostatistical modelers and research/development staff.

YOU WILL LEARN HOW TO
• Integrate various aspects of carbonate rocks for improved carbonate reservoir architecture and fluid flow characteristic
• Apply knowledge of petrophysical, sedimentological petrologic tools to characterize and evaluate carbonate reservoirs
• Recognize and understand well log responses in carbonate systems and to learn to utilize data from formation evaluation tools to determine reservoir quality
• Identify potential stratigraphic variations in carbonate pore architecture and its effect on permeability
• Better understand the relationship of primary depositional facies, sequence stratigraphic framework, and diagenetic history to pore architecture and reservoir quality
• Better understand fracturing in carbonates, relating fracture density, aperture, length to facies, lithology, and diageneisis
• Distinguish controls on carbonate reservoir heterogeneity, sub-reservoir to reservoir scale
• Better understand carbonate reservoir heterogeneity and the value of 3D geological model building to better manage the development of carbonate reservoirs

COURSE CONTENT
Importance of understanding the various scales of heterogeneity in carbonate reservoirs • Carbonate deposition, diagenesis, mineralogy, rock textures, and pore types • Carbonate rock and carbonate pore system classification • Carbonate rock properties and core analysis • Well log response, limitations, and strengths in carbonates • Determination of lithology, porosity, and permeability • Fracture identification and distribution • Porosity/depth relationships in limestone and dolomite reservoirs • Importance of sequence boundaries to development of pore architecture • Variations in carbonate pore architecture and its effect on permeability • Relationship of primary depositional facies, sequence stratigraphic framework and diagenetic history to pore architecture and reservoir quality • Controls on reservoir heterogeneity, from sub-reservoir to reservoir scale • Value of analogs for development of petrophysically-based reservoir models • Value and limitations of 3D geostatistical models to understand reservoir heterogeneity and architecture

Operations Geology — OG

INTERMEDIATE 5-Day

At the end of this integrated course, participants will be able to contribute effectively to the preparation of planned wells and their concurrent operations during the exploration, appraisal, and development phases. As geoscientists, petroleum engineers, well engineers, and production technologists are increasingly assembled in asset, project, or operational teams they must not only understand each other in technical matters, but should also contribute to each other’s efforts in these aspects: a driller should know why it is important to cut a core or log a particular interval despite potential drilling problems, and geoscientists should understand drilling operations and their inherent hazards and problems. All should be able to understand and prepare daily drilling reports with a full appreciation of the various subjects. Cuttings, cores, logs, and well tests should be analyzed, cross-correlated, and compiled to mesh with progresses and existing data to effectively manage the impact on the field development plan. Correct procedures in tendering and contracting should be followed to minimize the duration of the operations and to maximize the quality of the operations services provided. Understanding of all operations should greatly improve the effectiveness of the Operations Geologist. Note: A basic knowledge of geology and/or petroleum geology is advisable if not required to fully appreciate the course contents.

DESIGNED FOR
All geoscientists, petroleum engineers, well engineers, and technical personnel who in the course of their career will attend or direct subsurface and wellsite operations.

YOU WILL LEARN HOW TO
• Plan and prepare for a drilling location and for geological services
• Identify drilling operations and geological drilling hazards
• Understand and apply logging services
• Understand well testing services
• Evaluate drilling reports
• Describe drilling cuttings and cores
• Evaluate the impact on the field development plan
• Prepare and compile operations reports

COURSE CONTENT
Petroleum geology and its systems • Operations geology: prospect to well planning, provision of geological services • Wellsite geology: geological sampling, sample analysis, and well stratigraphy, cutting, and core description • Structural geology: fractures, faults, borehole geology • Drilling Operations: bits, fluids, casing and cement, drilling problems and well control, directional drilling, geosteering • Logging operations: acquisition, tools, quick look interpretation, MWD/LWD, geosteering • Well testing and fluids: reservoir properties, rock and fluid interaction, permeability, averaging, data gathering and interpretation • Impact on FDP: case histories • Tendering and contracting • Reporting: geological data, petrophysical data, pressure data • Exercises: cores, cuttings, quick look, pressures, daily drilling report

Prospect and Play Assessment — PPA

INTERMEDIATE 5-Day

This fully revised and updated course is a fully modern approach to defining prospect and play volumetrics, uncertainties in defining these volumes and the risk that the accumulation fields. This course offers a step-by-step approach, probabilistic play and prospect assessment procedures that are consistent and repeatable allowing for direct comparisons play to play or prospect to prospect. In addition, the methods offer measures of the play prospectiveness based on the number and resource size distribution of potential future fields. Tools include comprehensive assessment forms for prospects and plays, and graphs, data tables, and guidelines for making all assessment decisions.

DESIGNED FOR
All exploration team members and leaders including geologists, geophysicists, geochronists, analysts, reservoir engineers, economists, planners and managers who make business decisions based upon exploration data.

YOU WILL LEARN HOW TO
• Calculate geological risk and uncertainty in exploration prospects
• Determine prospect resource volume estimates
• Assess resource distribution in a play
• Understand the differences between stochastic and probabilistic estimates and have the knowledge to weight when to use one or the other.
• Predict the number and size distribution of potential future fields in a play
• Describe and calibrate risks associated with discovering a successful play

COURSE CONTENT
Geological controls of oil and gas occurrence • Review of common assessment methods • Application of volumetric prospect assessments: techniques, comparative data, and graphs to estimate input factors, such as trap volume, porosity, net/gross saturation, hydrocarbon fill fraction, formation volume factors, and recovery efficiencies • Probability methods • Risk analysis • Hydrocarbon charge assessment: procedures for estimating possible amounts of oil and gas generated, migrated, and trapped in prospects • Prospect assessment workshops • Play assessment techniques: estimating the possible numbers, sizes, and associated risks for potential fields, with useful data on field densities, field-size distributions, oil versus gas relationships, and dependent versus independent risks • Play recognition and mapping: play classification and subdivision, and play maps that high-grade the most favorable areas with minimal geological risks • Play assessment workshop: projects supplied either by the instructor or by participants, worked by teams and reported to the entire group • Aggregation of assessment results: summing, derisking, and preparation for economic analysis • Limitations, pitfalls, uses, and discovery concepts: the philosophy of risk and uncertainty in evaluating potential future fields in a play • The impact of natural fractures on hydrocarbon fracture stimulation

COURSE CONTENT
Characterization of natural fractures and fracture systems • Influence of mechanical stratigraphy and structure on fracture development • Detection and prediction of sub-surface natural-fracture occurrence and intensity from cores and well logs • Fractured rock properties affecting reservoir performance • Classification of naturally-fractured reservoirs with reservoir examples and potential production problems • Naturally-fractured reservoirs: fluid-flow, well performance and well testing, reservoir performance, numerical simulation • Geomechanics/Fluid-flow • Behavior and stimulation of naturally-fractured reservoirs • Effects of natural fractures on reservoir permeability, anisotropy, drainage area, and waterflow sweep efficiency

Naturally Fractured Reservoirs: Geologic and Engineering Analysis — FR

SPECIALIZED 5-Day

This course covers geologic and engineering concepts, methodology, and technology used to characterize, evaluate, and manage naturally-fractured reservoirs. Applications and limitations of geologic and engineering procedures and tools are discussed. Field examples and case studies demonstrate the importance of integrated geologic and engineering studies in developing effective, economical reservoir management strategies for different types of reservoirs.

DESIGNED FOR
Engineers and geoscientists interested in a multi-disciplinary approach to evaluating and predicting the overall effect of natural fractures on subsurface fluid-flow and subsequent reservoir performance.

YOU WILL LEARN HOW TO
• Detect and predict subsurface natural fracturing occurrence and intensity from cores and well logs • Determine fractured rock properties affecting reservoir performance • Design and analyze pressure transient tests in naturally-fractured reservoirs • Evaluate reservoir performance in naturally-fractured reservoirs • Develop and apply numerical simulation models to fluid flow in naturally-fractured reservoirs • Apply coupled geomechanics/fluid-flow behavior to reservoir management strategies in naturally-fractured reservoirs • Evaluate the impact of natural fractures on hydraulic fracture stimulation

2019-2020 Schedule and Tuition (USD)

LONDON, UK 11-15 NOV 2019 $3650+VAT
$5405+VAT

2019-2020 Schedule and Tuition (USD)

HOUSTON, US 10-14 AUG 2020 $4510
KUALA LUMPUR, MYS 7-11 DEC 2020 $4525

KUALA LUMPUR, MYS 28 SEP-2 OCT 2020 $5425
LONDON, UK 2-6 NOV 2020 $4610
KUALA LUMPUR, MYS 15-19 APR 2020 $4510
KUALA LUMPUR, MYS 17-21 JULY 2020 $5235+VAT

* plus computer charge

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The Course Progression Matrix below shows how the Geophysics courses in this section are structured within each topic, from Basic to Specialized. On either side of the Geophysics section, you will see courses in associated disciplines for cross-training. These matrices are ideal for building training plans for early-career staff or finding the right course to build upon existing knowledge and experience.

The first two courses in this section, Basic Geophysics – BGP and Seismic Interpretation – SI1, are two of our most popular and build the foundation of the discipline. For unconventional plays, be sure to check out Use of Full Azimuth Seismic and Microseismic for Unconventional Plays – FAMS on page 17. Also, be sure to take a look at our new course, Advanced Practices in Exploration and Development of Unconventional Resources – EDUR, on page 16.

The following instructors have been selected and approved by the PetroSkills Curriculum Network:

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**Course Content**
- **Basics:** geological controls on the propagation, reflection, and refraction of seismic waves
- **Data acquisition and processing with emphasis on its potential impact on interpretation:**
  - 2D and 3D interpretation techniques
  - Seismic interpretation of different structural styles: extensional, compressional, strike-slip, inverted, salt, and gravity dominated basins
  - Seismic velocities
  - Sequence stratigraphy and seismic facies analysis
- **Acoustic impedance**
- **AVO**

**YOU WILL LEARN HOW TO**
- Understand the seismic process, interpret seismic sections, develop a geologic model, and prepare maps
- Relate the subsurface stratigraphy to well data
- Identify different structural styles from seismic data
- Create a basic stratigraphic framework using seismic stratigraphy

**DESIGNED FOR**
- Geologists, geophysicists, and engineers who want to use seismic data for petroleum exploration and/or production. Familiarity with geological terminology will be helpful.

**2019-2020 Schedule and Tuition (USD)**
- **Calgary, CAN**
  - 20-24 JUN 2020: $4355+GST
  - 16-20 MAR 2020: $4450
- **Houston, US**
  - 21-25 SEP 2020: $5250
  - 16-20 NOV 2020: $5250+VAT
- **Kuala Lumpur, MYS**
  - 10-14 MAY 2020: $5250
- **London, UK**
  - 16-22 NOV 2019: $5250+VAT
  - 16-20 NOV 2020: $5250+VAT
**Basic Geophysics – BGP**

**BASIC**
This course is designed to familiarize anyone using seismic data with the nature of the data and what they specifically represent. One of the key goals of the course is to explain the large and confusing amount of jargon that is used by the geophysical community when they use seismic data. The course is supplemented by a large number of case histories that concretely illustrate the principles in the course material. These are updated with every course presentation to keep up with the rapidly developing technology in this field. Each section of the course is supported with a classroom exercise. The course participants are given a thumb drive that contains the case histories, class exercises, and all of the extensive PowerPoint animations used in the classroom.

**YOU WILL LEARN**
- How seismic data represent subsurface rock parameters including the relative structure, lithology, and pore-filling material
- How land and marine seismic data are acquired and processed to produce both two- and three-dimensional seismic images
- The limits of vertical and horizontal resolution inherent in the seismic data
- How seismic data are used to measure reservoir parameters and how data-guide reservoir development; this includes a detailed discussion of AVO and other seismic attributes
- The various approaches to seismic imaging and how the velocity model relates to this image
- How new technologies including seismic inversion have helped us define rock properties including pore-filling material, pore pressure, water saturation, and fracture orientation
- How to value developments such as time-lapse seismic surveys for reservoir monitoring purposes

**COURSE CONTENT**
- The nature of seismic data
- What is wave propagation
- What causes seismic reflections and how they relate to rock properties including pore-filling material
- The workflow in the seismic data and its limits of resolution
- Seismic velocities as they relate to rock properties and the imaging process
- The relationship between seismic velocities and pore pressure
- Seismic data processing and seismic migration
- Pre-stack, post-stack, time and depth imaging
- Direct hydrocarbon indicators and AVO
- Seismic inversion for rock and fluid properties
- Seismic attributes
- Time-lapse reservoir monitoring (4D seismic surveys)
- Recent developments in seismic acquisition, processing, and interpretation

**Designed for**
Geoscientists, engineers, team leaders, geoscience technicians, asset managers, and anyone involved in using seismic data that needs to understand and use this data at a basic level or to communicate with others that use it.

See website for dates and locations. [PETROSKILLS.COM/BLENDED-BGP](http://PETROSKILLS.COM/BLENDED-BGP)

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**Seismic Imaging of Subsurface Geology – SSD**

**FOUNDATION**
Basic seismic imaging principles and techniques are introduced at the outset of the class to establish the purpose, underlying principles, parameterization, and limitations of the various imaging steps leading to final interpretable images and will be able to recognize possible problems introduced or not mitigated by the processing flow. Moreover, the participant will understand how seismic acquisition and data processing steps affect seismic amplitudes to assess their validity as input to various post-imaging seismic attribute and inversion processes.

**YOU WILL LEARN HOW TO**
- Assess and determine data processing flows for a variety of acquisition and reservoir scenarios
- Determine the most cost-effective imaging or migration technique given acquisition and structural scenarios
- Recognize various noises and how best to mitigate them
- Assess and appreciate the sensitivity of data processing parameters on final images
- Estimate the vertical and lateral resolution of the processing and attribute products
- Understand and examine data acquisition and processing quality control displays
- Ask appropriate questions during data processing steps
- Communicate effectively with specialists in seismic data acquisition, processing, and interpretation
- Appreciate and evaluate the trade-off between costs, turn-around time, and sophistication of processing and imaging steps

**COURSE CONTENT**
Review of basics of reflection seismology; wave propagation and seismic amplitudes; Seismic imaging techniques and principles; Overview of 3D seismic data acquisition and quality control; Improving seismic resolution; deconvolution, inverse-Q filtering, and spectral whitening; Velocity estimation, velocity field building, and velocity uncertainty implications; Near-surface problems and solutions: seismic datums and static corrections; Noise identification and suppression; coherent noises, multiples, linear noises, and incoherent noises; Advanced seismic imaging techniques: pre-stack time and pre-stack depth migration; Migration velocity analysis techniques

**Designed for**
Seismic interpreters, geophysicists, geologists, and exploration team members who use seismic data and need to understand the purpose and implications of the data acquisition and processing steps that lead to the final seismic images and derivative attributes. Also, the course is appropriate to early-career processing geophysicists seeking a rigorous foundation of the principles of data processing and seismic imaging.

See website for dates and locations. [PETROSKILLS.COM/BLENDED-SSD](http://PETROSKILLS.COM/BLENDED-SSD)

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**Seismic Velocities and Depth Conversion – SVDC**

**FOUNDATION**
This course will teach you how to use velocity information and structural inputs to build a consistent velocity model and/or calibrate ones that have been created during seismic data processing. This class is designed for the interpreter so that he or she understands the theory and practice of how to estimate depths from older time-migrated data, as well as how to qualify control (QC) and calibrate newer PSDM data. Also covered in this class are when to reproces the data and how to communicate with the processor in order to produce the best velocity model and depth image.

**YOU WILL LEARN HOW TO**
- Understand the various types of velocities, their calculation, and the validity of their interpretation and extrapolation
- Compare, quality control, smooth, and combine the various velocity types into an integrated velocity model
- Validate model quality by examining the changes in velocity needed to tie the seismic
- Use the model to convert horizons, faults, and seismic data from time to depth
- Understand at an introductory level, how velocity models are used for other studies such as forward modeling and pore-pressure prediction

**COURSE CONTENT**
Velocity: definition and comparison of the many types of velocity including average, interval, RMS, stacking, migration, P-wave, and S-wave
- Velocity Inputs: accuracy and regional extent of each, including check shots, VSPs, sonic logs, time/depth functions, well picks and pseudo velocities, seismic velocities, and horizons for structural control
- Synthetic Seismograms: creation, upscaling, and tie to seismic data; Advanced synthetics including synthetic gather creation, Zoeppritz equations, A/R, and AVO
- Matching Synthetics to Seismic: calibrating the seismic data to the well data; Seismic Velocities: semblance analysis, velocity picking, multiples, and how seismic velocities differ from well velocities
- Migration and Migration Velocities: introduction to pre- and post-stack algorithms, tomography, and iterative velocity analysis
- Velocity Model Building: workflows to integrate stacking velocities, time/depth curves, well picks associated with seismic horizons (pseudo-velocities), and structure from horizons
- Time-to-Depth Conversions: vertical stretch, inverse ray-tracing, migration, and uncertainty
- Introduction to Advanced Topics: anisotropy, pore-pressure prediction, geostatistics, and forward modeling

See website for dates and locations. [PETROSKILLS.COM/BLENDED-SVDC](http://PETROSKILLS.COM/BLENDED-SVDC)

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**Seismic Positioning Data Management – SPDM**

**FOUNDATION 2-Day**

While both seismic navigation and trace data topics are covered, there is a greater focus on the geo-spatial component of trace data, with respect to navigation and positioning. The course will offer insight into geolocation considerations to ensure removal of geo-spatial data ambiguity using case studies of data acquisition, processing, data loading, and proposed well location selection. Preservation of metadata and compliance to international standards in data exchange provide the integrity backbone to enhancing data quality and removing any ambiguity with respect to geo-referencing and legal ownership. Ensuring interpreters interpret and are not deviated from their activities by having to resolve mis-likes within the data is key to enhancing efficiency at a critical stage of the project cycle.

**DESIGNED FOR**

This course is aimed at a wide audience and will be of particular benefit to technicians, data loaders, and data analysts. Those involved with seismic data processing can preserve data quality and obtain geo-spatially accurate imaging of subsurface features by applying techniques covered in the course. Asset team members responsible for maintaining seismic data and data loading to interpretation workstations can enhance their processes by applying techniques covered.

**YOU WILL LEARN HOW TO**

- Assess data quality and manage seismic trace and navigation data related to seismic data acquisition, processing and data loading
- Apply best practices to enhance and preserve data integrity and ensure seismic data sets are fit for purpose and do not contain geophysically significant errors
- Preserve metadata and maintain compliance with international standards for data exchange

**COURSE CONTENT**

Seismic navigation data principles • Basic geodesy • 2D data loading exercises • Data quality control and practical examples thereof • 2D data editing and exporting • 3D bin grid data definitions and exercises for importing, analyzing, editing, and exporting • Applied geodesy introduction to EPSG database • Trace data licensing • Acquisition • Storage • Import and quality assessment • Formats and conversions • Best practices

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<td><strong>$4505</strong></td>
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<td>19-23 OCT 2020</td>
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**Advanced Practices in Exploration and Development of Unconventional Resources – EDUR**

**INTERMEDIATE 5-Day**

In this course, participants will learn and practice the techniques used by various disciplines to evaluate unconventional resources. The objective is to understand the significance and limits of the various tools in order to optimize integration, improve communication, and allow for greater efficiency in follow-up projects. In addition to covering the techniques, many of the exercises and problems use data from active producing unconventional basins. Several spreadsheets are provided to allow for quick look reviews.

**DESIGNED FOR**

Geoscientists, engineers, and managers who need an enhanced understanding of assessment techniques for unconventional resources and how to integrate them.

**YOU WILL LEARN HOW TO**

- How to use engineering and geoscience methods to analyze unconventional well data
- To reduce risk by understanding the strengths and limitations of various assessment tools
- How to effectively collect and integrate data from multiple sources
- The essential functions of each key discipline in order to become a valuable member of the integrated team, contributing and communicating effectively

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<td>8-12 DEC 2019</td>
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**AVO, Inversion, and Attributes: Principles and Applications – AVO**

**INTERMEDIATE 5-Day**

The subject of direct hydrocarbon indicators and AVO has rapidly expanded to include AVO inversion, offset AVO inversion, and 4D AVO inversion. A significant part of the course deals with rock physics as it relates to the other topics in the course. Further insight into the seismic data is supplied by looking at seismic attributes. The technology has provided the interpreter with a very new and exciting package of tools that allow us to look at the seismic image as being truly representative of both the rock properties and the pore filling material. This course is intended to provide the users with a clear and useable understanding of the current state of these technologies. The focus of the course is on both understanding and application. Exercises: Each topic in the course outline is reinforced by an exercise that gives the participants many practical and simple methods of integrating the course material into their everyday work.

**DESIGNED FOR**

Geophysicists, geologists, explorationists, seismic interpreters, technical support personnel, seismic data processors, exploration, production, and acquisition managers who need a clear understanding of the details of implementation and application of this technology.

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**AVO, Inversion, and Direct Hydrocarbon Indicators: A Basin Scale Regional Exploration Workshop – ISS**

**INTERMEDIATE 5-Day**

One of the most revolutionary, most effective, yet most under-utilized tools introduced into exploration this century is that of seismic stratigraphy. It is not a tool exclusive to geophysicists, nor is it a tool only for geologists. Seismic stratigraphic techniques are based upon an integration of firm, well-established geological and geophysical fundamentals. When properly applied, seismic stratigraphy provides a powerful tool for the interpreter to use in the analysis of data, helping describe a basin’s evolution and the resulting effects upon its spatial and temporal variation in hydrocarbon potential. Seismic stratigraphy chronostratigraphically constrains both the seek for its petroleum system and mechanical stratigraphy of a basin. Furthermore, it can provide a predictive model extrapolated beyond the borehole as to aspects of the quality of potential reservoirs and seals, their sedimentary environments of deposition, and in some cases, their paragenesis. In this rigorous workshop, participants pragmatically apply the seismic stratigraphic method to optimizing their exploration efforts by working in teams on projects selected from diverse settings around the world. Areas for the projects include borehole-constrained seismic data drawn from such regions as the Alaska North Slope, Gulf of Mexico, Red Sea, Southeast Asia, South America, and Western Africa.

**DESIGNED FOR**

Geophysicists, geologists, explorationists, and managers who are interested in an introduction or review of the theory and application of contemporary seismic stratigraphic techniques to exploration.

**YOU WILL LEARN HOW TO**

- Apply geophysical fundamentals to uncovering the geological information embedded within seismic
- Understand the premises behind the Vail seismic sequence paradigm
- Construct and interpret chronostratigraphic charts, sea level curves, and seismic facies maps
- Interpret clastic and carbonate depositional systems responses to tectonic processes, and autogenic processes and the effects upon reservoir architecture and seal potential
- Systematically reconstruct a basin’s geohistory which provides the critical foundation for its petroleum system analysis and effective exploration

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<tr>
<td><strong>DUBAI, UAE</strong></td>
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**Introduction to Seismic Stratigraphy: A Basin Scale Regional Exploration Workshop – ISS**

**INTERMEDIATE 5-Day**

**2019-2020 Schedule and Tuition (USD)**

| **CALGARY, CANADA** |
| 7-11 DEC 2020 |
| **$4555+GST** |

| **HOUSTON, US** |
| 21-25 OCT 2019 |
| **$4525** |

| **KUALA LUMPUR, MYS** |
| 19-23 OCT 2019 |
| **$4610** |

| **LONDON, UK** |
| 27-31 JULY 2020 |
| **$5335+VAT** |

* plus computer charge

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3D Seismic Attributes for Reservoir Characterization – SARC

SPECIALIZED 5-Day

The primary objective of this course is to gain an intuitive understanding of the kinds of seismic features that can be identified by 3D seismic attributes, the sensitivity of seismic attributes to seismic acquisition and processing, and how independent seismic attributes are coupled through geology. We will also discuss alternative workflows using seismic attributes for reservoir characterization as augmented by modern commercial software and practiced by interpretation service companies. Participant discussion centered around case studies, attribute recipes for particular objectives, reservoir workflows and seismic attribute jeopardy exercises will be the main focus of the course.

DESIGNED FOR
Seismic interpreters, processors, stratigraphers and structural geologists, reservoir engineers, and students of geophysics.

YOU WILL LEARN HOW TO
• Use attributes to enhance subtle faults and folds, as lithologic indicators, and quality control the choice of processing parameters
• Evaluate and exploit attribute expressions for different depositional environments to better characterize reservoirs by adopting appropriate workflows and multi-attribute tools
• Identify geological features highlighted by attributes, limitations to seismic processing through attributes that may result in smeared attribute images from multi-azimuth and multi-offset data, limits of attribute analysis on data that have been poorly imaged and good and bad color display practices

COURSE CONTENT
Types of attributes • Impact of seismic data quality on seismic attributes • Methods for preconditioning of seismic data • Introduction of various algorithms for attribute computation, their limitations and performance strengths • Attribute expression of structure and stratigraphy in terms of facies and diapirism, clastic and carbonate depositional systems and geologic hazards • Multi-attribute analysis tools • Reservoir characterization workflows • Physical demonstration of attributes on real seismic data

Advanced Seismic Stratigraphy: A Sequence – Wavelet Analysis Exploration – Exploitation Workshop – ADS

SPECIALIZED 5-Day

Seismic stratigraphy is a powerful tool for exploration and exploitation. The methods used in this workshop do not rely upon either cosmetic processing or interpretation as an art; instead, practical methods of seismic stratigraphy are employed as a science, based upon firm, tested principles that are applied to a spectrum of tectonic structural styles and depositional environments. Participants learn how to make seismic modeling–interpretation judgments as a basis for seismic–facies and reflection character analysis. Case studies for exploration and development incorporate 2D and 3D seismic data with well data selected from around the world. Each participant should bring a hand-held calculator to class.

DESIGNED FOR
Geophysicists, geologists, and explorationists who have completed the PetroSkills course, Introduction to Seismic Stratigraphy: An Exploration Workshop: A Basin Scale Regional Workshop, or have comparable training and desire a challenging workshop, which will improve exploration and development skills.

YOU WILL LEARN HOW TO
• Evaluate rock-fluid information from wavelet analysis (frequency, velocity, Q, seismic attributes and AVD)
• Understand the strengths and weaknesses of geovisualization using and misusing synthetics, seismic inversion, and VSP
• Delineate fault mechanical stratigraphy through proper interpretation of fault imaging
• Understand the differences, weaknesses, and strengths of both the Valley with the Gallaway sequence paradigms and when to optimally employ them
• Develop sea level curves from micropaleontology
• Construct detailed seismic facies maps and understand their relationship to Walter’s law
• Classify deltas based upon their seismic characteristics
• Differentiate basin floor fan facies and parasitic sets
• Interpret clastic and carbonate depositional system responses to alluvial and autocyclic processes and the effects upon reservoir architecture and seal potential
• Optimally interpret parastratigraphic set fairways for exploration
• Geophysically characterize reservoirs for optimizing development

COURSE CONTENT
Review of philosophy and epistemology • Application of geophysical fundamentals (wave theory, attributes, frequency substitution, and coherency) • Amplitude variation with offset (lithologies, fluids, gases, porosities, and pressures) • Fault mechanical stratigraphy • Valley and Gallaway sequence theory and application • High resolution sea level curve generation from micropaleo • Shallow and deep water siliciclastic sequences • Seismic facies and paleo-environmental analysis • Reservoir scale geophysics using the wavelet • Imaging hydrocarbons • Geohistory reconstruction • Optimizing exploration and development

Applied Seismic Anisotropy for Fractured Reservoir Characterization – ASAF

SPECIALIZED 5-Day

This course is designed to enable you to perform professional geophysical work to evaluate fractured reservoirs and/or reservoirs that require hydrofracturing to produce. The emphasis of the lectures is steered to the participants’ work assignments. Field data case histories and laboratory data illustrate the principles and practices of calibrating azimuthal travel times and azimuthal poststack amplitudes against independent measurements of in-situ horizontal stresses, and natural fractures that flow fluids. The course covers acquisition design and Q/C, azimuthal processing, interpretation, and modeling to test different interpretations. The skills that you will learn also involve integrating the support data – well logs, production testing, VSP, core work - with your reflection seismic data. This includes identifying the effects of the two types of seismic anisotropy on seismic data. You will learn how to employ anisotropy to accomplish your reservoir-related goals. Seismic anisotropy is everywhere in the layered sedimentary rocks, but in the past, geophysicists have often ignored it, sometimes because they didn’t consider the data that reveal its presence, and other times because they didn’t understand the benefits that properly recorded and processed anisotopic data provide. The class is usually designed as lectures in the morning, with field-data analysis in the afternoons. If the course is taught as an in-house course, with your own properly acquired and properly processed 3D data, then software applications useful for fractured reservoir analysis will be used during the class.

DESIGNED FOR
Working, interpretation geophysicists and other geoscientists assigned to evaluate fractured reservoirs or reservoirs requiring hydrofracturing to produce.

YOU WILL LEARN HOW TO
• Ask necessary geotechnical questions about your reservoir and play, identify the geophysical data needed to answer those questions; design acquisition and processing processes and the effects upon reservoir architecture and seal potential
• Specify what geologic and/or engineering resources, and/or fractured reservoirs that will be acquired; design acquisition; specify the processing sequence
• Identify the support data required for the successful fracture and in-situ horizontal characterization
• Extract engineering benefits and meaning from microseismic data
• Appraise the utilities, capabilities, and limitations of microseismic imaging
• Develop insights and fundamental questions for microseismic projects
• Identify the support data needed to give a complete picture of the results
• Weigh field deployment options
• Assess stimulation designs

COURSE CONTENT
Fundamentals of reflection seismology: seismic anisotropy - its causes and uses • Issues, goals, and pitfalls in seismic full-azimuth acquisition • Seismic data processing - nonazimuthal and azimuthal • Interpretation of azimuthal interval velocities and azimuthal amplitudes for in-situ stress and natural fractures • Evaluation • Fundamentals of seismic modeling for anisotropy, especially common assumptions in different modeling packages • Microseismic: opening statements and discussion, historical background, Yeomann science 101 • Hydraulic fracture technology, in-situ and other studies of hydraulic fracture geometries • Earthquake seismology and hydraulic-fracture-induced microseismology • The means and the methods of microseismic imaging: Examples I: results - the data • Examples I: interpretation and integration • Pitfalls, benefits, FAQs • Wrap-up discussion

Use of Full Azimuth Seismic and Microseismic for Unconventional Plays – FAMS

SPECIALIZED 5-Day

For surface seismic, participants will learn to evaluate azimuthal seismic in fractured reservoirs or resource intervals needing hydrofracturing. The course presents reflection seismology and full-azimuth acquisition design, processing, interpretation, and integrating support data narrow-azimuth seismic, well logs, production tests, VSPs, and core work. For microseismic, participants will learn the strengths, weaknesses, limitations, and benefits of microseismic imaging of hydraulic fractures.

DESIGNED FOR
For surface seismic, experienced geoscientists working seismic to evaluate unconventional resources, and/or fractured reservoirs that require hydraulic stimulation. For microseismic, all professionals using microseismically to plan, monitor, evaluate, and diagnose stimulations will find this course useful.

YOU WILL LEARN HOW TO
• Specify what geologic and/or engineering questions need to be asked about your reservoir and your play
• Specify the geophysical data that need to be acquired; design acquisition; specify the processing sequence
• Integrate the final processed data and test different interpretations
• Identify the support data required for the successful fracture and in-situ horizontal characterization
• Extract engineering benefits and meaning from microseismic data
• Appraise the utilities, capabilities, and limitations of microseismic imaging
• Develop insights and fundamental questions for microseismic projects
• Identify the support data needed to give a complete picture of the results
• Weigh field deployment options
• Assess stimulation designs

COURSE CONTENT
Fundamentals of reflection seismology: seismic anisotropy - its causes and uses • Issues, goals, and pitfalls in seismic full-azimuth acquisition • Seismic data processing - nonazimuthal and azimuthal • Interpretation of azimuthal interval velocities and azimuthal amplitudes for in-situ stress and natural fractures • Evaluation • Fundamentals of seismic modeling for anisotropy, especially common assumptions in different modeling packages • Microseismic: opening statements and discussion, historical background, Yeomann science 101 • Hydraulic fracture technology, in-situ and other studies of hydraulic fracture geometries • Earthquake seismology and hydraulic-fracture-induced microseismology • The means and the methods of microseismic imaging: Examples I: results - the data • Examples I: interpretation and integration • Pitfalls, benefits, FAQs • Wrap-up discussion

2019-2020 Schedule and Tuition (USD)

2019-2020 Schedule and Tuition (USD)

HOUSTON, US
3-7 AUG 2020 $4610
LONDON, UK
29 SEP-2 OCT 2020 $5335+VAT

2019-2020 Schedule and Tuition (USD)

HOUSTON, US
29 OCT-1 NOV 2019 $4690
LONDON, UK
29 JUNE-3 JULY 2020 $3690

2019-2020 Schedule and Tuition (USD)

HOUSTON, US
5-9 OCT 2020 $4610

See website for dates and locations

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

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The Course Progression Matrix below shows how the Well Construction/Drilling courses in this section are structured within each topic, from Basic to Specialized. On either side of the Well Construction/Drilling section, you will see courses in associated disciplines for cross-training.

The first two courses in this section are two of our most popular and build the foundation of the discipline. Basic Drilling Technology – BDT provides a basic overview of the drilling process, while Well Design and Engineering – WDE on page 19 integrates all major well design technologies. If you need to build a foundation around directional and horizontal wells, be sure to see Directional, Horizontal, and Multilateral Drilling – DHD on page 21. Also, be sure to check out our exciting deepwater course Deepwater Well Engineering - DWE on page 21.

The following instructors have been selected and approved by the PetroSkills Curriculum Network:

Mr. Peter Aird
Mr. Richard Aird
Mr. Aaron Klein
Mr. Hector Moreno
Mr. Bob Westermann
Mr. George Armstead
Mr. Kevin Cutler
Mr. Steve McKeefer
Dr. Don Schmidt
Mr. Larry Wolsten
Mr. James Boro
Mr. Mark Hackler
Mr. Steve Metcalfe
Mr. Aaron Klein
Mr. Steve Otley
Mr. Hector Moreno
Mr. Bob Westermann
Mr. George Armstead
Mr. Kevin Cutler
Mr. Steve McKeefer
Dr. Don Schmidt
Mr. Larry Wolsten
Mr. James Boro
Mr. Mark Hackler
Mr. Steve Metcalfe
Mr. Aaron Klein
Mr. Steve Otley
Mr. Hector Moreno
Mr. Bob Westermann
Mr. George Armstead
Mr. Kevin Cutler
Mr. Steve McKeefer
Dr. Don Schmidt
Mr. Larry Wolsten
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Mr. Mark Hackler
Mr. Steve Metcalfe
Mr. Aaron Klein
Mr. Steve Otley
Mr. Hector Moreno
Mr. Bob Westermann
Mr. George Armstead
Mr. Kevin Cutler
Mr. Steve McKeefer
Dr. Don Schmidt
Mr. Larry Wolsten
Mr. James Boro
Mr. Mark Hackler
Mr. Steve Metcalfe

**Basic Drilling Technology – BDT**

This course addresses the technology used to drill wells from a fundamental view point. Equipment and procedures involved with drilling oil and gas wells are described for those who are interested regardless of academic background. The overall drilling process is presented along with definitions and descriptions of drilling equipment. This provides the vocabulary to understand the drilling process.

**Field Trip**

This course provides an opportunity to see the equipment and procedures involved with drilling oil and gas wells firsthand. The field trip is an integral part of the course and provides a practical understanding of the materials covered in the classroom.

**You Will Learn**

- About drilling equipment and how it is used
- Drilling terminology and abbreviations
- Basics of planning a successful well
- Common drilling problems and avoiding them
- How to read a morning report
- Technology behind info in a morning report

**Course Content**

Drilling process and equipment • The language of drills - understanding their terminology • Understanding the abbreviations and acronyms associated with drilling • Rig equipment and types • Types of drill bits • MWD • Drill strings • Drilling fluids management • Mud tank arrangements • Drilling fluid properties • Well control™ • Cementing • Drilling design • Hole problems (plastic pipe, lost circulation) • Well control • Directional drilling operations and tools • Safety

**2019-2020 Schedule and Tuition (USD)**

- **HOUSTON, US**
  - 16-20 DEC 2019
  - $4585
  - 20-24 APR 2020
  - $4585
  - 14-18 DEC 2020
  - $4585

- **LONDON, UK**
  - 14-18 SEP 2020
  - $5135+VAT

† includes field trip
Casing and Cementing – CAC

BASIC 5-Day
This course builds a firm foundation in the principles and practices of designing, planning and conducting successful casing and cement operations. The course uses a process-based perspective that takes participants from initial casing design and depth selection, casing and liner design procedures, casing running practices, and planning and executing primary cementing through remedial cementing and plugging operations. In addition to the necessary technical information and procedures, the course is laced with considerable practical, experience-based content. Participants will be furnished Dr. Byrom’s textbook, “Casing and Liners for Drilling and Completion,” and computer spreadsheets to facilitate routine calculations.

DESIGNED FOR
Personnel responsible for planning, overseeing, and conducting casing and cementing operations; operator and service personnel.

YOU WILL LEARN
- Selection of casing sizes and setting depths to achieve well objectives
- Determination of casing loads for design purposes
- To design casing properties to meet burst, collapse, and tensile strength requirements
- To conduct casing running operations safely and successfully
- Specification of cement slurry properties and volumes to meet well objectives
- Determination of best procedures for attaining successful primary cementing
- To conduct stage jobs, squeeze jobs, and set cement plugs

COURSE CONTENT
Selecting casing and hole sizes • Setting depths • Casing loads • Selecting casing and connections • Casing stress calculations • Cement and cement additives • Selecting appropriate slurries • Mud removal and cement placement • Stage cementing, squeezes, and plugs • Preventing gas migration • Cementing calculations • Cementing equipment • Wellhead equipment

Well Design and Engineering – WDE

FOUNDATION 10-Day
Well Design and Engineering integrates all major well design technologies from pre-spud to TD. Participants are actively engaged in every aspect of the technical activities required to deliver a cost-effective well plan while also gaining valuable perspective on how the overall process should be managed in a dynamic team environment. The workshop content is often customized to address technologies and practices that may be specific to a project or operational situation. The single most important goal of the workshop is to draw the linkages between the design topics and to leave the participants with an understanding that each decision has influence on those that follow. Intensity mounts as the course progresses and each design topic builds on those that came before. Design iterations are commonly required, and seemingly unrelated decisions push and pull into situations of uncomfortable operational risk. On the last day, each team presents their completed design before the class and an invited panel of industry professionals. A scientific calculator is required and a laptop computer is strongly recommended.

DESIGNED FOR
Personnel responsible for planning, overseeing, and conducting casing and cementing operations; operator and service personnel.

YOU WILL LEARN HOW TO
- Use clays and polymers to achieve desired mud properties
- Apply water chemistry to the treatment of drilling fluids
- Perform complete water-based fluid as well as non-aqueous fluid tests using API Recommended Practice 13B/ISO 10414-1.1
- Evaluate and apply the results of an API drilling fluids report to maximize drilling operations and minimize non-productive time
- Identify critical drilling fluid contaminants and prescribe corrective treatments for effective drilling fluid management
- Calculate the chloride concentration of the drilling fluid in order to maintain wellbore stability
- Select non-aqueous fluids to meet drilling requirements and environmental concerns
- Manage non-aqueous drilling fluid systems
- Minimize formation damage to optimize well productivity
- Evaluate options for drilling fluid waste management

COURSE CONTENT
Composition and properties of water-based drilling fluids • Analysis of API water-base mud and non-aqueous drilling fluid report • Identification and treatment of drilling fluid contaminants • Composition and properties of water-based and non-aqueous drilling fluid systems • Selection of water phase salinity for borehole stability • API water-based and non-aqueous drilling mud tests • Adjustment of non-aqueous drilling fluid properties • Managing invert emulsion fluid systems: rig preparation and displacement • Non-aqueous drilling fluids designed for environmental compliance

Drilling Fluids Technology – DFT

FOUNDATION 5-Day
This course is designed for engineers and field personnel involved in the planning and implementation of drilling programs. The seminar covers all aspects of drilling fluids technology, emphasizing both theory and practical application. Hands-on laboratory exercises are included in the five-day Houston sessions. Drilling is a complex operation requiring the marriage of different technologies and disciplines. Today’s drilling personnel must have a working knowledge of all these disciplines in order to effectively drill a well. The course provides all the fundamentals necessary to drill a well whether it is a shallow well or a complex, high pressure well. Computer programs are used to design many aspects of the modern well and the course will provide the participants with the theory behind most programs along with practical implementation. Participants are required to bring a scientific calculator. For in-house courses, the instructors of this course will accept examples from your company for analysis as one of the demonstration exercises. Please contact PetroSkills Training for a list of the information and support data required, as well as the necessary load-time.

DESIGNED FOR
Drilling supervisors, drilling engineers, tool pushers, managers, and technical support personnel involved with drilling operations.

YOU WILL LEARN HOW TO
- Review drilling data and plan the well
- Incorporate completion plans into the drilling plan
- Drill a well cost effectively and maximize penetration rate
- Evaluate stuck pipe problems and avoid potential problems
- Evaluate and maintain drilling fluids
- Optimize hole cleaning
- Design casing, drill string and BOP/wellheads
- Evaluate and implement cementing programs
- Design and implement bit and hydraulics programs
- Incorporate directional drilling and deviation control
- Recognize and evaluate well control problems

COURSE CONTENT
Planning including requirements for the completion and testing, AFE preparation • HSE at the rig site • Cost control, evaluating alternative drilling methods and maximizing penetration rate • Hole cleaning, sloughing shale, lost circulation, stuck pipe and fishing operations • Drilling fluids • Lifting capacity of drilling fluids, pressure losses in the circulating system and ECD • Maximizing hydraulics in the planning phase and at the rig • Bit selection and application • Casing and drill string design, selection of casing sizes, BOP equipment • Cement, cement additives and displacement mechanics • Deviation control, directional drilling and horizontal drilling • Pressure control, routine and special problems • Project post analysis

Drilling Practices – DP

FOUNDATION 10-Day
The two-week course is designed for engineers and field personnel involved in the planning and implementation of drilling programs. The seminar covers all aspects of drilling technology, emphasizing both theory and practical application. Drilling is a complex operation requiring the marriage of different technologies and disciplines. Today’s drilling personnel must have a working knowledge of all these disciplines in order to effectively drill a well. The course provides all the fundamentals necessary to drill a well whether it is a shallow well or a complex, high pressure well. Computer programs are used to design many aspects of the modern well and the course will provide the participants with the theory behind most programs along with practical implementation. Participants are required to bring a scientific calculator. For in-house courses, the instructors of this course will accept examples from your company for analysis as one of the demonstration exercises. Please contact PetroSkills Training for a list of the information and support data required, as well as the necessary load-time.

DESIGNED FOR
Drilling supervisors, drilling engineers, tool pushers, managers and technical support personnel.

YOU WILL LEARN HOW TO
- Review drilling data and plan the well
- Incorporate completion plans into the drilling plan
- Drill a well cost effectively and maximize penetration rate
- Evaluate stuck pipe problems and avoid potential problems
- Evaluate and maintain drilling fluids
- Optimize hole cleaning
- Design casing, drill string and BOP/wellheads
- Evaluate and implement cementing programs
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2019-2020 Schedule and Tuition (USD)

COUNTRY | DATES | TUITION (USD)
---|---|---
Doha, Qatar | 1-12 Dec 2019 | $9990
Aberdeen, UK | 11-15 Nov 2019 | $5395+VAT
Dubai, UAE | 25 May-5 June 2020 | $7620+GST
Calgary, Canada | 7-15 Oct 2019 | $8999+HST
London, UK | 21-25 Sep 2020 | $5195+VAT

LAB VISIT
- Includes lab visit

2019-2020 Schedule and Tuition (USD)

COUNTRY | DATES | TUITION (USD)
---|---|---
Calgary, Canada | 25 May-5 June 2020 | $7620+GST
Doha, Qatar | 29 Nov-1 Dec 2020 | $9990
Dubai, UAE | 25 May-5 June 2020 | $7620+GST
Calgary, Canada | 29 Nov-5 Dec 2020 | $7620+GST
London, UK | 21-25 Sep 2020 | $5195+VAT
Aberdeen, UK | 11-15 Nov 2019 | $5395+VAT

Foundation 10-Day
LAB VISIT
- Includes lab visit

2019-2020 Schedule and Tuition (USD)

COUNTRY | DATES | TUITION (USD)
---|---|---
Dubai, UAE | 8-12 Dec 2019 | $9395+VAT
Calgary, Canada | 25 May-5 June 2020 | $7620+GST
Aberdeen, UK | 11-15 Nov 2019 | $5395+VAT

Foundation 10-Day
LAB VISIT
- Includes lab visit

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Casing Design Workshop – CDW

**Course Description**

**Intermediate**

Casing design is an integral part of a drilling engineer's work scope. This workshop provides a comprehensive overview of the design process, emphasizing the working stress approach currently used in the industry. Upon completion, participants will be able to select casing points, identify tubular requirements and loads, and design and specify the required casing string. Through a combination of lecture and extensive hands-on examples, the fundamentals of casing design are imparted to the attendees. Estimation of standard and special loads is covered in detail. Standard theories of strength and failure are discussed as well as advanced considerations for combined loads. In addition, safe handling, running, and hanging practices are covered. Participants will be furnished Dr. Byron's textbook, "Casing and Liners for Drilling and Completion," and computer spreadsheets to facilitate routine design calculations.

**You Will Learn How To**

- Select casing setting depths based on pore and fracture pressure data as well as other criteria
- Determine bit and bit sizes, and alternatives for contingencies and special clearance situations
- Identify and define load cases to meet specific design requirements
- Apply standardized design factors to meet specific design requirements and identify the controlling design load for each string in the well
- Use and understand casing and connection specifications and select casing to satisfy the controlling design requirements
- Understand the limits of single load specifications and adjust the basic design for combined loading effects
- Design casing for high pressure fracturing in horizontal wells
- Apply practical safe handling, running, and hanging practices

**Course Content**

- Goals of casing design
- Types of oilfield tubulars and connections
- Casing point selection and size determination
- Load estimation methods for casing and liners
- Typical design factors
- Theories of strength and failure (standard collapse, burst, axial; yield basis for combined loads)
- Design examples and exercises for all key loads and strings
- Casing handling, running, and hanging practices

**Blended Learning Workshop Structure**

- Virtual Instructor-led Training
- Online Learning Activity/Reading
- Exercise(s)

<table>
<thead>
<tr>
<th>Week</th>
<th>Hours (Approx)</th>
<th>Subject</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Opening Session: Overview</td>
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<tr>
<td></td>
<td>2.5</td>
<td>Introduction to Casing Design</td>
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<td>2</td>
<td>3</td>
<td>Select Casing Depth and Sizes</td>
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<tr>
<td></td>
<td>0.5</td>
<td>Select Casing Depth and Sizes</td>
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<tr>
<td>3</td>
<td>1</td>
<td>Calculate Collapse and Burst Loads</td>
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<td>3</td>
<td>Casing Load Determination</td>
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<tr>
<td>4</td>
<td>3</td>
<td>Make Preliminary Casing Selection, Adjust for Axial Loads</td>
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<tr>
<td></td>
<td>1</td>
<td>Make Preliminary Casing Selection, Adjust for Axial Loads</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Optional session - Creating Detailed Design for Portfolio Well</td>
</tr>
</tbody>
</table>

**TO LEARN MORE, VISIT**

PETROSKILLS.COM/CASING-DESIGN-WORKSHOP

See website for dates and locations.

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**Offshore Drilling Operations – ODO**

**Course Description**

This course is designed to familiarize personnel with unique aspects of offshore operations, structures, and vessels, and how drilling rigs interact with them over the life of an asset. All styles of rigs are analyzed, including bottom-supported and floating, mobile and fixed. Advantages and disadvantages of specific rig applications are considered when clarifying selection criteria, especially HSE performance, technical capabilities, and full-cycle efficiency.

**Designed For**

Operator staff including engineering, geoscience, operations supervision and technical support, and HSE, drilling contractor rig crew and technical support personnel, and service company and logistics support personnel.

**You Will Learn How To**

- Identify differences between onshore and offshore operations
- Clarify HSE and other risks associated with offshore operations (helicopter operations, boat operations, crane and deck operations, simultaneous operations, emergency response)
- Identify offshore structures commonly used in the oil and gas industry and their typical applications (bottom-supported or floating, fixed or mobile, moored or dynamically positioned, single use and multi-use structures)
- Identify various styles and designs of marine risers, subsea and surface BOPs, wellheads and trees
- Determine differences between various rig types and how they interact with offshore structures over the life of an asset (platform rigs, barge rig, jackup rig, semi-submersible, drillship)
- Identify operational effectiveness differences between various configurations of rig equipment, especially multiple activity centers
- Specify rig selection criteria
- Identify operational effectiveness differences between various configurations of rig equipment, especially multiple activity centers
- Specify rig selection criteria
- Clarify logistical drivers for drilling and completion operations

**Course Content**

- Surface and subsurface characteristics unique to the offshore environment
- HSE considerations for offshore and how it impacts planning, operations, and logistics
- Design options for offshore and onshore installations (platforms, FPSOs, risers, and pipelines; wellheads and trees; subsea; how these choices impact life of the project, especially multiple activity centers
- Specify rig selection criteria
- Clarify logistical drivers for drilling and completion operations
- Transition to completion/intervention (barrier maintenance, job sequencing, intervention options)

See website for dates and locations.
**Primary Cementing – Cementing I – PCE**

**FOUNDATION 4-Day**

Cementing is a key factor in the well construction plan. The base cement used in the designing of cement slurries may or may not be API class cement. The operating company and the service company personnel should have a good working knowledge of cement slurry design, cement additives, and placement procedures. The majority of the operating companies do not have cement testing laboratories; therefore, the laboratory testing is conducted by service companies. This course is designed to give a good understanding of how the cement slurries are tested and under what conditions depending on given well parameters. This course will also cover casing hardware (both internal and external), cement blending, cement additive blending (dry and/or liquid), on-site mixing equipment and job execution on location.

**DESIGNED FOR** Operating and service company personnel responsible for planning, designing, laboratory testing, overseeing, and executing cementing operations.

**YOU WILL LEARN HOW TO**
- Design cement slurries using API and/or field adapted procedures and laboratory testing procedures
- Use cement additives in designing cement slurries to improve job success and/or reduce overall job costs
- Design cement jobs to include casing, multi-stage, liner, and tie-back strings
- Design and perform remedial (squeeze) cement jobs to include selection of tools
- Design cement plug slurries and selection of tools to improve overall job success

**COURSE CONTENT**
Basic cements • Cement additives • Laboratory testing • Casing hardware • Blending equipment • Mixing equipment • Primary cementing • Remedial cementing • Plug cementing

**2019-2020 Schedule and Tuition (USD)**

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>Tuition</th>
</tr>
</thead>
</table>
| HOUSTON, US | 28 OCT-1 NOV 2019 | $4685+
| HOUSTON, US | 14-17 SEP 2020 | $4600+
| HOUSTON, US | 2-4 DEC 2019 | $3245+
| HOUSTON, US | 8-10 JUNE 2020 | $3310+

† includes lab visit

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**Stuck Pipe Prevention – Train Wreck Avoidance™ – SPP**

**FOUNDATION 3-Day**

The Stuck Pipe Prevention Train Wreck Avoidance workshop provides the most comprehensive coverage in the industry for understanding and preventing the underlying causes of Stuck Pipe, Wellbore Instability, Loss Circulation, and other sources of non-productive time (NPT) in drilling operations. The workshop also focuses on correct responses by individuals and teams, early warning signs, and minimizing the impact to drilling operations. Through world-class presentations, practical discussion, and the best reference and instructional materials available, delegates hone their knowledge of basic drilling technology and how it relates to avoiding NPT.

**DESIGNED FOR** Entire drilling and completions team, including operator, drilling contractor, and service companies. Agendas are typically customized to address topics relevant to the team.

**YOU WILL LEARN HOW TO**
- Identify mechanisms and risk factors that lead to stuck pipe incidents
- Anticipate, prevent, recognize, and resolve stuck pipe due to wellbore instability, hole cleaning, differential sticking, and wellbore geometry
- Assess mechanics of wellbore stresses and the impact on wellbore stability
- Analyze trends to identify early warning signs of developing wellbore problems
- Use hole cleaning factors in both vertical and deviated wellbores
- Apply mechanics of jars and how to use them effectively
- Implement effective drilling and tripping practices
- Make cost-effective choices in planning fishing operations

**COURSE CONTENT**
Stuck Pipe Prevention • Rock mechanics • Wellbore stress • Wellbore instability • Trend recognition • Hole cleaning • Differential sticking • Wellbore geometry • Tripping practices • Fishing practices

**INTERMEDIATE 5-Day**

Cementing is a very important phase of the well construction plan. Operating company personnel must have a good working knowledge of cements, cementing additives, and placement procedures. The use of temperature modeling, computer programs used for job design, and placement of the cement has caused some operating companies to retain a cement service company representative on a full-time basis to assist in the overall cementing operations. The operator is critical to the success of the job. This course covers the importance of the cement sheath integrity during the life of the well, which will require additional mechanical properties of the cement sheath than just the unconfined compressive strength in many cases. The parameters that the cement sheath will be subjected to must be considered. There are a number of joint industry projects addressing this area of work. The course covers the use of cement formulations, cement additives, casing hardware, cement blending, on-site mixing equipment, and a well-planned job procedure. Cementing guidelines that aid in overall job performance will be covered.

**DESIGNED FOR** Operating company and service company personnel responsible for planning, overseeing, and executing cementing operations.

**YOU WILL LEARN HOW TO**
- Use cementing additives properly to improve and reduce job costs
- Interpret laboratory test results
- Perform primary cementing operations to include: casing cementing, liner cementing, multi-stage cementing
- Conduct squeeze jobs and selection of squeeze tools
- Perform cement plug operations to improve overall job success
- Interpret cement sheath evaluation logs

**COURSE CONTENT**
The overall cementing operation • Primary cementing • Remedial cementing • Plug cementing • The use of cement additives • Laboratory testing • Casing hardware • Cement sheath integrity • Cement sheath evaluation • Mixing equipment • Special cement systems • Cement guidelines • Current documents

**2019-2020 Schedule and Tuition (USD)**

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>Tuition</th>
</tr>
</thead>
</table>
| HOUSTON, US | 28 OCT-1 NOV 2019 | $4600+
| HOUSTON, US | 2-4 DEC 2019 | $3245+
| HOUSTON, US | 8-10 JUNE 2020 | $3310+

† includes lab visit

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**Cementing Practices – Cementing II – CEP**

**INTERMEDIATE 5-Day**

Cementing Practices – Cementing II – CEP

Cementing is a very important phase of the well construction plan. Operating company personnel must have a good working knowledge of cements, cementing additives, and placement procedures. The use of temperature modeling, computer programs used for job design, and placement of the cement has caused some operating companies to retain a cement service company representative on a full-time basis to assist in the overall cementing operations. The operator is critical to the success of the job. This course covers the importance of the cement sheath integrity during the life of the well, which will require additional mechanical properties of the cement sheath than just the unconfined compressive strength in many cases. The parameters that the cement sheath will be subjected to must be considered. There are a number of joint industry projects addressing this area of work. The course covers the use of cement formulations, cement additives, casing hardware, cement blending, on-site mixing equipment, and a well-planned job procedure. Cementing guidelines that aid in overall job performance will be covered.

**DESIGNED FOR** Operating company and service company personnel responsible for planning, overseeing, and executing cementing operations.

**YOU WILL LEARN HOW TO**
- Use cementing additives properly to improve and reduce job costs
- Interpret laboratory test results
- Perform primary cementing operations to include: casing cementing, liner cementing, multi-stage cementing
- Conduct squeeze jobs and selection of squeeze tools
- Perform cement plug operations to improve overall job success
- Interpret cement sheath evaluation logs

**COURSE CONTENT**
The overall cementing operation • Primary cementing • Remedial cementing • Plug cementing • The use of cement additives • Laboratory testing • Casing hardware • Cement sheath integrity • Cement sheath evaluation • Mixing equipment • Special cement systems • Cement guidelines • Current documents

**2019-2020 Schedule and Tuition (USD)**

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>Tuition</th>
</tr>
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| HOUSTON, US | 28 OCT-1 NOV 2019 | $4600+
| HOUSTON, US | 2-4 DEC 2019 | $3245+
| HOUSTON, US | 8-10 JUNE 2020 | $3310+

† includes lab visit

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Deepwater Well Engineering – DWE

INTERMEDIATE  5-Day
This is a five-day course designed to promote understanding of well design and engineering capabilities unique to the deep water environment. Participants are actively engaged in the skills and activities required to deliver a cost-effective well plan, while also gaining valuable perspective on the role of a DW drilling engineer as a project manager. Suggested course prerequisites include 5 – 7 years’ experience in drilling and 2+ years in a well planning role for onshore or shallow water applications.

DESIGNED FOR
Experienced drilling engineers, drilling supervisors, and other petroleum professionals that are new to deep water (DW) who will become involved or responsible for DW well planning or oversight of non-operated DW wells. The ten day, Well Design and Engineering (WDE) course, or its equivalent, is highly recommended as a pre-requisite.

YOU WILL LEARN HOW TO
• Understand and manage technologies, practices, and design methodologies unique to the DW environment
• Analyze and utilize offset well data important for DW planning and well design
• Identify key issues and risks related to floating operations and rig selection
• Manage challenging logistics and unique equipment/supply chain issues

COURSE CONTENT
Floating drilling rigs and equipment • Unique challenges of deepwater • Shallow hazards • Deepwater planning cycle • Subsea BOP • Challenges of deepwater • Shallow hazards • Floating drilling rigs and equipment • Unique • Consider abandonment requirements in well • Clarify well design issues for both riserless • Develop designs for DW drill strings, BHAs, • Assess DW cementing technologies and • Identify well control constraints and calculate • Identify well control constraints and calculate • Develop specific casing design skills, including • Assess DW cementing technologies and • Develop designs for DW drill strings, BHAs, • Clarify well design issues for both • Clarify risks to well delivery; develop • Consider abandonment requirements in well design

Directional, Horizontal, and Multilateral Drilling – DHD

INTERMEDIATE  5-Day
This course builds a firm foundation in the principles and practices of directional drilling, calculations, and planning for directional and horizontal wells. Specific problems associated with directional and horizontal drilling such as torque, drag, hole cleaning, logging, and drill string component design are included. Participants will receive instruction on planning and evaluating horizontal wells based on the objectives of the horizontal well. The basic applications and techniques for multi-lateral wells are covered in the course. Additionally, they will become familiar with the tools and techniques used in directional drilling such as survey instruments, bottomhole assemblies, motors, steerable motors, and steerable rotary systems. Participants will be able to predict well behavior based on historical data and determine the requirements to hit the target.

DESIGNED FOR
Drilling, production and operations engineers, field supervisors, toolpushers, managers, and technical support personnel.

YOU WILL LEARN HOW TO
• Make survey calculations • Interpret TVD, polar, and rectangular coordinates, and vertical coordinate • Interpret dogleg severity and the problems associated with dogleg severity • Plan a two-dimensional directional well • Plan horizontal wells based on the objectives of well • Determine the best multi-lateral completion for an application • Determine declination and non-magnetic drilling collar selection • Apply the best survey instrument for the job • Directly drill with rotary BHAs, jetting, whipstocks, motor, steerable motors, and rotary steerable systems • Drill horizontally underbalanced • Interpret torque and drag and determine what factors will affect the torque and drag • Determine cementing requirements for directional wells

COURSE CONTENT
Applications for directional drilling • Directional profiles • Extended reach wells • Survey calculations and accuracy • Dogleg severity calculations and problems associated with doglegs • Planning directional and horizontal wells • Horizontal drilling methods and applications • Logging high angle wells • Hole-cleaning • Multi-laterals • Types of survey instruments • Tools used to deflect a wellbore • Torque and drag calculations • Cementing

Drill String Design and Optimization – DSD

INTERMEDIATE  5-Day
We have been presenting Drill String Design workshops for over 12 years for all types of operations around the world. We are constantly updating our materials to reflect the latest technology applications for both near-vertical and high-angle well designs while maintaining a thorough grounding in the fundamentals. Workshop content is often customized to address customer-specific operational situations and software applications. Course tuition includes a copy of DS-1 Drill String Design Standard 4th Ed. Vol.2.

DESIGNED FOR
Operator, drilling contractor, and service company engineers; drilling supervisors and superintendents. This is an intensive technical workshop. A calculator is required and a laptop is strongly recommended. Class size is typically limited to 18-20.

YOU WILL LEARN HOW TO
• Place the drill string design process in context with other planning and operational considerations
• Refresh underlying physics of drill string failures and mechanical properties of drill string materials
• Optimise performance properties of drill string components and how to apply design margins
• Design cost-effective BHAs and match them to your bit
• Gain specific application experience analyzing common load cases for both near-vertical and high-angle situations: tension loads, torque loads, combined tension-torque loads, fatigue loads, buckling loads
• Understand the basis for industry software design tools, including torque and drag, casing wear, and hydraulics
• Identify drilling tools and operational practices to reduce both torque and drag and casing wear
• Diagnose and mitigate vibration to reduce drill string damage and failure
• Optimize your drill string inspection program using the latest industry standards

Managing Wellsite Operations – MWC

INTERMEDIATE  5-Day
Managing Wellsite Operations is an interactive course that teaches participants to successfully manage wellsite operational plans, resource time management, and control measures. Interpersonal skills associated with the art of managing the Johari window through active listening and conducting crucial conversations is exercised throughout the course. This course brings together documented case histories of complex well operations and techniques to manage associated human factors. Participants will learn to build effective teams by assuming roles in class exercises of the company representative, rig contractor, and supplier personnel. Critical issues are identified to improve safety and reduce trouble time. Improving the facilitating of wellsite action planning, rig instructions, and work processes is exercised to improve operator, contractor, and service provider performance metrics.

DESIGNED FOR
Drilling and completion well supervisors, wellsite engineers, superintendents, operations managers, senior drilling contractor, and wellsite service personnel.

YOU WILL LEARN HOW TO
• Manage key relationships between surface – subsurface parts of the well program
• Manage technical and interpersonal skills associated with complex operations
• Manage self and rig team situational awareness and competences
• Manage communications to improve wellsites performance and build effective rig teams
• Manage the well monitoring program to reduce lost time risks

COURSE CONTENT
Rig team priorities and success measures • Focusing on wellsite challenges, distractions, and sensitivities • Managing reports and rig documentation • Rig meetings and drills • Well monitoring, limits, alarms, and suspension of operations • Reducing unscheduled events, technical limits, and drilling/completing well on paper techniques • Managing complex situations associated with tripping, displacements, and testing

2019-2020 Schedule and Tuition (USD)

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<th>Location</th>
<th>Dates</th>
<th>Tuition</th>
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2019-2020 Schedule and Tuition (USD)

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<td>24-28 AUG 2020</td>
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Explore the Unconventional.

PetroSkills delivers the knowledge and skills required for unconventional resource plays.

<table>
<thead>
<tr>
<th>PETROSKILLS UNCONVENTIONAL RESOURCE COURSES:</th>
</tr>
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<tbody>
<tr>
<td>• Advanced Hydraulic Fracturing</td>
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<tr>
<td>• Advanced Practices in Exploration and Development of Unconventional Reservoirs</td>
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<tr>
<td>• Applied Rock Mechanics</td>
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<tr>
<td>• Artificial Lift for Unconventional</td>
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<tr>
<td>• Basic Petroleum Engineering Practices</td>
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<tr>
<td>• Basic Petroleum Technology</td>
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<td>• Basin Analysis Workshop: An Integrated Approach to the Exploration and Evaluation of Conventional and Unconventional Resources</td>
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<td>• Coalbed Methane Reservoirs</td>
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<td>• Completions and Workovers</td>
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<tr>
<td>• Directional, Horizontal, and Multilateral Drilling</td>
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<td>• Evaluating and Developing Shale Resources</td>
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<tr>
<td>• Foundations of Petrophysics</td>
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<tr>
<td>• Gas Production Engineering</td>
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<td>• Horizontal and Multilateral Wells: Analysis and Design</td>
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<td>• Horizontal and Multilateral Wells: Completions and Stimulation</td>
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<tr>
<td>• Hydraulic Fracturing Applications</td>
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<td>• Introduction to Fiber Optics for Well Surveillance</td>
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<tr>
<td>• Introduction to Geomechanics for Unconventional Reservoirs</td>
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<tr>
<td>• Oil Well Pad Facilities for Facilities Engineers</td>
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<td>• Oil Well Pad Facilities for non-Facilities Engineers</td>
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<tr>
<td>• Onshore Gas Gathering Systems: Design &amp; Operations</td>
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<tr>
<td>• Operations and Development of Surface Production Systems</td>
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<td>• Petroleum Systems Analysis</td>
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<tr>
<td>• Petrophysics of Unconventional Reservoirs - PUR</td>
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<tr>
<td>• ProReservoir Management</td>
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<tr>
<td>• Production Operations 1</td>
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<td>• Production Operations 2</td>
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<tr>
<td>• Project Management in Upstream Field</td>
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<tr>
<td>• Petroleum Systems Analysis</td>
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<td>• Petroleum Technology - BPT</td>
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Breakthroughs in technology have placed unconventional resources at the center of the US E&P and Midstream sector growth. Interest continues to expand internationally as PetroSkills Unconventional Resource offerings enable participants to develop and hone critical competencies associated with the development and management of shale oil/gas, tight gas, and coalbed methane resource plays. Challenges with developing unconventional resources require enhanced project management expertise, more cost-effective testing and completion protocol, enhanced production operations techniques, and greater efficiencies in the process and treating of produced fluids and gases.

Count on PetroSkills to help build your organizational capability in the Unconventionals.
The Course Progression Matrix below shows how the Petrophysics courses in this section are structured within each topic, from Basic to Specialized. On either side of the Petrophysics section, you will see courses in associated disciplines for cross-training. These matrices are ideal for building training plans for early-career staff or finding the right course to build upon existing knowledge and experience.

**Foundations of Petrophysics - FPP** on page 24 and **Well Log Interpretation - WLI** on page 25 are essential as foundation Petrophysics courses. We are also happy to offer a new course, **Introductory Geomechanics for Unconventional Reservoirs – IGUR** on page 25.

The following instructors have been selected and approved by the PetroSkills Curriculum Network:

<table>
<thead>
<tr>
<th>Dr. Ahmed Badrulzaman</th>
<th>Mr. Paul Gardner</th>
<th>Mr. Steve Sadoskas</th>
<th>Dr. E.C. Thomas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Andrew Chen</td>
<td>Mr. Jeff Hamman</td>
<td>Dr. Robert Skpec</td>
<td>Dr. Jack Thomas</td>
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<tr>
<td>Dr. Amir Eleya</td>
<td>Mr. Bob Lippincott</td>
<td>Dr. John Sneider</td>
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<tr>
<td>Mr. Eric Foster</td>
<td>Mr. David Patrick Murphy</td>
<td>Dr. Carl Sanders</td>
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<tr>
<td>Ms. Laura Foulk</td>
<td>Mr. Roberto Peveraro</td>
<td>Dr. John Spivey</td>
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### Course Progression Matrix

<table>
<thead>
<tr>
<th>Geology and Geophysics</th>
<th>Petrophysics</th>
<th>Reservoir Engineering</th>
<th>Production and Drilling</th>
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<tr>
<td><strong>FOUNDATION</strong></td>
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<td>Petrophysics</td>
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<td>Geophysical data</td>
<td>SPINE-HOLE LOG INTERPRETATION</td>
<td>Natural Fracture Reservoirs (Pae 25)</td>
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<td>acquisition</td>
<td>DATA ACQUISITION AND FIELD STUDIES</td>
<td>CARSED HOLE LOG INTERPRETATION</td>
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<td>ROCK GEOMECHANICS</td>
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<td>Wireline Formation Testing and Interpretation (Pae 27)</td>
<td>Reservoir Characterization (Pae 32)</td>
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<td>Applied Rock Mechanics (Pae 27)</td>
<td>Production Logging (Pae 34)</td>
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<td>Well Log Interpretation (Pae 25)</td>
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<td>Coring and Core Analysis (Pae 25)</td>
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<td>Introduction to Geomechanics for Unconventional Reservoirs (Pae 25)</td>
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<td>Reservoir Engineering for Other Disciplines (Pae 30)</td>
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<td>Operating Geology (Pae 10)</td>
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<td>Structural and Stratigraphic Interpretation of Deposits and Borehole-Mapping Logs (Pae 27)</td>
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<td>Capillary in Rocks (Pae 21)</td>
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<td>Integration of Rocks, Logs and Test Data (Pae 26)</td>
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| **2019-2020 Schedule and Tuition (USD)**

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<th>Location</th>
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FPP is also available as a self-paced, virtual course which is an enhanced version of the face-to-face public session.

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## 2019-2020 Schedule and Tuition (USD)

### Well Log Interpretation – WLI

<table>
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<td>Denver, US</td>
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### Coring and Core Analysis – CCA

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### Mudlogging – MDLG

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### Introduction to Geomechanics for Unconventional Reservoirs – IGUR

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<td>Houston, US</td>
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</table>
Introduction to Fiber Optics for Well Surveillance – IFOS

FOUNDATION 3-Day

This course will give attendees an introduction to fiber optics sensing in reservoirs and wells. Attendees will gain an awareness of the types of fiber available, how it can be deployed, the range of measurements that can be made and how these can be applied to resolving common well and reservoir issues. The emphasis in the course will be on distributed measurements rather than point measuring sensors. The course will discuss the differences between the main types of fiber available, the underlying physics of the measurements, and the principles of operation for the different measurements and sensor types.

Attendees will learn about the variety of conveyance and deployment methods for fiber deployment in wells. Hypothetical examples will be used to illustrate the different deployment cases. The course will give the participant an understanding of the type of measurement available and how the operator can use fiber measurements in combination with other data to help design an integrated surveillance program to diagnose common well and reservoir performance issues. Case examples will be used within discussion groups to explore the measurement choices.

The participant will gain an understanding of the variety and range of fiber optic interrogation units available, along with the flexibility in setup that can be applied to help enhance the system’s ability to identify specific well and reservoir issues. Examples will be shown of how this data can be integrated with other data forms to help optimise the interpretation process and generate robust well and reservoir diagnosis.

DESIGNED FOR

Petroleum engineers, production engineers, petrophysicists and reservoir engineers and managers who may be making technology and tool selection decisions.

YOU WILL LEARN HOW TO

• Select the appropriate fiber deployment options for your well
• Select the appropriate measurements for well and reservoir evaluation
• Determine the optimal fiber interrogation units for your application
• Design a basic program for a fiber surveillance strategy
• Understand the physics behind distributed fiber measurements
• Perform basic distributed temperature and acoustic interrogations
• Integrate fiber with other data forms to generate robust well diagnostics.

COURSE CONTENT

Basics of fiber construction and manufacture • How fiber is selected for downhole service • The types of measurement that are commonly made with fiber • The differences between point measurements and distributed measurements • Different fiber deployment methodologies • Selection and performance characteristics of optical interrogation units • Principles behind distributed temperature interrogation (DTI) • Principles of distributed acoustic interrogation (DAI) • Integration of fiber data with other data forms • Case examples with different fiber applications

2019-2020 Schedule and Tuition (USD)

ABERDEEN, UK 19-21 OCT 2020 $3895+VAT
HOUSTON, US 27-29 July 2020 $3310

HOUSTON, US 1-15 NOV 2019 $4425
10-14 AUG 2020 $5235+VAT

London, UK 20-23 APR 2020 $4040

Denver, US 20-23 APR 2020 $4040

Dubai, UAE 3-6 Nov 2020 $4805+VAT

Nuclear Magnetic Resonance (NMR) Petrophysics – NMRF

INTERMEDIATE 4-Day

NMR today is a must-have technology for many companies because of the value-added to formation-evaluation. Some of the applications include: Matrix-independent, ‘sourceless’ porosity, low-resistivity, low-contrast, fresh-water reservoirs, and carbonates. NMR completes the formation-evaluation story for many companies now using the technology regularly because it either validates conventional log and test data or it independently provides an answer unavailable from other sources. Certainly, in many instances, the absence NMR data too frequently leaves the formation-evaluation story incomplete and uncertain. This four-day, PetroSkills NMR Petrophysics course will provide geoscientists and engineers with a basic to intermediate skill-level for using NMR data in reservoir characterization workflows. Course design is a balance between information transfer, discussion, training, and practical exercise. The expectation is that participants will return to their jobs with the skill-set shown below.

DESIGNED FOR

Geoscientists and engineers interested in learning how NMR technology fits within the reservoir characterization/reservoir modelling workflow and how to use the data to best advantage.

YOU WILL LEARN HOW TO

• Understand how NMR works for petrophysical applications
• Understand the language of NMR technology (minominics)
• Use NMR data for core and log applications
• Understand how NMR fits into predictive rock-type schemes
• Plan core and log acquisition programs
• Identify data quality indicators and what they mean
• Use core data for log calibration
• Use contractor deliverable to produce an interpretation
• Fit NMR data with conventional log data
• Process raw data

COURSE CONTENT

Basics of NMR technology • NMR Core Analysis
• Rock typing from NMR core data and its relationship to logs • Pore geometry and what it means for the interpretation of NMR data • NMR logs • Job planning • Log quality control • Working with NMR data (various exercises throughout the course)

2019-2020 Schedule and Tuition (USD)

Denver, US 20-23 APR 2020 $4040

Dubai, UAE 3-6 Nov 2020 $4805+VAT

Hong Kong, China 6-11 MAR 2020 $5595+VAT

HOUSTON, US 10-13 AUG 2020 $4050

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Any course is available in-house at your location. Contact us today.
**Applied Rock Mechanics – ARM**

- **SPECIALIZED 5-Day**

  Understanding the stress, strain, and failure mechanics of rocks and their response to earth stresses can lead to enormous economic benefits in all phases of petroleum reservoir development. Over the last ten years, rock mechanics has emerged as a critical technology capable of lowering financial risk in drilling and well completions, qualifying exploration and development opportunities, and improving hydrocarbon productivity. Rock mechanics is a vital decision-making tool for high-angle and horizontal drilling, unconventional reservoirs, deepwater drilling, massive hydraulic fracturing, and completing poorly cemented formations. Borehole instability, casing shear, subsidence, stuck pipe, and sand control issues cost the petroleum industry many billions of dollars annually. New theory and experimental methods as well as straightforward computer modeling techniques have provided insight into developing prospects in complex geological basins and harsh drilling environments. In Applied Rock Mechanics, students are provided with basic theory, laboratory demonstrations, hands-on exercises, and computer modeling demonstrations. In addition to a comprehensive manual, software is provided for the student to perform wellbore stability calculations. The practical application of rock mechanics is emphasized. Applied Rock Mechanics is designed to familiarize engineers and geoscientists with the necessary tools for immediate field application.

**DESIGNED FOR**

- Petrophysicists, geologists, geophysicists, and team members involved in reservoir characterization.

**YOU WILL LEARN HOW TO**

- Interpret dipmeters and borehole-imaging logs and understand the physical principles behind them
- Detect and quantify faults and fractures, determine in situ stress orientations, improve horizontal well placement, provide input into flow simulations
- Determine paleocurrent orientations, define stratigraphic compartments, quantify wavy porosity, detect thin beds, analyze depositional characteristics, interpret image facies
- Apply image data in reservoir characterization

**COURSE CONTENT**

- Applications and types of dipmeters and borehole images
- Data acquisition and processing
- Quality control and artifacts
- Generalization and use of stereonets and rose diagrams
- Quantitative analysis using cumulative dip plots, vector plots, and SCAT plots
- In situ stress from borehole breakout and drilling induced fractures
- Horizontal wells
- Identification and classification of fractures, faults, sub-seismic scale faults, micro-faults, and unconformities
- Fracture spacing and wellbore bias correction
- Thin bed analysis and net-sand counts
- Carbonate porosity and facies interpretation
- Sedimentology from borehole images: burrows, cross beds, scourcd surfaces, slumps
- Determination of paleocurrent directions
- Interpretation of borehole images in various depositional settings
- Application of image data in geocellular modeling and reservoir characterization
- Integration of image data with core, mapping, seismic, petrophysical, and production data

**2019-2020 Schedule and Tuition (USD)**

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<td>HOUSTON, US</td>
<td>13-17 APR 2020</td>
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† includes field trip

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**Cased Hole Formation Evaluation – CH**

- **SPECIALIZED 4-Day**

  This course teaches skills necessary to practice the art and science in accurately determining remaining hydrocarbons using modern dual-detector and emerging multi-detector pulsed neutron (PND) tools. The latter can compute multiple petrophysical parameters simultaneously and delineate gas better, especially in low porosity, but also to add data and interpretation complexity. The course discusses interpretation-to-interpretation techniques used by various users and thus offers an insight into their effectiveness in conditions of increasing wellbore and formation complexities. The user will gain a better understanding of why tools from different service companies, often recording similar raw data in near-identical conditions, may differ significantly in their predictions. The course will help users of the technology make targeted tool choices, plan logging jobs better, and perform in-house interpretation if needed.

**DESIGNED FOR**

- Geologists, formation evaluators, specialists, completion engineers, and production engineers, and managers who may be making technology- and tool-choice decisions.

**YOU WILL LEARN HOW TO**

- Determine adequacy of PNC capture vs. C/O logging methods for saturation calculation, especially through complicated wellbores and in complex formations
- Calculate water and steam saturations from Pulsed Neutron Capture (PNC) Logs
- Correct petrophysical calculations for the influence of shaliness
- Distinguish gas/steam from liquids
- Compute oil saturation directly from Carbon/Oxygen technique
- Locate water entry and judge zonal communication
- Judge where specialty methods, such as Log-Inject-Log, to estimate remaining oil versus residual oil saturation, pseudo-density, etc., may not work
- Make appropriate tool choices
- Perform interpretation QC and plan logging jobs

**COURSE CONTENT**

- Basics and application of nuclear logging in general (briefly) and cased-hole logging in particular
- Attributes of various modern dual-detector and emerging multi-detector cased-hole logging tools used in the industry
- Cased-hole application of pulsed neutron capture (PNC) methods in clean and shaly formations, carbon/oxygen logging in low or variable salinity conditions in water and steam floods where PNC methods do not work, and direct neutron (FNM) methods to Locate oil, gas/luid, or steam/liquid contacts
- Compute water, gas/steam/saturation (in steam floods), and residual saturation using log-inject-log methods
- Application of above in open-hole completions
- Differences in saturation interpretation methods across vendors
- Oxygen activation to locate water entry
- Job planning and best practice parameters for successful monitoring

**2019-2020 Schedule and Tuition (USD)**

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**Wireline Formation Testing and Interpretation – WFT**

- **SPECIALIZED 5-Day**

  Formation testing and sampling tools (FTTs) with wireline and while-drilling are widely used in exploration/appraisal and reservoir development projects. Over the past two decades, modern tools, such as MDT, PK, RTG, and FRF, have emerged to become one of the critical formation evaluation means in drilling projects with high risk/cost and high reward environments. In recent years, FT tools while-drilling provide wireline formation testing at earlier timing, flexible operational sequences in complicated wellbores access to reservoirs. FT pressure data and fluid samples are acquired for predicting hydrocarbon resource sizes and accessing key development uncertainties. This course is designed to satisfy the interdisciplinary needs of geoscientists, petrophysicists, and reservoir engineers with an increasing use of FT data. Practical and hands-on exercises are worked in the class.

**DESIGNED FOR**

- Geoscientists, petrophysicists, wellsite supervisors, reservoir engineers, and geodata technicians engaged in multiphase flow evaluation and development teams engaging in explorations, appraisals, and field development activities.

**YOU WILL LEARN HOW TO**

- Apply formation testing and sampling technologies, applications, and limitations
- Understand how FTTs work, configure tool strings and design/ plan a test program
- Perform QAVC pressure and sampling data in real-time
- Interpret pressure gradient data for fluid densities and contact levels
- Understand reservoir connectivity/continuity and compartmentalization
- Quantify uncertainties of data interpretation results
- Interpret graphical techniques (scatterplot, excess pressures, normalization)
- Design and interpret Mini-DST and VIT data

**COURSE CONTENT**

- Why formation testing and sampling • How FT tools work; measurement principles; test types; drawdown mobility; data quality QAVC
- Pressure fluid gradient and contact level interpretation principles • Graphical pressure interpretation techniques: scatter plot for gradient, PML, and compositional gradient; excess pressure plot for compartmentalization; normalization plot for depleted reservoir
- Multiphase well pressure trends for reservoir characterization, fluid continuity, and extent
- Qualification and quantification of interpretation results • Mud filtration phenomena dynamics; dynamic gradient; supercharging; wettability/capillary effects • Optical property measurement of reservoir fluids and contamination control; sampling principles and fluid sample QA/QC procedures; in-situ fluid PVT analysis • Permeability test; mini-DST and VIT; practical aspects of well productivity and deliverability potential estimates

**2019-2020 Schedule and Tuition (USD)**

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<td>HOUSTON, US</td>
<td>30 MAR – 3 APR 2020</td>
<td>$4050</td>
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<tr>
<td>LONDON, UK</td>
<td>24-28 AUG 2020</td>
<td>$5353+VAT</td>
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The Course Progression Matrix below shows how the Reservoir Engineering courses in this section are structured within each topic, from Basic to Specialized. On either side of the Reservoir Engineering section, you will see courses in associated disciplines for cross-training. These matrices are ideal for building training plans for early-career staff or finding the right course to build upon existing knowledge and experience.

**Basic Reservoir Engineering – BR** leads off the section as a perfect basic overview for anyone working with reservoir definition, development, or production. The next course, **Applied Reservoir Engineering – RE** on page 29, represents the core of our reservoir engineering program and the foundation for all future studies in this subject.

The following instructors have been selected and approved by the PetroSkills Curriculum Network:

<table>
<thead>
<tr>
<th>Mr. Jeff Aldrich</th>
<th>Ms. Greg Enster</th>
<th>Dr. Chun Huh</th>
<th>Dr. Grant Robertson</th>
<th>Dr. John Spivey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Rosalind Archer</td>
<td>Dr. Chris Galas</td>
<td>Dr. Russell Johns</td>
<td>Mr. Deborah Ryan</td>
<td>Dr. Dave Waldren</td>
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<tr>
<td>Dr. Assaad Bahar</td>
<td>Mr. Curtis Geuze</td>
<td>Dr. Monian Kekar</td>
<td>Dr. Helmy Sayhoun</td>
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<tr>
<td>Dr. Rodolfo Camacho-Velazquez</td>
<td>Dr. Mason Gomez</td>
<td>Mr. Stanley Knefteser</td>
<td>Mr. Richard Schoeder</td>
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<tr>
<td>Dr. Adel Datta-Gupta</td>
<td>Dr. Tony Grimsberg</td>
<td>Dr. Larry W. Lake</td>
<td>Mr. John Stee</td>
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<tr>
<td>Dr. Mouden Delfadah</td>
<td>Dr. Greg Hazlett</td>
<td>Dr. Kishore Komanty</td>
<td>Mr. Rod Selde</td>
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<tr>
<td>Dr. Iskander Dvashiev</td>
<td>Mr. Richard Henry</td>
<td>Mr. David Patrick Murphy</td>
<td>Dr. George Slater</td>
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</table>

**Course Progression Matrix**

**Reservoir Engineering**

- **Geology and Geophysics**
  - Applied Rock Mechanics (Page 27)
  - Wireline Formation Testing and Interpretation (Page 27)
- **Petrophysics**
  - Integration of Probes, Logs and Test Data (Page 26)
  - Production Logging (Page 44)
  - Capillarity in Rocks (Page 31)
  - Petrophysics of Unconventional Reservoirs (Page 25)
- **Modelling and Simulation**
  - Uncertainty: Applications to Reservoir Simulation, Characterization and Management (Page 25)
  - Naturally Fractured Reservoirs: Geologic and Engineering Analysis (Page 34)
  - Coiled Tubing: Reservoirs; Advanced Analysis Techniques (see version)
  - Chemical Enhanced Oil Recovery Fundamentals (Page 30)
  - Enhanced Oil Recovery with Gas Injection (Page 31)
- **Production and Drilling**
  - Formation Damage: Causes, Prevention and Remediation (Page 42)
  - Petroleum Project Management (Page 56)
- **Health, Safety, Environment**
  - Applied Environmental Management Systems (Page 46)
  - Fundamentals of Process Safety (Page 47)
  - Risk Based Process Safety Management (Page 48)
- **Petroleum Business & Professional Development**
  - Petroleum Business (Page 30)
  - Applied Petroleum Engineering (Page 30)
  - Economics of Worldwide Petroleum Production (Page 30)
  - Production Technology for Other Disciplines (Page 30)
  - Team Leadership (See Website)

Basic: Basic Reservoir Engineering (Page 29)

- Basic Petroleum Engineering Practices (Page 6)

Intermediate: Applied Reservoir Engineering (Page 30)

- Well Test Design and Analysis (Page 30)
- Reservoir Fluid Properties; Preparation for Reservoir Engineering and Simulation Studies (Page 37)
- Applied Reservoir Engineering (Page 29) (Available as Virtual/Blended course)
- Reservoir Engineering for Other Disciplines (Page 30)
- Evaluating and Developing Shale Resources (Page 27)

Specialized: Advanced Reservoir Engineering (Page 29)

- Reservoir Management (Page 33)
- Reservoir Characterization (Page 33)
- Reservoir Management for Unconventional Reservoirs (Page 33)
- Reservoir Simulation Strategies (Page 33)
- Reservoir Modeling of Heavy Oil Reservoirs (Page 33)
- New Opportunities in Old Fields (Page 25)
- Integrated Reservoir Modeling (Page 33)
- History Matching and Reservoir Optimization (Page 32)
- Reservoir Simulation: Applications to Reservoir Characterization and Management (Page 25)
- Reservoir Fluid Properties: Preparation for Reservoir Engineering and Simulation Studies (Page 37)
- Reservoir Engineering for Other Disciplines (Page 30)
- Enhanced Oil Recovery Fundamentals (Page 30)
- Enhanced Oil Recovery: Waterflooding (Page 30)
- Enhanced Oil Recovery: CO₂ Injection (Page 30)
- Reservoir Management (Page 33)
### Basic Reservoir Engineering – BR

**BASIC 5-Day**

This course is designed to help the participants develop a more complete understanding of the characteristics of oil and gas reservoirs, from fluid and rock characteristics through reservoir definition, delineation, classification, development, and production. Data collection, integration, and application directed toward maximizing recovery and Net Present Value are stressed. Basic reservoir engineering equations are introduced with emphasis directed to parameter significance and an understanding of the results.

### Designed for

Geologists, geophysicists, engineers, engineering trainees, technical managers, technical assistants, technicians, chemists, physicists, technical supervisors, service company personnel, sales representatives, data processing personnel, and support staff working with reservoir engineers and wanting to understand the process of reservoir definition, development, and production, or engineers newly placed in a reservoir engineering position that want a first reservoir engineering course at the Basic level.

### You Will Learn

- How to collect and analyze the data needed for reservoir engineering tasks
- Fundamentals of fluid flow in porous media
- How reservoirs are characterized by fluid type and drive mechanisms
- The basis for reservoir fluid distribution
- About oil and gas well performance and pressure buildup analysis
- About oil displacement and optimizing reservoir performance
- The basics of enhanced oil recovery
- How oil and gas in place can be estimated and recovery predicted

### Course Content

- Reservoir fluid properties
- Coring practices and reservoir rock properties
- Fundamentals of fluid flow
- Reservoir fluid distribution
- Reservoir classification
- Reservoir drive mechanisms
- Oil and gas well performance, including inflow and outflow concepts
- Pressure buildup analysis
- Oil displacement concepts
- Estimation of oil-in-place and gas-in-place
- Recovery techniques

### Applied Reservoir Engineering – RE

**FOUNDATON**

This course represents the core of our reservoir engineering program and the foundation for all future studies in this subject. Numerous engineering practices are covered, ranging from fluid and rock properties to simulation and field development planning. Proficiency in using Microsoft Excel to perform calculations and make graphs is desirable. Reservoir engineering is also presented in the context of a modern, multi-disciplinary team effort using supporting computer technology. An extensive manual and set of references are included. Are you ready to attend a PetroSkills Applied Reservoir Engineering course training class, school or short course? This is the best time to register.

### Designed for

Engineers or geoscientists who will occupy the position of reservoir engineer, and any other technically trained individual who desires a more in-depth foundation in reservoir engineering than is offered in the one-week Basic Reservoir Engineering and Reservoir Engineering for Other Disciplines courses.

### You Will Learn How To

- Determine critical properties of reservoir rocks-fluid (oil, water, and gas) PVT relationships
- Calculate hydrocarbons initially in place using several methods
- Assess reservoir performance with dynamic techniques
- Determine the parameters that impact well/reservoir performance over time
- Analyze well tests using standard well testing principles and techniques
- Characterize aquifers
- Determine reservoir drive mechanisms for both oil and gas reservoirs
- Apply oil and gas field development planning principles
- Forecast production decline

### Course Content

- Asset life cycles, professional roles, hydrocarbon reservoir descriptions
- Porosity, permeability, compressibility, capillary pressure, wettability and relative permeability, averaging reservoir property data
- Phase behavior of reservoir fluids, gas properties, oil properties, water properties, PVT sampling, and understanding PVT laboratory reports
- Calculate original hydrocarbons in-place with volumetric methods, build hydrocarbon volume vs depth relationships, and review reserve booking guidelines
- Oil recovery material balance, Hlavina-Odel method, gas material balance, volumetric, compaction, water drive, and compartmentalized reservoirs
- Oil well testing: radial flow, theory, wellbore storage and skin, drawdowns, buildups, curve shapes, type curve solutions, pseudo steady state, steady state, average pressure estimates, PI and IPR relationships
- Gas well testing: pressure, pressure squared, real gas pseudo pressure solutions, rate sensitive skins, multi-rate testing, gas well deliverability
- Hurst van Everdingen, Carter Tracy, and Fetkovitch methods of aquifer analysis and description
- Immiscible displacement: fluid displacement process, fractional flow, Buckley Leverett, Welege, Description of coring, cusping, and over/under running, critical rates calculations, breakthrough times, horizontal well applications
- Gas reservoirs: volumetric, water drive and condensate drive, oil drive, gas cap expansion, combination drive, naturally fractured and critical reservoir fluid reservoirs
- Gas field developments: characteristics, deliverability issues, contracts, planning tools - field developments: development phases, reservoir characterization, sweep and recovery, production policies
- Reservoir simulation: workflow simulators
- Various simulation models, simulator types, setting up a simulator model

### 2019-2020 Schedule and Tuition (USD)

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*plus computer charge

### 2019-2020 Schedule and Tuition (USD)

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

See website for dates and locations.

PETSUKILLS.COM/BR-BLENDED

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

See website for dates and locations.

PETSUKILLS.COM/RE-BLENDED
## Reservoir Engineering for Other Disciplines – REO

### FOUNDATION
5-Day

This course gives the non-reservoir engineer a better understanding of reservoir engineering practices and limitations. The course is designed to provide a good understanding of reservoir engineering processes, the required data, and the limitations on the engineers' analysis and interpretations. The course also provides persons who are already well trained in the petroleum industry technical disciplines with an understanding of the current state-of-the-art practice of reservoir engineering.

### DESIGNED FOR
Engineers and geoscientists now working in an asset environment where they need to better understand the practices and limitations of the methods and procedures employed by the reservoir engineers with whom they work. Participants should have three or more years of technical experience in the upstream petroleum industry.

### YOU WILL LEARN HOW TO
- Utilize the tools and techniques of the reservoir engineer
- Apply the principles of reservoir engineering
- Develop reservoir, well performance and asset management options

### COURSE CONTENT
Distribution of Reservoir Properties: structure, fluid contacts, water saturation, and pressure
- Rock Properties: porosity, permeability, capillary pressure, and relative permeability
- Fluid Properties: phase behavior of reservoir fluids; properties of gas, oil, and water; PVT Sampling; and PVT laboratory reports
- Volumetric Calculation of Initial Hydrocarbons in Place: oil in place, gas in place, addressing uncertainty using probabilistic methods, reservoir booking practices, and reservoir recovery efficiencies
- Material Balance Methods: oil reservoir material balance, Havlena-Dodin method, gas material balance, volumetric, compaction, water drive, and compartmentalized reservoirs
- Fluid flow and well performance: radial and linear flow, transient, pseudosteady state, steady state flow regimes, productively of vertical and horizontal wells
- Aquifer influx and immiscible Displacement.
- Fluid displacement process, fractional flow, Buckley-Leverett, Weller, water under running, and gas overriding
- Coning and Cusing: description of process, critical rates, using horizontal wells
- Reservoir Types and Drive Mechanisms: gas reservoirs; volumetric, water drive and compaction drive; oil reservoirs
- Solution gas drive, water drive, water flood, gas cap expansion, combination drive, naturally fractured and critical reservoir fluid recovery
- Reservoir Simulation: why simulate, types of simulators and simulation models, setting up a simulation model, conducting a simulation study
- Field Development Planning: characteristics, planning tools, deliverability issues, determining a well count and rate forecast

### 2019-2020 Schedule and Tuition (USD)

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<td>The Hague, NL</td>
<td>21-25 Sep 2020</td>
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## Well Test Design and Analysis – WTA

### FOUNDATION
5-Day

This course stresses practical application of well test theory to design and interpret pressure transient tests. An integrated approach to well test interpretation is emphasized throughout the course. Class exercises involving hand calculations and simple spreadsheet applications will reinforce the concepts illustrated by both synthetic data sets and real field examples. Participants will be able to apply the knowledge and skills they gained in this course to their job assignments upon course completion.

### DESIGNED FOR
Engineers and geoscientists who want to understand well testing principles and interpretation techniques to design, analyze, report, evaluate results or intelligently participate in the well testing process. Previous experience in production and/or reservoir engineering is recommended. Previous experience in well testing is helpful but is not required.

### YOU WILL LEARN HOW TO
- Analyze drawdown and buildup tests in oil and gas wells
- Identify flow regimes using the log-log diagnostic plot
- Describe characteristic pressure behavior for common bounded reservoir geometries
- Identify well test data affected by various wellbore and near-wellbore phenomena
- Design a well test to meet desired objectives
- Estimate average drainage area pressure
- Analyze well tests in hydraulically fractured wells, horizontal wells, and naturally fractured reservoirs

### COURSE CONTENT
Introduction to well testing
- Radial flow
- Log-log type curve analysis
- Pressure transient testing for gas wells
- Flow regimes and the log-log diagnostic plot
- Bounded reservoir behavior
- Wellbore and near-wellbore phenomena
- Well test interpretation
- Well test design
- Estimation of average drainage area pressure
- Hydraulically fractured wells
- Horizontally fractured wells
- Naturally fractured reservoirs

### 2019-2020 Schedule and Tuition (USD)

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## Enhanced Oil Recovery Fundamentals – ORE

### FOUNDATION
5-Day

One-third to one-half of the original oil-in-place may remain in a reservoir as it reaches abandonment due to its economic limit. This course covers the recovery improvement possibilities that present themselves at all stages in the reservoir life cycle. It thereby enables one to timely select the most beneficial method and set realistic expectations on production behavior changes and recovery improvement. The impacts of the selected method on personnel training, technology transfer, and facility modification are also covered. It utilizes case studies from projects around the world; their analyses and interpretations aid the participant in understanding of the material.

### DESIGNED FOR
Engineers responsible for sustaining or increasing oil and gas production and enhancing oil recovery from reservoirs under primary depletion, pressure maintenance by water or gas injection, and enhanced oil recovery schemes. Also, other professionals and managers participating in the above effort on a multi-disciplinary team who need to gain a better understanding of various conventional and emerging technologies.

### YOU WILL LEARN HOW TO
- Develop recovery expectations from reservoirs under primary depletion or pressure maintenance utilizing water or immiscible gas injection
- Determine reasons and causes for less than theoretically possible recovery
- Choose appropriate methods for improving oil recovery from reservoirs under primary depletion or pressure maintenance utilizing water or immiscible gas injection
- Enhance oil recovery beyond waterflooding or immiscible gas injection project
- Understand mechanisms responsible for recovery improvement in various EOR methods
- Important variables that control recovery improvement in various EOR methods
- Select EOR methods using screening criteria
- Use designing procedures - theoretical, laboratory tests, and field pilots
- Plan and implement EOR processes employing the proper empirical, analytical, and simulation tools
- Forecast rate-time and recovery-time behavior under various EOR methods and analyze reservoir performance
- Assess risks and ways to minimize their impact on project economics
- Monitor reservoir/well behavior

### COURSE CONTENT
Reservoir life cycle and recovery process
- Life under primary recovery phase: recovery targets and ways to improve
- Life under secondary recovery phases: immiscible gas injection, waterflooding, recovery targets, ways to improve
- Life under enhanced oil recovery phase: increasing complexity, cost/benefit consideration
- Miscellaneous methods
- Chemical methods
- Thermal methods
- Technical challenges: current and future R&D directions, facilities modifications and personnel training
- Understand the practices and limitations of the upstream petroleum industry technical disciplines employed by the engineers who are already well trained in the other disciplines who are responsible for the design, implementation and management of chemical EOR projects. However, the contents of this course are also beneficial for other technical personnel with at least a B.S. degree and some experience in reservoir engineering. The course benefits individuals who are responsible for the design, implementation and management of chemical EOR projects. However, the contents of this course are also beneficial for other technical personnel with at least a B.S. degree and some experience in reservoir engineering.

### 2019-2020 Schedule and Tuition (USD)

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## Chemical Enhanced Oil Recovery Fundamentals – EORC

### SPECIALIZED
5-Day

This course gives an overview of oil recovery processes that involve the use of polymer, surfactant, alkali, gel, and a combination of them. Furthermore, it reviews reservoir engineering fundamentals and describes the principles for a variety of chemical enhanced oil recovery processes. The current status of these technologies is discussed and guidelines are presented for initial screening for each process correspondingly to particular field conditions. Examples of laboratory and field performances are presented. Simulation exercises are used for each process.

### DESIGNED FOR
Engineers, geoscientists, managers, personnel or other technical personnel with at least a B.S. degree and some experience in reservoir engineering. The course benefits individuals who are responsible for the design, implementation and management of chemical EOR projects. However, the contents of this course are also beneficial for other technical personnel with at least a B.S. degree and some experience in reservoir engineering. The course benefits individuals who are responsible for the design, implementation and management of chemical EOR projects. However, the contents of this course are also beneficial for other technical personnel with at least a B.S. degree and some experience in reservoir engineering. The course benefits individuals who are responsible for the design, implementation and management of chemical EOR projects. However, the contents of this course are also beneficial for other technical personnel with at least a B.S. degree and some experience in reservoir engineering. The course benefits individuals who are responsible for the design, implementation and management of chemical EOR projects.

### YOU WILL LEARN HOW TO
- Evaluate benefits and limitations of different chemical EOR processes
- Select laboratory tests and perform scoping simulations for pilot and field designs
- Screen these techniques for particular fields
- Set expectations on incremental oil recoveries and the economics
- Determine impact of these recovery techniques on production facilities and personnel training

### COURSE CONTENT
Review of areal and vertical sweep efficiencies
- Heterogeneity and vertical sweep efficiency
- Residual oil saturation
- Enhanced Oil Recovery (EOR) methods
- Chemical methods
- Polymer flooding - polymers and their properties
- Laboratory screening - Polymer flood field design and example field results
- Overview of reservoir simulators for polymer flooding
- Example simulations - Surfactant/polymer (SP) methods
- Surfactant-brine-oil phase behavior
- Microemulsion properties
- Capillary desaturation and oil mobilization
- Laboratory screening - Field examples and designs
- Reservoir simulators for ASP - Example simulations
- Alkaline/Surfactant/Polymer (ASP) methods
- Effect of alkali on phase behavior
- Laboratory screening - Field examples and designs
- Reservoir simulators for ASP - Example simulations
- Performance Evaluation Control/ Water Shutoff Methods - Overview of conformance control options (i.e. bulk gel, CDG, PRG, Bright Water) - Gel properties
- Laboratory screening - Field examples and designs
- Reservoir simulators for conformance control methods

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### Reservoir Fluid Properties: Preparation for Reservoir Engineering and Simulation Studies – RFP

**FOUNDATION** 5-Day

This course goes beyond the usual description of reservoir fluid properties. The underlying purpose is to be able to prepare the most accurate possible set of values of fluid properties for use in other engineering calculations. An understanding of the advantages of the application of both laboratory data and correlations will be provided. Extensive exercises are used to illustrate the principles and to test the consistency of measured data.

Accordingly, participants are encouraged to bring their own PVT laboratory data to deconstruct in class. Equations of State calculations are introduced, and a tuning exercise is conducted on commercial software.

**DESIgnED FOR**

Reservoir, production, and facilities engineers who have a need to model the flow of oil, gas, and water through reservoirs, wellsites, and surface facilities.

**YOU WILL LEARN HOW TO**

- Identify the type of fluid in a particular reservoir and predict how that fluid will behave during production
- Read and QC PVT Reports
- Use laboratory data to determine values of fluid properties for use in engineering calculations, including Equation of State
- Use correlations to determine values of fluid properties in the absence of laboratory data
- Select the best available fluid property correlations for oils, gases, and brines
- Shape PVT data to get the best results out of analytical and numerical software

**Course Content**

- Fluid fundamentals • Dry gas models • Brine models • Wet gas models • Dead oil models
- Black oil models • Volatile oil models • Gas condensate models • Fluid sampling • Laboratory tests • Reading a PVT report • Quality checks on a PVT report • Corrections to laboratory data • Equations of State • Tuning Equations of State

### Waterflooding A to Z – WF

**FOUNDATION** 5-Day

Waterflooding has long been proven as the simplest and the lowest cost approach to maintaining production and increasing oil recovery from an oil reservoir. However, these benefits may fall far short of the expectations unless the time-tested concepts and practices are clearly understood and judiciously implemented. These concepts and practices aim at process optimization - reducing production cost while minimizing waste and maximizing oil recovery and income. This course is light on theory but heavy on proven and successful practices. Published case histories of projects around the world are reviewed to provide an understanding of divergent points-of-view, what works where, what fails when, and why.

This training covers all elements of a waterflood project from A to Z - from source water selection to produced water disposal and everything in between. Participants are grouped into small multi-disciplinary teams. All classroom discussions and problem-solving sessions are handled in an asset management team format. Simulation studies are done in class to evaluate basic waterflood physics as well as to optimize the development of a hypothetical field.

**DESIgnED FOR**

Reservoir, production, facilities, and operations engineers who are involved with some aspects of a new or existing waterflood project; geoscientists and professionals who want to get a better feel for the entire process of planning, development, management, and optimization of a waterflood project.

**YOU WILL LEARN HOW TO**

- Distinguish rock characteristics and fluid properties that control displacement of oil and thereby control oil recovery
- Predict incremental oil recovery and develop production and injection profiles using a variety of tools
- Estimate injection water requirements in terms of volumes, timing, and composition
- Create early warning systems for flood management and optimize recovery through new and existing technologies
- Specify components of a well-designed waterflood plan

**Course Content**

- Overview and terminology • Effect of rock properties • Effect of heterogeneity and anisotropy • Effect of fluid properties
- Wettability • Capillary pressure • Relative permeability • Physics of water displacing oil
- Statistical forecasting • Analytical forecasting • Numerical forecasting • Injector monitoring
- Production monitoring • Integrated monitoring • Effect of water imbibition • Surface processing of injection and produced water • Water shut-off • Pattern rotation • Natural and hydraulic fractures
- Horizontal well applications • Downhole separation • Enhanced waterfloods • Waterflood planning • Many case histories

**2019-2020 Schedule and Tuition (USD)**

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* plus computer charge
History Matching and Reservoir Optimization – HMRO

INTERMEDIATE 5-Day

This course is designed to cover state-of-the-art techniques/workflows for history matching geological and reservoir models for both conventional and unconventional reservoirs. The course will discuss manual and assisted history matching methods and also, inverse modeling techniques and the pros and cons of the methods. The production/history data can be in the form of pressure or rate transient tests, tracer tests, multiphase production history, or interpreted 4D seismic information. Field examples will be presented to illustrate the current state of the art and limitations. The use of history matched models for optimizing reservoir development and management strategies will be discussed. The course will involve a combination of theoretical discussion, practical applications, and computer exercises using public domain software to provide the participants with hands-on training on the workflows that can be applied using available commercial software.

DESIGNED FOR
Practicing geoscientists and engineers performing geologic modeling, reservoir simulation, and optimization studies.

YOU WILL LEARN HOW TO
• Recognize the difficulties and sources of error in history matching
• Define limitations of various techniques for both conventional and unconventional reservoirs
• Apply theory of streamline and streamline-assisted history matching for waterflooding
• Understand the background and theory of commercially available assisted/automatic history matching tools and algorithms
• Apply concepts of experimental design/response surface/surrogate models
• Use learnings from case studies for a systematic procedure for history matching and well placement optimization in a mature field, well rate optimization/allocation in a mature field, and well completion optimization for an unconventional reservoir
• Use permeability predictions, facies identification, and upsampling
• Use commercial tools for history matching

COURSE CONTENT
History Matching: fundamentals and workflow • Simulation equations • Reservoir Simulators: background • History Matching: mathematical background • Drainage volume calculations and completion optimization • History matching of unconventional reservoirs • Practical considerations • Streamline-based history matching • Streamline Simulation • Streamlines: mathematical background • Streamlines: applications • Streamline-based history matching • History matching and uncertainty analysis • Experimental design and surrogate models • Multiscale history matching with grid coarsening • Case Study: history matching and rate optimization • Case Study: history matching and well placement optimization • History matching: new developments

Integrated Reservoir Modeling – GRD

INTERMEDIATE 5-Day

As the oil companies define business units and asset teams, it is becoming increasingly important that all the team members understand the workflow in developing integrated reservoir description for that asset. A proper development of reservoir description is helpful in managing daily operations of the asset, as well as long-term planning. Integration involves using all the available information about the reservoir to develop better understanding of the reservoir. This process is inherently interdisciplinary and requires understanding of all the disciplines. Although soft skills are important in working in an interdisciplinary team, this course concentrates on the hard skills required to develop a realistic reservoir description. Starting with collecting information and assessing the need for additional data, the course will cover all the topics from structural and geological modeling, estimation of reservoir petrophysical properties using geostatistical tools, upsampling to simulator model and finally, proper history matching and future predictions in the presence of uncertainties. This course is important for reservoir modelers involved in any phase of the description work. This is intended to expose various geoscientists and engineers to the entire process of integrated reservoir description and the geostatistical tools that can be used to achieve the goals. The course will develop improved appreciation of the other disciplines’ needs as well as the necessity of the feedback during the integration process. The instructor of this course is willing to accept examples from your company for analysis in the class as one of the demonstration exercises.

DESIGNED FOR
Geologists, geophysicists, engineers, petrophysicists or others involved in reservoir modeling.

YOU WILL LEARN HOW TO
• Develop the workflow in the reservoir integration process
• Evaluate and quantify uncertainties in various sources of data
• Build a conceptual model using geostatistical tools and upscale it to capture essential heterogeneities
• Develop criterion for objective history matching
• Utilize seismic data in different phases of reservoir description and integrate them using geostatistics
• Use various description tools in a judicious manner
• Use public domain software to apply many of the techniques discussed in class

COURSE CONTENT
Basic statistical principles • Spatial modeling • Structural modeling • Estimation of properties at well locations • Conditional simulation • Facies/rock type modeling • Petrophysical properties simulation • Ranking of realizations • Construction of simulator input model • History matching • Future predictions and quantification of uncertainty

Oil and Gas Reserves Evaluation – OGR

INTERMEDIATE 5-Day

This newly revised course will cover the definitions of, and uses for, oil and gas reserves estimates, and how to be compliant with each of the industry standards (SPE-PRMS) and regulator’s US SEC definitions of reserves requirements. Participants will learn how geoscience and engineering evaluation methods should be used for compliance of reserves estimates, the differences in the evaluation assumptions between PRMS and SEC, and how the inherent uncertainties in reserve estimates are reflected by the categorization of reserves. Participants will learn how to handle reserve estimation-related situations properly, including documentation, audits, SEC enquiries, and evaluation ethics. This understanding is reinforced by working class problems and case studies.

DESIGNED FOR
Geologists, geophysicists, reservoir engineers, reserves managers, bankers, and government officials involved in reserves reporting, reserves auditing, and reserves estimations.

YOU WILL LEARN HOW TO
• Interpret and apply the 2018 SPE-PRMS reserves definitions and principles
• Interpret and apply the US SEC reserve definitions under SEC reporting regulations
• Generate compliant reserves estimates and reports using either PRMS or SEC definitions
• Comprehend and work with a typical third-party reserves report
• Understand the proper use of traditional engineering and geoscience techniques to satisfy reserve reporting requirements
• Demonstrate the reliability of modern techniques in your reserve reports
• Prepare for audit reviews of your reserves estimates by third-party auditors, the SEC, or banks
• Document and defend your reserve estimates for internal inspection or internal historical record

COURSE CONTENT
Detailed examination of and instruction on the updated SPE-PRMS for oil and gas reserves • What reserves means to the regulator: understanding SEC reserve definitions and reporting – how to be compliant with SEC regulations (including demonstrating a “reliable technology”) • Examples of reserve typical questions – comparing PRMS and SEC compliance • Reserve evaluation – what to watch for when using each of the different calculation methods (including probabilistic analysis and dynamic reservoir simulation) to ensure compliant reserves • How to document and defend reserve estimates – understanding reserve audits, SEC issues/committee letters, bank lending evaluations • Economics and entitlements impact on reserves • Geoscientific topics: case studies, reserves in unconventional reservoirs and/or IOV/EDOR projects, ethics

Reservoir Characterization: A Multi-Disciplinary Team Approach – RC

INTERMEDIATE 5-Day

The modern team approach to Reservoir Characterization describes productive zones more reliably through the integration of disciplines, technology, and data. Increase your proven reserves, discover new and discovered opportunities, reduce development time and costs, improve production rates, and rejuvenate old fields through the skills learned in this course. The course is process-based and focuses upon understanding the applicability of measurements and interpretations from the participant’s discipline to other adjacent disciplines, understanding information from other disciplines, and the uncertainties and risks involved in its gathering/interpretation, awareness of the latest technologies and working principles, evolving on the cutting edge of the industry, managing a complex project to solve business problems in the most efficient manner, particularly when working in a difficult environment (multi-disciplinary teams, sponsors and bosses outside of petroleum, cross purposes from disciplines), and working with both probabilistic and deterministic multiple working hypotheses throughout a hydrocarbon project.

During the course, particular attention will be paid to uncertainties and risks. It will be shown how these can be handled and their impact on the economics of hydrocarbon projects. The instructor is willing to accept examples from your company for analysis in the class as one of the demonstration exercises. It is also possible to design a course specifically tailored to your own company around such a case study. Please contact Petroskills for a list of the information and support data required, as well as the necessary lead-time.

DESIGNED FOR
Geologists, geophysicists, reservoir engineers, production engineers, petrophysicists, exploration and production managers, team leaders, and research scientists.

YOU WILL LEARN HOW TO
• To develop a business proposal for any Reservoir Characterization project
• To apply the concept of correlation length to understand reservoir connectivity
• To define hydraulic flow units in a reservoir
• To assess the economics of oil and gas projects across their entire life cycle
• To carry out the integrated Reservoir Characterization process

COURSE CONTENT
Business value drivers and selection criteria • The scale and resolution of data • Variograms, correlation length • Time, rock, and fluid units • Seismic attributes • Upscaling, streamline simulation • Decision trees: value of information • Giving and receiving feedback • The future of Reservoir Characterization

2019-2020 Schedule and Tuition (USD)

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<td>11-15 MAY 2020</td>
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+1.918.828.2500 | petroskills.com | +1.800.821.5933 (toll free North America) Any course is available in-house at your location. Contact us today.
Reservoir Management — RM

INTERMEDIATE 5-Day

The principles of sound reservoir management are presented with emphasis on practical applications. Actual case histories are used to study both successes and failures. An interdisciplinary, synergistic approach to efficient reservoir management is detailed with the goal of optimized profitability. The significance of each component and the importance of timing and cost/benefit analysis are emphasized. Reservoir management models for optimum field development and field operating plans are analyzed. The interdisciplinary reservoir management approach shows how each technology or function contributes to the plan and how checks and balances are developed.

DESIGNED FOR
Reservoir, production, and operations engineers, geologists, geophysicists, managers, experienced technicians, and service company personnel responsible for improving the performance of petroleum reservoirs.

YOU WILL LEARN HOW TO
• Apply the principles of sound reservoir management
• Use the interdisciplinary synergistic approach to efficient reservoir management
• Include each reservoir management component and the importance of timing and cost/benefit analysis
• Develop checks and balances

COURSE CONTENT
Definition of reservoir management: an integrated, interdisciplinary team effort • Goal setting, planning, implementing, monitoring, and evaluating reservoir performance • Field development and field operating plans to optimize profitability • Efficient monitoring of reservoir performance • Minimizing drilling of unnecessary wells • Wellbore and surface systems • Focus on the reservoir and its integration into a data set that reflects a holistic approach to reservoir management. Attendees should leave this course with an improved understanding of unconventional reservoir exploitation.

Reservoir Management for Unconventional Reservoirs — RMUR

INTERMEDIATE 5-Day

This course in unconventional reservoir management is aimed at all petro-technical professionals who have little experience with these resource types but who wish to quickly learn some key elements and issues associated with the exploitation of unconventional reservoirs (tight gas, light oil, and shales). The course is built around the role of the reservoir engineer and, hence, concerns itself with the integration and use of information to make well rate and recoverable volumes estimates, making decisions on desirable data collection, and planning answers to common questions such as choice of initial development spacing and the value of subsequent infill drilling. Attendees should leave this course with an improved understanding of unconventional reservoir exploitation.

DESIGNED FOR
All petro-technical professionals who have little experience with unconventional reservoirs but who need or desire to start developing some understanding of important basic concepts and methods associated with these resource types. The course is focused on reservoir management issues for light gas, light oil and shale reservoirs. CBM reservoirs are not addressed.

YOU WILL LEARN HOW TO
• Plan solutions to common reservoir management problems for unconventional reservoirs
• Apply approaches to estimate rate and recoverable volumes for wells prior to development in an unconventional reservoir
• Use classical and current non-simulation methods for estimating wells rates and recoverable volumes using production data from unconventional reservoirs
• Better understand the limitations of these rate and recoverable volume prediction methods
• Address the development of a life-of-field surveillance plan for an unconventional reservoir
• Better understand the use, design and analysis of pressure transient tests appropriate for the characterization of unconventional well/reservoir systems (DFITs & PBUs)

Reservoir Modeling of Heavy Oil Resources — HORM

INTERMEDIATE 3-Day

As conventional oil reserves decline, more emphasis is placed on heavy oil and bitumen. Heavy oil and bitumen are plentiful in many developed oil provinces, as well as in areas with no conventional oil. As with conventional oil, the reservoir engineering aspects of the development of heavy oil and bitumen is aided by modeling of various kinds. For heavy oil and bitumen, the modeling is complicated by the high oil- viscosity and the need for enhanced oil recovery techniques, usually involving heating of the reservoir to produce the oil at commercial rates. In this course, modeling is understood as a part of reservoir engineering and includes the use of analogues and analytical modeling, as well as numerical simulation. The emphasis is on numerical simulation, but analytical techniques are also examined in some detail, since they provide considerable insight into the recovery process. The emphasis of the course is on HOW to perform a successful heavy oil simulation study, including factors to be considered, pitfalls to avoid, testing of models, examination of output, and ensuring results are reliable.

DESIGNED FOR
Petroleum and reservoir engineers who will be actively working on studies, and be involved in assessing the results of studies.

YOU WILL LEARN HOW TO
• Select the type of modeling required to meet the aims of the study
• Design different types of modeling studies to achieve the aims of the study (feasibility, operating strategy, development plan, ultimate recovery, etc.)
• Collect and select the data for the study
• Incorporate field observations into the study (production data, pressure data, 4D seismic, observation well data)
• Set up, run, and test the model(s)
• Assess the adequacy of the history matches
• Create and run different development options and assess the results
• Assess the results of third party studies (in-house or external)

COURSE CONTENT
Introduction (definitions of heavy oil, types of study, types of modeling, design of study, grid orientation and refinement) • Routine and special core analysis • Single phase up-scaling of geo-cellular model parameters

Reservoir Simulation Strategies — RSS

INTERMEDIATE 5-Day

This course is designed to give an introduction to the fundamental and practical aspects of modern reservoir simulation. Particular emphasis is placed upon the available data and its integration into a data set that reflects a coherent model of the reservoir. These aspects are reinforced with small practical examples run by groups of the course participants. The course is organized in morning lecture sessions and afternoon practical sessions.

DESIGNED FOR
Reservoir and petroleum engineers who will be actively using reservoir simulation.

YOU WILL LEARN HOW TO
• Apply the principles of reservoir engineering to numerical modeling
• Set up, run, and analyze the results for single-well, pattern, and full-field models
• Prepare fluid and rock property data in the manner required for simulation studies
• Identify and eliminate causes of numerical problems
• Perform a history match
• Use the matched model to predict future performance under a variety of assumptions

COURSE CONTENT
Buckley Lovett replacement • One dimensional water oil displacement • Model components, types, and modern gridding methods • Two dimensional displacement • Grid orientation and refinement • Route and special core analysis • Single phase up-scaling of geo-cellular model parameters

2019-2020 Schedule and Tuition (USD)

Reservoir Management

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Reservoir Management for Unconventional Reservoirs

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Reservoir Modeling of Heavy Oil Resources

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Reservoir Simulation Strategies

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<td>$5235+VAT</td>
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+1.918.828.2500 | petroskills.com | +1.800.821.5933 (toll free North America)
Decline Curve Analysis and Diagnostic Methods for Performance Forecasting – DCA
SPECIALIZED 2-Day
Decline curve analysis has been called the most commonly used and misused technique for forecasting future production and remaining reserves. This course will give the learner a better understanding of how fundamental reservoir properties and drive mechanisms affect the shape of the production decline curve and how to avoid many of the mistakes commonly found in decline curve forecasts. The course also examines the use of modern production decline type-curves to evaluate reserve properties and predict future performance.

DESIGNED FOR
Engineers or technical assistants who are responsible for making forecasts of future production using decline curve analysis. Economists, managers, or geoscientists who are interested in developing a greater working knowledge of decline curve methods and how to make better forecasts will also benefit from this course.

YOU WILL LEARN HOW TO
• Use the exponential, hyperbolic and harmonic decline curve equations
• See the relationships between reservoir recovery mechanisms and decline curve types
• Identify and understand how the transient flow period can lead to overestimation
• Use multiple methods to avoid overestimating reserves
• Recognize reservoir performance characteristics based on field examples
• See the impact of reservoir heterogeneities such as faulting, permeability variance, and layering
• Account for changing operating conditions
• Perform analysis on a multi-well basis without introducing common errors
• Use alternative methods including diagnostic performance plots (e.g., log WOR vs. Np, Stagg’s, P2/2 vs. Gp, etc.) for rate and reserves analysis
• Use advance decline curve and production data analysis for reservoir characterization

COURSE CONTENT
Conventional decline curve equations: exponential, hyperbolic and harmonic rate versus time and rate versus cumulative production relationships, selecting the proper equation based on reservoir properties and drive mechanisms • The effects of transient production: how to recognize transient production, how transient forecasts can overestimate remaining reserves, how to properly constrain transient forecasts • Forecasting during displacement processes: using trends like water-oil ratio and versus cumulative oil production to estimate ultimate oil recovery, converting these trends into an oil rate versus time forecast • Difficult situations: layered and compartmented reservoirs, downtime, workovers, changing facility conditions and facility constraints, forecasting groups of wells, common multiples • Production decline type-curves: introduction and historical background, how to use modern Fetkovich type-curves for forecasting production • Brief discussion of unconventional gas/oil decline analysis and production forecast

2019-2020 Schedule and Tuition (USD)
BAKERSFIELD, US 4-5 NOV 2019 $2610 20-21 NOV 2020 $3220
OKLAHOMA CITY, US 20-21 JUNE 2020 $3220
KUAKA LUMURUM, MYI 22-26 JUNE 2020 $4010
LONDON, UK 7-11 SEP 2020 $5335+VAT

* plus computer charge

Gas Reservoir Management – GRM
SPECIALIZED 5-Day
Natural gas production has become a major part of every petroleum company’s asset base and continues to grow in importance throughout the world. This course will help participants understand the engineering drivers on gas reservoir management and how a gas reservoir’s value can be maximized through sound engineering practices. A full spectrum of gas reservoir engineering techniques is addressed and their application to a large variety of gas resource management options is discussed.

DESIGNED FOR
Engineers actively involved in the operation and management of gas reservoirs; geoscientists working with gas reservoirs in field development and exploration planning would also benefit from attending this course.

COMMENTS FROM PREVIOUS PARTICIPANTS:
“Very good practical approach to the material - course is highly recommended.”
“Instructor did a great job relating the theory to potential applications.”

YOU WILL LEARN HOW TO
• Evaluate gas reservoir data and prepare this data for engineering calculations
• Apply frequently used gas reservoir engineering techniques
• Perform production decline type curve analysis and use other advanced reservoir calculations such as simulation
• Solve reservoir engineering calculations through the use of many practical exercises

COURSE CONTENT
Gas reservoir fluid properties: gas condensate sampling and understanding laboratory reports • Gas reservoir fluid flow and well testing: deliverability testing and non-darcy flow, testing for hydraulically fractured wells, horizontal wells, and gas condensate reservoirs • Determination of original gas-in-place: material balance techniques for various drive mechanisms and reservoir types, alternate plotting techniques, production decline type curves • Gas flow in wellbores and pipelines: the gas production system, pressure drop in wellbores and flowlines, restrictions to gas production • Prediction of future performance and ultimate recovery: decline curves, coupled material balance and deliverability techniques, reservoir simulation, gas well spacing and infill drilling • Special topics •Reservoir management of water-drive gas reservoirs, predicting gas condensate reservoir performance, cooled methane reservoirs

Horizontal and Multilateral Wells: Analysis and Design – HML1
SPECIALIZED 5-Day
The complex, interdisciplinary decisions in advanced well projects are emphasized in this course. The application and benefits of horizontal and multilateral wells are analyzed. The process of candidate screening and selection, including geological, reservoir, and production characteristics are considered, as well as constraints on drilling and completion options. Methods to predict well performance and recovery from horizontal and multilateral wells are presented with integration of inflow and wellbore flow performance for individual and multilateral wells. Well completion options and its impact on well performance for horizontal and multilateral wells are summarized. The improvement by well stimulation (multistage hydraulic fracturing and matrix acidizing) is evaluated. Economic and risk analysis are also presented with a number of case histories to highlight the potential benefits of horizontal wells and the elements of risk and uncertainty at the initial design stage.

DESIGNED FOR
Geologists, reservoir engineers, production and completion engineers, and development, asset, and project managers.

YOU WILL LEARN HOW TO
• Identify the applications of horizontal, multilateral, and intelligent wells from geological and reservoir aspects
• Assess multidisciplinary inputs for successful selecting applications
• Predict horizontal and multilateral well productivity with integrated reservoir flow and well flow models
• Evaluate formation damage and well completion effects on advanced well performances
• Diagnose problems in advanced wells and conduct the necessary sensitivity analyses
• Evaluate well stimulation treatments: including multiple-stage fractured horizontal well performance and matrix acidizing results
• Intelligent well concept, design and field applications
• Minimize technical and economic risk in advanced well projects

COURSE CONTENT
Technical and economic benefits of advanced well systems • Reservoir applications for various well types • The screening of applications for advanced well applications • Geological structure characteristics • Classification of advanced wells • Reservoir inflow performance at different boundary conditions • Wellbore flow and integrated well performance • Conmingled production and cross flow in multilateral wells • Formation damage in horizontal and multilateral wells • Well completion and combined effect of conventional and damage on well performance • Well stimulation evaluation by productivity improvement • Optimal design of stimulation • Reservoir simulation considerations • Applications of intelligent completion in advanced wells • Risk identification and assessment

2019-2020 Schedule and Tuition (USD)
LONDON, UK 8-12 JUNE 2020 $5335+VAT

See website for dates and locations.

Naturally Fractured Reservoirs: Geologic and Engineering Analysis – FR
SPECIALIZED 5-Day
This course covers geologic and engineering concepts, methodology, and technology used to characterize, evaluate, and manage naturally-fractured reservoirs. Applications and limitations of geologic and engineering procedures and tools are discussed. Field examples and case studies demonstrate the importance of integrated geologic and engineering studies in developing effective, economical reservoir management strategies for different types of reservoirs.

DESIGNED FOR
Engineers and geoscientists interested in a multi-disciplinary approach to evaluating and predicting the overall effect of natural fractures on subsurface fluid-flow and subsequent reservoir performance.

YOU WILL LEARN HOW TO
• Detect and predict subsurface natural fracture occurrence and intensity from cores and well logs
• Determine fractured rock properties affecting reservoir performance • Design and analyze pressure transient tests in naturally-fractured reservoirs • Evaluate reservoir performance in naturally-fractured reservoirs • Develop and apply numerical simulation models to fluid-flow in naturally-fractured reservoirs • Apply coupled geomechanics/fluid-flow behavior to reservoir management strategies in naturally fractured reservoirs • Evaluate the impact of natural fractures on hydraulic fracture stimulation

COURSE CONTENT
Characterization of natural fractures and fracture systems • Influence of mechanical stratigraphy and structure on fracture development • Detection and prediction of subsurface natural-fracture occurrence and intensity from cores and well logs • Fractured rock properties affecting reservoir performance • Classification of naturally-fractured reservoirs with reservoir examples and potential production problems • Naturally-fractured reservoirs: fluid-flow, well performance and well testing, reservoir performance, numerical simulation • Geomechanics/fluid-flow • Behavior and stimulation of naturally-fractured reservoirs • Effects of natural fractures on reservoir permeability, anisotropy, drainage area, and waterflood sweep efficiency
New Opportunities in Old Fields – NOF

SPECIALIZED 5-Day

Don’t buy or sell a producing property before taking this course! There is nearly always upside in mature oil and gas fields that may be particularly profitable because of existing wells and infrastructure. The keys to successful exploitation of new opportunities include 1) recognition of the new opportunities, 2) quantification of the reserves, 3) evaluation of alternative methods of exploitation, and 4) economic analysis of depletion scenarios. Case studies and class problems address each of these key items and illustrate how new opportunities can be recognized and evaluated for many different types of oil and gas reservoirs.

The computer-based problems will provide the delegate with utility programs and solution templates that can be used in the real world.

DESIGNED FOR
Reservoir and production engineers, development geoscientists, asset team leaders, acquisition and divestiture managers, and other technical personnel involved in evaluation and exploitation of reserves in mature fields.

YOU WILL LEARN HOW TO
• Recognize production and reservoir characteristics of old fields that indicate the potential for increasing reserves and value

Understand whether existing recovery factors are consistent with those that can be realized with effective utilization of the natural drive mechanism(s) and the appropriate use of improved recovery methods

Identify under-stimulating wells or field areas and recommend appropriate intervention

Determine the upside potential of a field, distinguishing between incremental reserves and reserve acceleration

Examine alternative re-development strategies by studying case histories and working example industry problems

COURSE CONTENT
Why Opportunities Emerge: nature of reserves growth; operating practices and their effect on new opportunities; the contribution of evolving technology
Recognizing Opportunities: reservoir characteristics and production performance indicative of new opportunities, unearthing limited data, linking operator practices to new opportunities
Reserves versus Upside Potential: reviewer of reserve classification, risk assessment, value of new information, data quality control and integration
Reservoir Heterogeneity and New Opportunities: categories of heterogeneity and their implications for new opportunities, reservoir compartmentalization, application of 3D seismic in old fields, identification of net pay, fractured reservoirs
Expoitation Opportunities: reservoir enhancement, the full injection-redisplacement, redevelopment of mature waterfloods, infill drilling, its utility, application, and value; horizontal and multilateral wells including their use in displacement projects, re-completions in stratified reservoirs, de-bottlenecking gathering systems, produced water management, co-production of water for improved recovery

Streamlines: Applications to Reservoir Simulation, Characterization and Management – SRS

SPECIALIZED 5-Day

This course is designed to cover introductory and advanced concepts in streamline technology and its applications for reservoir characterization, reservoir management/optimization and field development strategy. This course is not limited to streamline simulation but exposes the power of streamlines in general. A copy of the SPE textbook Streamline Simulation: Theory and Practice along with streamline simulation software will be provided to each course participant.

DESIGNED FOR
Practicing geoscientists and engineers. No formal training in reservoir simulation is required other than knowledge of basic mathematics.

YOU WILL LEARN HOW TO
• Apply the fundamentals of streamlines and streamline simulation, and analyze the advantages and limitations over conventional simulation

• Simulate flow and visualize results at the geologic model scale

• Calculate swept areas and drainage volumes

• Optimize infill wells

• Perform reservoir surveillance and flood optimization using streamlines

• Integrate streamlines with finite-difference simulators

• Validate upscaled and upgraded geologic models

• Perform streamline assisted history matching of reservoir models

• Apply streamline simulation for complex reservoir geometries and flow processes

COURSE CONTENT
Basic governing equations • Line source and sink solutions • Streamfunctions and streamtubes • Tracing streamlines in 2D • The streamline time of flight and its significance • Use of streamlines with finite-difference models
• Streamline simulation • Flow simulation through geologic models • Streamline vs. finite difference • Analytical/numerical solutions along streamlines • Modeling gravity and cross-streamline mechanisms • Compressibility effects • Mapping and material balance errors • Practical considerations and limitations
• Flow visualization • Primary recovery and drainage volume calculations • Swapt volume calculations and optimizing infill wells pattern balancing/rate allocations • Improved waterflood management • Waterfront field tracer interpretation • Hybrid methods
• Miscible flood modeling and predictions • Model ranking and uncertainty assessment dynamics • Reservoir characterization upscaling/upgridding • Streamline-based history matching • History matching: workflows • Assisted history matching of finite-difference models • Streamline-based sensitivity computations production • Data integration • Field case studies • Advanced topics discussion and wrap-up • Fractured reservoir modeling and applications • Corner point geometry and faults • Compositional modeling • Time step and stability considerations • Fracture tracking methods • Streamline vs. finite difference: advantages and limitations

Unconventional Resource and Reserve Evaluation – URRE

SPECIALIZED 5-Day

This five-day advanced course is designed to expose attendees to the understanding and application of the latest approaches, techniques, and requirements being applied to reserves evaluation within unconventional resources. Particular focus is given to actions and methodologies that are necessary to enhance the reserve categorization. Discussion and class examples will emphasize the testing protocols necessary within the exploration, appraisal, and development phases of the resource life cycle.

The course is based around the Petroleum Reserve Management System (PRMS), Variances needed to conform to other national standards such as the SEC, N-51, SORP, NPD, Chinese, as well as other standards, is taught as a stand-alone module. A majority of the offering is focused on shale oil and shale gas resources, with selected coverage of tight gas, coalbed methane, and coal seam gas plays also being included, depending on participant interest.

DESIGNED FOR
Reservoir engineers and geoscientists working in integrated teams in unconventional assessments. Managerial staff requiring an understanding of unconventional reserve reserve and resource evaluation standards will also benefit.

YOU WILL LEARN HOW TO
• Differentiate reserve estimation approaches within shale oil/gas, tight gas, CBM/CSS, and hybrid plays
• Compute gas/oil in place and estimated ultimate recovery in unconventional resources
• Design a data collection program appropriate within the exploration, appraisal and development phases of an asset life cycle
• Apply analysis of core analysis, well test data, and proximate analyses to enhance reserve estimation
• Describe the advantages and disadvantages between various reserve estimating techniques including decline curve, rate transient, and the probabilistic approach
• Differentiate between various reserve and resource accounting methods
• Differentiate between prospective resources, contingent resources and reserves
• Summarize the concepts of reasonable certainty and reliable technology
• Create a unconventional reserve growth portfolio
• Minimize unconventional reserve write-downs

COURSE CONTENT
Fundamentals of unconventional reserves • The Petroleum Reserve Management System (PRMS) • Probabilistic analysis as applied to unconventional resources • Exploration data collection programs • Prospective resource evaluation • Appraisal data collection programs • Contingent resource evaluation • Reserve data collection programs • Reserve classification • Reserve portfolio management • Alternate evaluation approaches • Ethics and public information releases

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Petroleum Geology
Exploration and Appraisal
Drilling Operations and Systems
Well Completion / Stimulation
Production Technology
Hydrocarbon Recovery
Surface Processing
Midstream Overview
Pipelines and Storage Systems
Gas Processing Overview
Refining Fundamentals
Introduction to Petrochemicals
Steam Cracking

Introduction to Solvents

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ePetro

2019-2020 Schedule and Tuition

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See website for dates and locations.

* plus computer charge
### Production and Completions Engineering

#### Course Progression Matrix

The Course Progression Matrix below shows how the Production and Completions courses in this section are structured within each topic, from Basic to Specialized. On either side of the Production and Completions section, you will see courses in associated disciplines for cross-training. These matrices are ideal for building training plans for early-career staff or finding the right course to build upon existing knowledge and experience.

**Production Operations 1 – PO1** leads off this section on page 37 and represents the core foundation of the production engineering course curriculum and is the foundation for future studies in the discipline. The next course, **Completions and Workovers – CAW**, is an introduction to many facets of completion and intervention technology, and is one of our most popular courses. For all of your **Hydraulic Fracturing** needs—both applied and advanced—see page 40.

The following instructors have been approved by the PetroSkills Curriculum Network:

- Dr. Ahmad Baahuzzaman
- Dr. Omar Barkat
- Mr. Paul Barry
- Mr. Michael Berry
- Mr. Larry Britt
- Dr. Iskander Dzhshev
- Dr. I. Shari Duinin-Noriman
- Mr. Larry Harris
- Dr. Aaron Horn
- Mr. Satish Kalka
- Dr. Mohan Kular
- Dr. James Lee, Jr.
- Mr. Diego Longino
- Dr. John Martinez
- Dr. Howard McFadden
- Mr. Jeffrey McMullan
- Mr. Steve Melzay
- Mr. Manojkumar Nadar
- Mr. Bob Nicholson
- Dr. Paul Nitz
- Mr. Carlos Palacios
- Mr. Cliff Redus
- Mr. Kenneth Smith
- Mr. Richard Schroeder
- Dr. Subhash Shah
- Mr. Kyle Travis
- Mr. Hugo Varlas
- Mr. Bob Westermann
- Mr. Scott Wilson

### Course Progression Matrix

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### Additional Topics

- **Basic Petroleum Technology Principles** (Page 5) (Virtual/Blended course)
- **Basic Petroleum Engineering Practices** (Page 6) (Virtual/Blended course)
- **Drilling and Completion Workover Operations** (Page 8) (Virtual/Blended course)
- **Overview of Gas Processing** (Page 45) (Virtual/Blended course)
- **Essential Technical Writing** (Page 49) (Virtual/Blended course)
- **Essential Leadership Skills** (Page 51) (Virtual/Blended course)
- **Basic Petroleum Economics** (Page 51) (Virtual/Blended course)
- **Drilling and Completion Workover Operations** (Page 8) (Virtual/Blended course)
- **Overview of Gas Processing** (Page 45) (Virtual/Blended course)
- **Essential Technical Writing** (Page 49) (Virtual/Blended course)
- **Essential Leadership Skills** (Page 51) (Virtual/Blended course)
- **Basic Petroleum Economics** (Page 51) (Virtual/Blended course)
Completions and Workovers – CAW

FOUNDATION 5-Day
An integrated introduction to many facets of completion and intervention technology. The material progresses through each of the major design, diagnostic, and intervention technologies concluding with some common remedial measures and well abandonment. The course focuses on the practical aspects of each of the technologies, using design examples - successes and failures - to illustrate the key points of the design and the risks/uncertainties. The overall objectives of the course focus on delivering and maintaining well quality.

DESIGNED FOR
Graduates or engineers with experience, engaged in drilling operations, production operations, workover, and completions; petroleum engineering in both the service and operating sectors

YOU WILL LEARN HOW TO
• Develop a high level completion strategy for wells in a variety of situations
• Select tubing, packers, and completion flow control equipment
• Appraise/design a flow barrier strategy
• Identify key design considerations for vertical and inclined wells, horizontal, multilateral, HPHT, and unconventional resource wells
• Select intervention strategy/equipment
• Identify key features/applicability of the main sand control and well stimulation options
• Assess/specify concerns/remedial measures for formation damage/skin removal

COURSE CONTENT
Basic well completion design, practices, and strategies • Well quality and integrity • Safety aspects of well design • Wellhead, trees, subsurface safety valves, and flow control equipment • Material selection guidelines based on corrosion and erosion conditions • Interpretation of inflow and tubing performance to aid tubing size selection • Tubing design and selection • Considerations for designing deviated horizontal, multilateral, and multi zone reservoir completions • Basic completion principles and considerations for subsea, HPHT, and unconventional wells • Perforating job selection and design • Formation damage mechanisms and remediation • Stimulation design considerations • Sand control options and their selection • Wireline, coiled tubing, and hydraulic workover rig operations • Snubbing

CAW is also available as a virtual course which is an enhanced version of the face-to-face public session. See website for dates and locations.

PRODUCTION AND COMPLETIONS ENGINEERING

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 advancements to maximize oil and gas production and overall resource recovery.

The course structure and pace apply a topical 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 fluid specifications • 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 • and more...

2019-2020 Schedule and Tuition (USD)

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P01 is also available as a virtual course which is an enhanced version of the face-to-face public session. See website for dates and locations.

TO LEARN MORE, VISIT PETROSKILLS.COM/PO1-BLENDED
Production Technology for Other Disciplines

PTO

FOUNDATION

5-Day

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 best 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 advancements 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 • Basic well completion equipment and engineering principles for oilfield project development
• 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 advancements for smart well completions
• Maximize asset team interaction and understand the dynamics between production technology and other disciplines

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

See website for dates and locations.

PETROSKILLS.COM/VIRTUAL-PTO

Well Stimulation: Practical and Applied

4-Day

BASIC

Too often in today’s oil and gas industry, not enough attention is paid to the details of well stimulation treatments. This can result in poor and/or less than optimum results. Those involved in the planning, execution, and evaluation of stimulation treatments need to have the background and training in the basics so better decisions can be made resulting in more gas down the line or oil in the tank! This practical course is designed for those involved in all aspects of well stimulation. To be better able to make decisions it is important to have a basic understanding of the types of formations and basic reservoir properties with which we deal. For this reason, time is spent in the early portion of the course setting the geological and reservoir property stage for vertical, horizontal, and multilateral wells prior to developing the basic formation damage, acidizing, and hydraulic fracturing concepts. The course includes acidizing and fracturing quality control, conducting the treatment, monitoring pressures, and other critical parameters during and after the treatment. An important part of the course is class teamwork whereby the attendees divide into teams to evaluate and select optimum stimulation treatments. These exercises bring out many important parameters discussed during the course. This subject is briefly covered in the PetroSkills Production Operations I course (Foundation Level) as well as in the Formation Damage: Causes, Prevention, and Remediation (Intermediate Level) course. However, this course focuses in more detail on the basics of stimulation than either of the two previously mentioned courses.

DESIGNED FOR

Those involved in the planning, execution and evaluation of well stimulation treatments in conventional as well as unconventional plays, including the shales. This includes completion, production, reservoir, and drilling engineers; field supervisors; production foremen; engineering technicians; and geologists.

YOU WILL LEARN

• How to select stimulation techniques best suited for various formation types and situations
• To apply basic non-acid and acidizing concepts
• To apply basic hydraulic fracturing concepts

COURSE CONTENT

Geological/basic reservoir properties • Formation damage - how and why it happens • Non-acid damage removal techniques • Acidizing - objectives, types, additives • Acidizing placement techniques and the pressure chart • Quality control and safety • Hydraulic fracturing materials and their importance to success, including gel and slick water treatments • The frac chart • Hydraulic fracturing quality control and safety • Energized fluids - application and safety

Surface Production Operations

5-Day

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 main 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 produced fluids. This course is especially suited for cross-training and delivering 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, dehydration, acid gas treatment towers, and other treating equipment
• A wide range of produced fluid measurement and sampling techniques
• A description of treating equipment whether located on the surface, offshore platform, or sea floor

Coiled Tubing Interventions

5-Day

BASIC

Coiled Tubing is one of the most common technologies used for well interventions on a daily basis throughout the oil industry during drilling, completion, and mainly production phases of oil and gas wells worldwide.

This course covers the surface and pressure control equipment, the bottomhole assembly components (downhole tools), the string manufacturing and operational limits, the interventions performed with coiled tubing (20+ different pumping and mechanical interventions including coiled tubing drift out and coiled tubing drifts), and how to deal with fatigue and corrosion. Nitrogen equipment and calculations required for constant / variable temperature and corrugated nitrogen interventions are also covered.

The final part presents an extensive coverage of emergency responses and contingencies to deal with a wide variety of scenarios. A generous amount of time is spent in practical exercises, and technical concepts are enhanced with pictures, videos and numerous real field cases and problems. Participants will gain the knowledge to actively and efficiently participate in coiled tubing intervention planning, design and/or execution.

DESIGNED FOR

Well interventions or well services supervisors, operations or field Engineers, coiled tubing supervisors and operators, sub-surface engineers, production engineers, drilling engineers, completion engineers, and those professionals willing to expand their knowledge in coiled tubing and nitrogen interventions planning, design and/or execution.

YOU WILL LEARN HOW TO

• Plan, design, manage, and execute coiled tubing interventions
• Improve the overall operational performance during coiled tubing interventions
• Select or recommend coiled tubing equipment for given field conditions and applications
• Select the proper pressure control equipment for any particular well condition
• Calculate the appropriate size of accumulators for a coiled tubing unit
• Select the most commonly used downhole tools and explain their function
• Calculate and define coiled tubing string limits
• Recognize, prevent, and manage corrosion and sour conditions and their impact
• Work safely with liquid nitrogen
• Calculate nitrogen volumes required for a given application
• Take appropriate actions during emergency responses and contingencies

COURSE CONTENT

Introduction • Surface equipment • Pressure control equipment • Bottomhole assembly components • Coiled tubing strings • Operational limits • Pumping operations • Mechanical operations • CT drilling operations • Life extension (fatigue) • Corrosion • String management • Checklists • Nitrogen • Emergency responses and contingencies

2019-2020 Schedule and Tuition (USD)

HOUSTON, US 3-7 AUG 2020 $4310

2019-2020 Schedule and Tuition (USD)


DUBAI, UAE 15-19 DEC 2019 $5350+VAT

DUBAI, UAE 13-17 JULY 2020 $5035+VAT

DUBAI, UAE 15-19 DEC 2019 $5345+VAT

LONDON, UK 27-31 JULY 2020 $4410

2019-2020 Schedule and Tuition (USD)

DUBAI, UAE 6-10 OCT 2019 $5450+VAT

DUBAI, UAE 13-17 JULY 2020 $5035+VAT

DUBAI, UAE 13-17 JULY 2020 $5035+VAT
Unconventional Resources Completion and Stimulation – URCS

FOUNDATION 5-Day

This course will focus on some of the key elements of well completions and stimulation practices as they apply to horizontal wells in tight and unconventional reservoirs. Optimization studies will be shown and used to highlight the importance of lateral length, number of fractures, inter-fracture distance, fracture half-length, and fracture conductivity. These results will be used to discuss the various completion choices such as cemented, open hole with external casing packers, and open hole pump and pray techniques. This course will also address key risks to horizontal wells and develop risk mitigation strategies so that project economics can be maximized. In addition, tight and unconventional gas field case studies will be used to illustrate the application of these design, optimization, and risk mitigation strategies for horizontal wells in tight and unconventional gas reservoirs.

DESIGNED FOR
Petroleum and production engineers, completion engineers, stimulation engineers, geologists, managers, technical supervisors, service and support personnel.

YOU WILL LEARN HOW TO
• Use key multi-disciplinary tools for successful completions and stimulations in unconventional resources
• Understand the importance of geo-mechanics and rock mechanics to the success of transverse multiple fractured horizontal wells in unconventional resources
• Understand unconventional resource play completion options and selection processes
• Apply principles and design of well stimulation treatments in unconventional resources
• Employ critical data needs and collection techniques with minimal operational impact

COURSE CONTENT
Geo-mechanics: what makes an unconventional shale reservoir prospective • Introduction to the completions and multiple fracture stimulated horizontal wells • Horizontal well objectives in Unconventional Reservoirs • Basis of fracture design in horizontal wells • Horizontal well stimulation objectives • Completion planning for horizontal wells • Horizontal well risks and risk mitigation strategies • Horizontal well case histories

Performance Analysis, Prediction, and Optimization Using Nodal Analysis – PO2

FOUNDATION 5-Day

Nodal analysis views the total producing system as a group of components potentially encompassing reservoir rock/irregularities, completions (gravel pack, open/closed perforations, open hole), vertical flow strings, restrictions, multi-lateral branches, horizontal/hilly terrain flow lines/risers, integrated gathering networks, compressors, pump stations, metering locations, and market/system rate/pressure constraints. An improper design of any one component, or a mismatch of components, adversely affects the performance of the entire system. The chief function of a system-wide analysis is to increase well rates. It identifies bottlenecks and serves as a framework for the design of efficient field wide flow systems, including wells, artificial lift, gathering lines and manifolds. Together with reservoir simulation and analytical tools, Nodal analysis is used in planning new field development. Software is used extensively during the class. However, if the attendee chooses not to supply his/her own software, nodal analysis, and gas deliverability planning programs can be provided.

DESIGNED FOR
Production, operations, and reservoir engineers; senior technicians and field supervisors with an engineering background.

YOU WILL LEARN HOW TO
• Apply nodal analysis concepts viewing the total producing system as a whole from the reservoir rock through the completion, well bore and gathering system, to the market while honoring system rate/pressure constraints
• Avoid improper design where any one component, or a mismatch of components, adversely affects the performance of the entire system
• Perform a system-wide analysis to increase well rates by identifying bottlenecks and design an efficient field-wide flow system, including wells, artificial lift, gathering lines, and manifolds
• Use nodal analysis, together with reservoir simulation and analytical tools, for planning new field development

COURSE CONTENT
Nodal Analysis Overview • Inflow Performance: Basics, well-test pros and cons, best models for all well types, IPR curves • Completions: Modeling basics, flow patterns in gravel packs, pressure drop in perforations, gravel packs and wellbore, optimal perforation density • Tubing Performance: Videos of flow patterns, flow dynamics, logging in horizontal wells, slugging and pressure changes in all completion types, fracture drop in horizontal wells, unloading techniques and examples • Flowlines: Pressure drop models, bottlenecks in a gathering network, line loops and jumpers, gathering systems • Forecast: Field forecasts, economic optimization, evaluation of options • Artificial Lift: Gas lift design, ESP and other methods basics • Liquid in gas streams, what is a dry gas well, loaded wells, predicting temperatures

NODAL Analysis Workshop – NAW

GEO-MECHANICS, ROCK MECHANICS, UNCONVENTIONAL RESOURCES, BASIS OF FRAC SHEAL RESERVOIRS, INTRODUCTION TO THE

INTERMEDIATE
Well Inflow/Outflow NODAL Analysis is an integral part of a production or completion engineer’s work scope, and is often applied throughout a well’s life to maximize value - from the beginning of the completion design process through underperforming well diagnostics. This workshop provides a comprehensive overview of this analysis technique, emphasizing real world application through multiple problems from different perspectives.

Upon completion, participants will be able to approach a problem recognizing potential solution methods, prepare data for the analysis, identify sources of error, perform an analysis with industry software, and present a holistic recommendation. Topics related to perforating, components of skin, matching transient test data, outflow limitations, selecting artificial lift, liquid loading, and incorporating fluid PVT properties will be covered.

DESIGNED FOR
Operating Company and Service Company engineers and technical managers responsible for performing or reviewing well systems analysis from at least one perspective (perforating design, tubing sizing, post stimulation evaluation, etc.). Participants should be in a role that requires they regularly perform or are required to technically review well inflow/outflow analysis.

YOU WILL LEARN HOW TO
• Recognize the application and limitations of traditional well systems analysis
• Identify data requirements for a meaningful analysis
• Accurately model the various components of skin, including perforating
• Assess outflow performance, including liquid loading, tubing constraints, and artificial lift
• Confidently approach well systems analysis from multiple perspectives and select the correct diagnostic strategy for your well conditions

COURSE DESCRIPTION
See website for dates and locations.

2019-2020 Schedule and Tuition (USD)

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2019-2020 Schedule and Tuition (USD)

PETROSKILLS.COM/ NODAL-VIRTUAL
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<td>Downhole Remediation Practices for Mature Oil and Gas Wells</td>
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### Course Content

**Hydraulic Fracturing Applications**

**Drillers’ Hydraulic Fracturing (DFU)**

- Introduction to hydraulic fracturing, design, and application.
- Fracture design concepts and methodologies.
- Fracturing fluid additives and proppant placement.
- Fracture conductivity and well cleanup.
- Waterfracing concepts and techniques.
- Case studies.

**Advanced Hydraulic Fracturing**

**Ahora Fracturing (AHF)**

- Advanced hydraulic fracturing concepts and applications.
- Fracture design and optimization.
- Fracture conductivity and well cleanup.
- Waterfracing concepts and techniques.
- Case studies.

### Additional Information

- **Contact Information:**
  - +1.918.828.2500
  - petroskills.com
  - +1.800.821.5933 (toll free North America)

- **Enrollment:** Any course is available in-house at your location. Contact us today.
Artificial Lift Systems – ALS

FOUNDATION 5-Day

This course blends lecture, hands-on exercises, and seminar teaching styles to enhance learning. Participants work with software that allows them to design and analyze artificial lift designs, which points the way to improved efficiency, higher production and less downtime due to failures. Participants learn how to design and troubleshoot rod pumping, continuous gas lift, and electric submersible pump systems. Other methods such as POP plunger, jet pump, hydraulic pump, and intermittent gas lift are presented as viable AL techniques. Participants gain experience in solving problems by hand and also by using industry computer software. Troubleshooting is an important part of artificial lift operations and several typical surveillance problems are solved. The class includes pictures and videos of the most important equipment components being applied. The course emphasizes techniques to maximize production. New developments at various stages of application are also covered. A discussion of modifications necessary for horizontal or unconventional wells for all methods of lift is included. Several examples of how these techniques are being applied in producing unconventional wells are presented. Distinct features of all lift methods are presented allowing the attendee to know how to select the best lift for well or field conditions.

DESIGNED FOR

Engineers, technicians, field supervisors, and others who select, design, install, evaluate, or operate artificial lift systems.

YOU WILL LEARN HOW TO

• Apply techniques to maximize oil production economically with artificial lift systems
• Make basic PVF properties and inflow performance calculations related to artificial lift
• Understand and apply multiphase tubing and open flow principles
• Select the appropriate artificial lift system by examining the drawdown potential of each method, the initial and operating expense and the range of production and depth possible with each method; special problems such as sand/scale/deviation etc. are discussed with each method
• Specify components and auxiliary equipment needed for each system
• Know what best practices are available to extend the life of equipment and installed lift systems
• Apply basic design and analysis concepts
• Design and operate system features for each method under harsh conditions

COURSE CONTENT

Overview of artificial lift technology • Selection criteria • Reservoir performance • Artificial lift screening • Economic analysis • Rod pump, gas lift and ESP equipment selection and design • Best practices for each system

2019-2020 Schedule and Tuition (USD)

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Artificial Lift for Unconventional Wells – ALUW

INTERMEDIATE 5-Day

This course addresses artificial lift methods and practices for unconventional wells for oil and gas producers, as well as associated industry service providers and contractors. The focus of the course is optimizing value from upfront well planning through the end of life of unconventional wells by selecting, installing and operating artificial lift effectively. Upon completion of this course, the participant will understand how to choose and implement artificial lift and be able to utilize best practices to resolve and reduce issues and challenges that frequently occur during the life cycle of unconventional wells. The course focuses on optimizing production and recovery by ensuring the proper artificial lift technology is used in conjunction with optimum surface pressure and related facilities in a holistic approach. Participants will understand the steps necessary to develop an effective artificial lift strategy for wells specific to areas/plays. Participants will be asked to bring a challenge they are currently facing in artificial lift for unconventional wells and will present the challenge (Day 2) and their path forward based on what they have learned (Day 3).

DESIGNED FOR

Production and artificial lift engineers. It will be valuable for engineers (working for operators, service companies or as consultants) who may have artificial lift knowledge on conventional wells or individual lift methods that want to expand their ability to deliver more optimal holistic artificial lift solutions specific to unconventional wells and the latest practices.

YOU WILL LEARN HOW TO

• Identify early in the well planning cycle the objectives of artificial lift
• Identify the critical differences and requirements for applying artificial lift to unconventional vs. conventional wells
• Evaluate the effect of changing Inflow Performance Relationship (IPR) over time
• Recognize the benefits and challenges of applying Systems Nodal Analysis in artificial lift for unconventional wells
• Identify the strengths and weaknesses of each major artificial lift method used
• Manage operating challenges and how to troubleshoot/mitigate them
• Select an effective artificial lift method for individual unconventional resources wells
• Analyze staging of artificial lift methods over time to enhance value
• Understand the importance of surface pressure and facilities
• Develop a comprehensive artificial lift strategy for an area/field

COURSE CONTENT

Artificial lift objectives, value, rate and recovery, costs • Differences between conventional and unconventional wells • Applying Nodal Analysis and using IPR curves for artificial lift selection in unconventional wells • Selecting the optimum artificial lift method, rod pumps, plunger lift, ESP or other • Developing comprehensive strategy

2019-2020 Schedule and Tuition (USD)

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Beam Pumps – BP

INTERMEDIATE 5-Day

This course will allow the user to become familiar with the beam pump system and its best application. Beam pumping is the most common and cost-effective artificial lift method. The course includes a detailed description of all the components in a beam pumping system, including the prime mover, belts/sheaves/ gear box, P&IDs, wellhead/ stuffing box, sucker rods/sinker bars and downhole pumps. Design and analysis, using industry computer software is also included. Films are shown throughout the course to illustrate new products and best practices. Exercises designed to illustrate the process and decision-making criteria to select the optimum lift method will be worked by participants throughout the course. Problems related to solids production, gas handling and corrosion are addressed. Best practices are stressed throughout so that a long lasting system can be designed to achieve optimum well performance. SCADA controls and VSDs are discussed. Participants will learn the function of each component, and important considerations about installation, operation, and removal of failed equipment. Participants will be able to evaluate the design of a system for current and future conditions, analyze an installed system, and review multiple operational aspects of the ESP system. Although the course uses industry computer software for design and analysis, much of the material is devoted to best practices, which is useful to both engineers and technicians. The common practice of using ESPs in unconventional wells with sharply declining production rates is also discussed.

DESIGNED FOR

Engineers and field technicians who are responsible for the selection, operation, and maintenance of beam pumping systems

YOU WILL LEARN HOW TO

• Design systems with optimum efficiency, economical production, longer operating life, high energy efficiency and safe performance
• Perform maintenance and monitor system performance using POC’s (on/off and VSD types)
• Identify and select optional system components for optimum performance
• Design and analyze a system using computer software
• Monitor equipment performance with SCADA systems
• Apply best practices to extend system life

COURSE CONTENT

Reservoir characteristics • Overview of artificial lift • Design and analysis of the beam pump system • Prime mover • Belt & Sheaves • Gear box • Unit • Polished rod • Wellhead/ stuffing box • Rods • Pump • Tubing • Artificial lift efficiency • Heavy oil considerations • Gas separation/handling • Best operating practices • Component design • System analysis • Pump off controllers

2019-2020 Schedule and Tuition (USD)

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<td>26-30 Oct 2020</td>
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Electrical Submersible Pumps – ESP

INTERMEDIATE 5-Day

ESP’s have advantages over some of the other artificial lift methods because they can generate a higher formation drawdown, and achieve a higher rate. However, their performance is impacted by gas interference and formation sand production, both of which have to be addressed when setting ESPs in production wells. This course will familiarize the user with the ESP system and its optimum application. All components will be described in detail. The course uses computer software for numerous design and analysis class problems. Some films will be shown to illustrate the installation, operation, and removal of failed equipment, new production, and troubleshooting. The course focuses on modern ESP methods to help facilitate the optimum method selection. Problems related to solids production, gas handling and corrosion are addressed. Best practices are stressed throughout so that a long lasting system can be designed to achieve optimum well performance. SCADA controls and VSDs are discussed. Participants will learn the function of each component, and important considerations about installation, operation, and removal of failed equipment. Participants will be able to evaluate the design of a system for current and future conditions, analyze an installed system, and review multiple operational aspects of the ESP system. Although the course uses industry computer software for design and analysis, much of the material is devoted to best practices, which is useful to both engineers and technicians. The common practice of using ESPs in unconventional wells with sharply declining production rates is also discussed.

DESIGNED FOR

Engineers and field technicians who are responsible for the selection, operation, and maintenance of ESP systems.

YOU WILL LEARN HOW TO

• Optimize well productivity using ESP systems
• Identify the function of each component of the ESP system, and to select optional components and add-ons
• Design and analyze a system using computer software
• Apply best practices to extend system life
• Optimize system power efficiency
• Manage gas, solids, corrosion, and viscosity associated with produced fluids
• Determine if an ESP system is the optimum artificial lift system for a given producer
• Monitor system performance using the different types of sensors available

COURSE CONTENT

Introduction to artificial lift and electrical submersible pumping • Reservoir and production considerations for ESP installation • Description of every component comprising the electrical submersible pump system • Installation considerations and important best practices to apply • Design of an ESP system to fit current and future well conditions • Troubleshooting analysis of failed equipment • Maintenance and monitoring

2019-2020 Schedule and Tuition (USD)

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<td>26-30 Oct 2020</td>
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*plus computer charge

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

+1.918.828.2500 | petroskills.com  | +1.800.821.5933 (toll free North America)
Plunger Lift – PLS

INTERMEDIATE  5-Day

There are about 400,000 gas wells in the USA and most are liquid loaded. Solving this problem may increase production as much as –40%. Plunger lift is a very popular method of gas well dewatering as it is initially inexpensive, has a long operating life and requires no power to operate in most wells. Each component of a plunger lift system is described in detail, and tools for analysis are provided to participants. Several methods of cycles analysis, including analysis by shape of the SCADA traces of CP, TP rate, and LP are discussed and applied throughout the course using a spreadsheet provided to participants to estimate the cycle slug size, the CP required to lift it at the correct speed, the minimum time for shut-in-for the plunger to fall, the maximum liquid possible, the cycle times, and other information on the plunger cycle. Proven methods of how to adjust cycles to increase production are presented. Details about plunger lift operation are covered, with emphasis on trouble free cycles and more gas production. Continuous (bypass), conventional, gas assisted and casing plunger lift are presented. Special equipment and techniques used in unconventional or horizontal wells are discussed, as well as the effect that well deviation has on system operation. The course has a good balance between slide and video presentations, example problems, and group discussion. Some programs and SS will be distributed to the participants. One personal computer is provided, at additional cost, for each two participants.

DESIGNED FOR

Engineers and field technicians that design, operate, monitor, and optimize plunger lift operations.

YOU WILL LEARN HOW TO

• Recognize liquid loading in a gas well from field performance, using critical velocity, and nodal analysis. Decline curve analysis is discussed.
• Understand the advantages and disadvantages of using a plunger system to lift a well, compared to other lift methods, and the optimum conditions to use one method over another.
• Apply, design, and diagnose continuous plunger lift and conventional plunger lift
• Increase production when operating plunger lift
• Know when conventional plunger ceases to work, what are other workable plunger related systems to switch to for continuous production
• Recognize important considerations for unconventional and horizontal wells

COURSE CONTENT

Introduction to methods to solve loading problems • Lifting capability comparison between Plunger Lift and other artificial lift methods • Continuous Plunger Lift • Conventional Plunger Lift • Trouble shooting using decline curves, SCADA traces cycle set points • Drawdown capability of plunger lift • PRS for plunger lift • Systems used to monitor plunger in the well • What systems to use when conventional plunger no longer works

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, larger tiebacks, deeper wells, and higher temperature and pressure reservoirs. Although gas hydrate issues dominate the thermohydraulic design, waxes, asphaltenates, 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 principals, 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 flow 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), asphaltenates, 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

Formation Damage: Causes, Prevention, and Remediation – FD

INTERMEDIATE  5-Day

Formation damage seems to be inevitable and it is costing your company money! Whether formation damage can be prevented, removed economically, or must be accepted as the price for drilling and producing a well will depend upon many factors. Concerns for formation damage have been with our industry from the early days. These concerns become more prevalent as we embark on more challenging reservoirs utilizing even challenging drilling, completion, and production methods. Additional concerns relate to the common lost production or injectivity following workovers in these challenging environments. These subjects and many more are addressed in this fast-paced, informative course covering all aspects of formation damage. Examples, case histories, and class team exercises are used throughout the course to emphasize key points on this important industry subject. This subject is briefly covered in the PetroSkills Production Operations 1 course (Foundation Level) as well as in the Well Stimulation: Practical and Applied (Basic Level) course. However, this course is more concentrated, detailed, and applied in the subject matter than either of the other courses.

DESIGNED FOR

Production, completions, reservoir, and drilling engineers: geologists concerned with well performance and production enhancement; field supervisors, production foremen, engineering technicians, production and exploration managers; those involved in vertical, horizontal, and multilateral wells, conventional and unconventional reservoirs.

YOU WILL LEARN HOW TO

• Recognize formation damage and damage mechanisms in carbonates, sandstones, and shales
• Prevent and overcome damage, when it exists, through the application of non-acid approaches, acidizing, and small fracturing treatments

COURSE CONTENT

Geological/depositional environment, reservoir property review • Properties influencing formation damage • Damaging sandstones, shales and carbonates, clay mineralogy • Damage mechanisms and causes of damage: fluids and polymers, during drilling, running pipe and cementing, from perforating, during well completions, during production (fines migration, paraffin, scale, etc.), during workovers, and damage to injection wells • Evaluating damage potential: laboratory testing • Evaluating wells that may be damaged: production performance, pressure analysis, production logging • Damage removal: non-acid approaches, acidizing, and bypassing damage with hydraulic fracturing

2019-2020 Schedule and Tuition (USD)

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*plus computer charge

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*plus computer charge

You Will Receive:

• Complimentary learning and development resources
• Information on new courses and instructors
• Additional public course locations and dates
• Invitations for PetroSkills events and conferences

Simply go to petroskills.com/emails signup

Keep current and ensure you always have the latest information by joining our email list.
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 influence 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, choking, 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; perforation 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, condensate; retrograde; reservoir estimation, laboratory simulation; gas cycling • Field operations problems: interpreting P/Z plots; hydra formation

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INTERMEDIATE 5-Day

As gas wells deplete, the velocity in the tubing drops and eventually liquids from the well and from condensation begin to accumulate in the tubing. This increase of liquids in the tubing adds back pressure on the formation, which in turn reduces flow or even stops flow all together. The course introduces this problem and discusses how to recognize liquid loading as opposed to other possible well problems. The course will then cover the various methods of solving the problem of liquid loading, showing how to apply the various solutions and the advantages and disadvantages of each method. Solution methods include use of surfactants, velocity strings, compression, use of plunger lift, various other pumping methods, gas lift, and the injection of fluids below a packer so gas can flow up the annulus. Participants will learn to recognize the problems and symptoms of liquid loading, determine which methods can solve the problem and select the optimum method(s) after attending the course. There are about 400,000 gas wells in the USA and most are liquid loaded. Solving this problem may on the average increase production by ~40% per well. Special considerations for the use of each system in unconventional or horizontal wells are also discussed.

DESIGNED FOR
Engineers, field technicians, field supervisors, and others who select, design, install, monitor, evaluate, or operate artificial lift systems for use in dewatering gas wells.

YOU WILL LEARN HOW TO
• Maximize gas production using optimized dewatering techniques
• Recognize liquid loading in a gas well using field symptoms, critical velocity, and nodal analysis
• Recognize the advantages and disadvantages of various methods of liquid removal
• Best install and troubleshoot the various methods
• Understand economics of each method covered

COURSE CONTENT
Recognize symptoms of liquid loading in gas wells • Critical velocity to analyze wells loading or not • Optimize techniques with nodal analysis • Sizing tubing • Compression: selection, sizing, and operation • Plunger lift: confidence (hypothetical), conventional and gas assisted • Use of foam to deliquefy gas wells • Hydraulic pumps • Use of beam pumps to deliquefy gas wells • Gas lift • Electrical submersible pumps • Progressive cavity pumps • Other methods to solve liquid loading problems

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INTERMEDIATE 5-Day

Scale Identification, Remediation and Prevention is an essential part of a production or workover engineer’s scope of work. This workshop provides a comprehensive overview of dilemmas in operating producing and injection wells related to the presence of a variety of oilfield scale types — primarily reduction in pipe carrying capacity and localization of corrosion attack — deposition mechanisms, identification methods, various removal techniques and methodologies for its prevention. Upon completion, participants will be aware of the scale problem, understand ways to remediate it and prevent it subsequent deposition. Specific mathematical scale prediction methods are presented and numerous preventive methods, both chemical and unique approaches, are covered.

DESIGNED FOR
Asset managers, drilling and completion engineers, petroleum engineers and geologists, independent producers, production managers and engineers, reservoir managers and engineers, field superintendents, company executives and officials, field personnel with operating and service companies. Participants should have at least one year of operations-related experience and be in a supervisory or support role.

YOU WILL LEARN ABOUT
• How to determine scaling potential and the solubility of various scales
• Two principal methods for scale identification and how to recognize other methods and their application for removing scale according to its composition
• Precipitation tendency variables and locations for various scale deposits — especially iron and be familiar with three mathematical models that predict scaling, including a popular software program
• How to properly prevent and inhibit scale formation and deposition using various methods

COURSE CONTENT
Overview scale, water and depo • Scaling potential: Factors affecting deposition • Scale Identification and removal • Scaling tendency/SL: Rice U ScaleSoftPlus software • Scale prevention and inhibition

Virtual Schedule and Tuition (USD)

See website for dates and locations.

TO LEARN MORE, VISIT
PETROSKILLS.COM/SCALE-BLENDED-VIRTUAL

INTERMEDIATE 5-Day

This course covers the selection and use of chemicals in oil and gas production. As oilfields mature more water is produced which requires the use of more chemicals to maintain production. Chemicals used for controlling corrosion, emulsions, foaming, mineral scales, paraffins (waxes), asphaltenes, gas hydrates, hydrogen sulfide scavengers, and water clarifiers are covered. The course includes methods to determine the need for chemical treatment, how to select the proper chemicals, and how testing for chemical compatibility with the formation and other chemicals is performed. Requirements for environmentally friendly products and products for deep water production are discussed. The course will include how the use of chemicals can prevent problems, improve production and economics, and extend the life of the production equipment. This course can be offered on an in-house basis with expansion of some sections and deletion of others to suit the needs of individual clients.

DESIGNED FOR
Production engineers, facilities engineers, chemists, and technicians involved with production systems from the wellbore through the topside production equipment, transmission pipelines, and storage facilities who are responsible for recognizing and treating problems which might require treatment chemicals.

YOU WILL LEARN HOW TO
• Recognize corrosive conditions and monitor corrosion rates
• Select and apply corrosion inhibitors
• Predict and treat emulsions
• Understand causes and control of foaming
• Predict scale forming conditions
• Select and apply scale inhibitors
• Control gas hydrate formation
• Predict and control paraffin (wax) deposition
• Evaluate methods for asphaltene control
• Recognize liquid loading in a gas well using various solutions and the advantages and disadvantages of each method

COURSE CONTENT
Covarse agents • Corrosion inhibitor selection and application • Predicting and monitoring corrosion rates • Basics of oilfield emulsions • Demulsifier selection and field application • Foams • Deoamifiers • foam basics • Field application of foams • How deoamifiers work • Compounds that cause scaling • Prediction of scaling tendency • Scale inhibitors • Solvents to dissolve scales • Requirements for gas hydrates to form • Types of compounds used to control hydrate formation • Causes of paraffin (wax) problems • Paraffin treatment chemicals • Asphaltene stability tests • Asphaltene treatment chemicals • Chemicals used as H.S scavengers • Application of H.S scavengers • Oil carryover in water • Removal of oil and oily solids • Tests required for chemicals used in deep water • Green chemicals (environmentally friendly chemicals)

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Production Logging - RMP

INTERMEDIATE 5-Day

Production logging refers to acquiring a suite of logging measurements in either production or injection wells to evaluate well or reservoir flow performance. Special purpose production logging tools can evaluate the well completion or look behind the pipe to evaluate the formation and its fluids in the near-well bore vicinity. Production logs are playing an increasing role in modern reservoir management by providing the only means of directly identifying downhole fluid movement. This course will cover single-phase and multi-phase fluid flow in pipes, the theoretical bases of production logging techniques, production log interpretation, and operational considerations in acquiring production logs. Numerous field examples are used to illustrate the principles of production log interpretation.

DESIGNED FOR
Petroleum and drilling engineers and managers, reservoir engineers, subsurface engineers, production engineers/technologists, petrophysicists, log analysts, and anyone interested in understanding production logs and cased-hole surveys.

YOU WILL LEARN HOW TO
• Measure zonal inflows in producing wells using temperature measurements
• Measure multi-phase flow using temperature, spinner (flowmeter), and fluid holdup measurements
• Define injection profiles using temperature, radioactive tracer, and spinner (flowmeter) measurements
• Identify flow behind pipe with temperature, radioactive tracer, or noise logs
• Interpret cement bond logs and ultrasonic logs to determine cement quality
• Measure flow inside and outside casing with pulsed neutron tools
• Apply specialty tools (array holdup and spinners and pulsed neutron tools) for flow profiling in high angle/horizontal wells
• Confirm the location of some types of completion components using pulsed neutron measurements
• Design a logging program using the appropriate production logging services for well diagnosis and reservoir surveillance.

COURSE CONTENT
Wellbore environment and tool deployment considerations • Depth control issues and natural gamma ray logging • Cement bond logs • Ultrasonic imaging logs • Conventional temperature logs • Conventional spinner (flowmeter) logs • Conventional fluid holdup logs (gamma density, capacitance, differential-pressure) • Radioactive tracer logs • Noise logs • Temperature from fiber optic cable • Pulsed neutron capture logs (including oxygen activation and nonradioactive traces) • Pulsed neutron spectroscopy logs • Array mini-spinner logs • Array fluid holdup logs (optical, capacitance, and resistance) • Multiphase flow and slip velocity • Effects of hole-deviation on fluid holdup and multiphase flow velocities • Combining production logs for multiphase flow profiling • Combining production logs for injection well profiling • Designing a production logging program for problem identification and solution.

TO LEARN MORE, VISIT
PETROSKILLS.COM/VIRTUALRMP

Sand Control - SNDC

INTERMEDIATE 5-Day

Sand causes a wide variety of costly problems when oil and gas are produced from unconsolidated reservoirs. The most costly problem is usually the loss of production resulting from formation damage caused by poorly planned and/or executed sand control applications. This course will identify the parameters that must be considered when selecting the sand control technique to be used. Examples, problems, and case histories will be examined to illustrate key points. Sand control failures will be used to illustrate the types of problems that can lead to early well failures. The course will also teach how to perform quality control checks during the sand control application to help insure successful wells. Because Sand Control in horizontal wells often proves to be short-lived when incorrectly applied, examples and class problems will focus on correctly choosing successful completion techniques for horizontal wells. Several new promising sand control technologies have been introduced in the last few years, such as expandable screens of several different types. The proper application of these new technologies will also be covered. Attendees will leave this course with a thorough understanding of what is necessary to design and implement cost-effective sand control in both producing and injection wells.

DESIGNED FOR
Drilling, completion, production, and research engineers; field supervisors and production foremen; technical personnel who supply services and equipment.

YOU WILL LEARN HOW TO
• Determine the causes of sand production
• Determine the need for sand control
• Select the best sand control method
• Prepare the well for the proper application of sand control
• Apply best practices to ensure successful sand control completions
• Conduct successful frac packs
• Evaluate sand control performance
• Minimize production losses
• Evaluate new technologies for proper applications.

COURSE CONTENT
Sand control techniques • Radial flow and formation damage • Causes and effects of sand production • Predicting sand production • Gravel pack design • Slotted liners and wire wrapped screens • Gravel pack completion equipment and service tools • Well preparation for gravel packing • Perforating for gravel placement techniques • Perforation prepacking and enhanced prepacking • Frac packing • Open hole gravel packing • Expandable screens • Gravel pack performance • Horizontal well completions.

TO LEARN MORE, VISIT
PETROSKILLS.COM/VIRTUALSNDC
Water Management in Heavy Oil Resource Operations – HOWM

INTERMEDIATE 3-Day

This course will review basics of heavy oil extraction, characteristics, quantities, and typical ratios of waters in heavy oil extraction. It will review alternative discharge limitations, offshore discharge, and treatment for well injection. Suspended and oil/crude separation, with traditional and new equipment, will be covered. The course will review the scientific basis and principles of softening, lime softening (hot, warm, including sludge disposal), strong acid exchange (SAC), weak-acid exchange (WAC), ion exchange, boiler feed water chemistry (including once through steam generator), and cooling tower classes. Technologies for produced water recovery will be discussed.

DEIGNED FOR
Central processing facility operators and process designers dealing with heavy oil produced water separation, recovery, and treatment for reuse or disposal. Personnel involved in establishing, improving, optimizing, or supervising the implementation of technology improvements. This course will be useful to managers in completion, production, and optimization of operations. The course is a great reference parameter for water technologies in mining and heavy industry, with some examples of cases and treatment for discharge and spills.

YOU WILL LEARN HOW TO
• Understand and analyze technology options, advantages, and limitations
• Choose the most advantageous technology given the site conditions
• Design or specify the equipment capable of fulfilling the operations intended
• Optimize design conditions and operating efficiency
• Choose suppliers when comparing basic principles and design
• Synthesize and define the applicability conditions of technologies
• Troubleshoot field situations, learned from field cases, discussions, and debates in class
• Understand water mass and ionic/solids balance
• Estimate and calculate equipment requirements, predesign and specify equipment
• Predict efficiencies or performance of equipment, anticipate remediation of spills

COURSE CONTENT
Heavy oil review and basic definitions, heavy oil around the globe • Thermo-extraction produced water, the process (SAGD and CSS) ratios • De-oiling technologies, traditional, deviations, and future • Alkalinity and hardness concepts, softening and silica removal, hot and warm lime softening • Ion exchange softening technology, SACs and WACs technologies, the in and out of vessel regeneration • Boiler feed water final treatment, standard requirements and chemical conditioning • Evaporator alternatives and zero liquid discharge technology • Mining bitumen extraction, tailings pond, process affected waters, their treatment and reuse • Cooling tower requirements, water conditioning, and treatments • Deep well injection of waste water: requirements and treatment

Horizontal and Multilateral Wells: Completions and Stimulation – HML2

SPECIALIZED 5-Day

Successful multilateral and horizontal wells require new considerations, interdisciplinary planning, and special techniques. This intense course focuses on the critical need for a proper understanding of all interested in horizontal and multilateral design and completion. It also addresses basic stimulation design and analysis concepts. It is designed for those planning or working with horizontal and multilateral wells and interested in effective use of the latest technology. Basic understanding of important reservoir characteristics, hole stability, formation damage, crucial zonal isolation, and hydraulic fracturing are just some of the critical issues addressed by this course. Hydraulic fracturing aspects of unconventional resources plays, including conductivity, proppant selection, and practices, are discussed. A combined practical and theoretical theme is employed, with emphasis on economy and efficiency in designing, completing, and producing horizontal and multilateral wells.

DEIGNED FOR
Completion, production, reservoir, and research engineers; geologists; managers in completion, production, drilling, and exploration; others involved in various phases of horizontal and multilateral well design or interested in gaining an interdisciplinary up-to-date understanding of this continually evolving technology.

YOU WILL LEARN HOW TO
• Successfully design and optimize horizontal and multilateral well completions
• Engineer wells, taking into account limitations imposed by well bore stability and borehole friction
• Determine the appropriate zonal isolation methods for horizontal and multilateral wells
• Identify key components of fracture design and analysis in horizontal wells
• Design damage removal, stimulation, and workover operators

COURSE CONTENT
Reservoir characteristics for horizontal and multilateral well applications • Well performance prediction • Wellbore stability of horizontal wells • Stress field effect on drilling, completion, production, and stimulation • Geo-steering • Multilateral well structure, junction, and application • Formation damage and its effect on horizontal well performance • Well completion and its effect on horizontal and multilateral wells • Intelligent completion: downhole monitoring and control • Well trajectory and completion optimization • Horizontal well fracturing • Acidizing of horizontal wells • Other stimulation methods

Applied Water Technology in Oil and Gas Production – PG

FOUNDATION 5-Day

This course provides an overview of the main water handling systems typically encountered in upstream (ESP) 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, as well as water injection and disposal systems will be reviewed. An exercise will be given to identify typical systems problems and to apply the knowledge gained to propose solutions. Emphasis will be placed on understanding and resolving operational problems in process equipment.

DEIGNED 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, disadvantages, and the importance of oil droplet size • Water injection and disposal systems - theory of operation, corrosion, scale, and biological control • Case study

199-2020 Schedule and Tuition (USD)

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199-2020 Schedule and Tuition (USD)

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

+1.918.828.2500 | petroskills.com | +1.800.821.5933 (toll free North America)
Compotent Person Fall Protection – FPST

**BASIC**
5-Day

This comprehensive training program is for anyone who develops or implements fall protection policy, as well as those involved with design practices, facility or production modifications and equipment procurement. The goal of training is to provide participants with the knowledge to solve fall protection issues before they arise. Attendees will acquire the tools required to become certified OSHA competent persons and the skills to develop and implement a comprehensive, cost-effective and attainable fall control system. The course provides interactive instruction, multimedia resources, and knowledge check that have been developed to train attendees to the competent person level.

**DEIGNED FOR**

This course is intended for safety directors, safety professionals, fall protection program administrators, managers, facility engineers, production supervisors, and maintenance supervisors.

**YOU WILL LEARN**

- To recognize myths and facts surrounding fall protection
- To describe how fall protection fits into the core elements of your safety program
- To determine the key resources for identifying fall hazards
- To rank abatement options using objective criteria
- Regulatory requirements for access, surfaces, and edge protection
- About lift equipment including requirements for vacating or entering an aerial lift
- The regulations and standards for scaffolding
- About the initial ANSI fall protection standards and the new ones within the 2395 family
- The difference between certified and non-certified anchorage points
- How to recognize how ANSI applies to various equipment components
- How to inspect fall hazard equipment
- About typical roof fall hazards
- About fall clearances including sample fall clearance calculations
- To identify the elements of a horizontal life system and recognize the pitfalls
- The importance of preparing a fall protection rescue as a part of a pre-task plan
- To develop a rescue procedure for a specific personal fall arrest system

**COURSE CONTENT**

Fall protection program overview • Fall hazard risk assessment • Fall hazard abatement • Engineering controls • Lift equipment • Scaffolding • OSHA requirements and ANSI standards • Equipment inspection • Roof fall protection • Fall clearances • Anchorage • Horizontal lifelines • Rescue

Applied Environmental Management Systems – AEM

**FOUNDATION**
5-Day

Since the Rio de Janeiro Earth Summit (UNCED) held in 1992, environmental issues have been drawn to the forefront of organizations’ operations and possibly their reputations. A review of the world’s press often reveals spillages, toxic releases, fires, and other pollution events. There are efficiency opportunities from better use of energy, water and from reducing waste in a systematic way. Participants will receive a template Environmental Management System (EMS) manual for their own use as part of the study materials. This class provides a complete review of the international standard for environmental management, ISO 14001:2015, as well as other environmental management techniques. Over five days, the class works through the PDCA improvement cycle provided by ISO 14001, teaching the tools and techniques of excellence practice. The course includes a week-long practical implementation case study set in the fictional highly-realistic setting of oil products distribution company Melvis Group where the new learning is validated through application. Please see www.melvisgroup.com for more information.

**DESIGNED FOR**

Environmental professionals seeking a deeper knowledge of environmental management systems (EMS) and/or external certification to ISO 14001, H&S managers wanting to broaden their knowledge in a related discipline, project managers, other staff with delegated environmental responsibilities such as those related to energy, waste, or water.

**YOU WILL LEARN HOW TO**

- Successfully design and use the principle elements of an environmental management system in a typical petrochemical organisation
- Identify and integrate key tools associated with Occupational Health and Safety (OHS) management, including environmental impact assessment, setting and progressing environmental objectives, emergency preparedness, and incident investigation
- Reflect on, shape, and initiate improvements in the environmental (HSE) culture of an organization
- Communicate a powerful improvement message to a team of senior leaders

**COURSE CONTENT**

- Context of the organization • Leadership and commitment • OHS & HSE policies, procedures • Objectives and metrics • Management review and decision making • Communication • Operational planning and control • Emergency preparedness • Performance measurement and evaluation (monitoring, internal audit, management review) • Improvement

Applied Occupational Health and Safety Management Systems – HSM

**FOUNDATION**
5-Day

Every 15 seconds, somewhere in the world, a worker is killed and over 150 others are injured. Our members’ and clients’ experience is that committed application of an Occupational Health and Safety Management System (OHSMS) can reduce such incidents, while providing a platform for sustained cultural change. We call this ‘predict and prevent’ instead of the unstructured approach of ‘react and abate’. Participants will receive a template OHSMS manual for their own use as part of the study materials. This class provides a complete review of the new international standard for occupational health and safety management, ISO 45001:2018, as well as an overview of other common OHS-S-MS (AS4801, ILO OSH-2001, ISO 45001:2018) that can be aligned to organizations’ own systems. Over five days, the class works through a Plan, Do, Check, Act improvement cycle teaching the tools and techniques of excellent practice. The course includes a week-long practical implementation case study set in the fictional highly-realistic setting of oil products distribution company Melvis Group where the new learning is validated through application. Please see www.melvisgroup.com for more information.

**DESIGNED FOR**

Health and Safety (H&S) professionals who want to take advantage of the new improvement opportunities presented by ISO 45001 (or seek external certification), project managers, contract managers, members of H&S committees, directors of smaller organizations with limited access to specialist H&S advice.

**YOU WILL LEARN HOW TO**

- Successfully design and use the principle elements of an OHS-MS in a typical petrochemical organisation
- Identify and integrate key tools associated with OHSMS management, including HSE, risk assessment, JSA, PIVT, LOTO, active and reactive monitoring
- Reflect on, shape and initiate improvements in the safety culture of an organization
- Communicate a powerful improvement message to a team of senior leaders

**COURSE CONTENT**

- Context of the organization • H&S culture • Leadership and commitment • H&S policies, procedures • Objectives and metrics • Communication • Operational planning and control • Emergency preparedness • Performance evaluation (monitoring, internal audit, management review) • Improvement

Risk Based Process Safety Management – HPS5

**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 “RBS” will be the text for this course. Participants 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 term use
- 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 safety guarding 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

2019-2020 Schedule and Tuition (USD)

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**Fundamentals of Process Safety – PS2**

**FOUNDATION 5-Day**

This 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)

**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

**Spill Control and Remediation Engineering – SCRE**

**INTERMEDIATE 5-Day**

Our Lead Auditor course provides a rigorous approach to conducting a risk-based internal audit of any structured means of control aligned to the international standard guidance ISO 19011. We use ISO 14001 environment and ISO 45001 (health and safety) as reference frameworks, but our approach could be applied to ISO 9001 (quality) or your own organization’s management systems. A copy of the best-selling book, Health and Safety, Environment and Quality Audits — A Risk-Based Approach is included for each participant. For the duration of the class, participants are assigned to a 5-6-person audit team, led by an experienced Lead Auditor. This course allows participants to relate audit to the essential principles of corporate governance and risk management. It also adds value for senior management from the auditing process through provision of a high-level, future-focused viewpoint. The course includes a week-long practical implementation case study in the fictional highly-realistic setting of oil products distribution company Melvis Group where the new learning is validated through application. Please see www.melvisgroup.com for more information. This course is approved by the International Institute of Risk and Safety Management (IIRSM) in conjunction with SME - see www.iirsm.org.

**DESIGNED FOR**

New management system auditors, experienced auditors aspiring to progress to Lead Auditor status, department managers wanting to understand the audit process or prior to secondment to an internal audit team.

**YOU WILL LEARN HOW TO**

- Lead/participate in an audit or review in line with the standards of the auditing profession, including ISO 19011
- Initiate an internal audit plan
- Prepare a risk-based audit plan to steer the conduct of any audit
- Conduct audit fieldwork including the necessary reviews and tests to substantiate findings
- Report the audit results and present to senior management

**COURSE CONTENT**

Risk management and business control
- Principles of auditing (ISO 19011)
- Initiating and planning a management systems audit
- Review and test
- Effective interview skills
- Legal and ethical aspects of auditing
- Developing audit findings and writing recommendations
- Reporting audit results and following up

**Management Systems Lead Auditor – AUD**

**NEW**

Achieve Chartered Membership (CMOSH) of the Institution of Occupational Safety and Health (IOSH) by flexible, distance learning. IOSH is the world’s largest health and safety professional body, and its membership credentials are recognized globally.

This is a mentored program typically lasting 12 months (532 hours). Each participant has a personal mentor and advisor who works with them on a flexible, one-to-one basis. Our support is tailored to meet your needs. You can start at any time, and you can work at a pace that suits you and your job. This qualification is accepted by IOSH for Graduate Membership (GradIOSH). CMIOSH is awarded after successful application and completion of an open book examination and professional interview. The Board of Certified Safety Professionals (BCSP) has a credential agreement with IOSH to accept GradIOSH for its Associate Safety Professional (ASP) designation. ASP is now a full certification and internationally accredited by the American National Standards Institute (ANSI). For more information, please go to petroskills.com/asp.

**DESIGNED FOR**

Experienced health and safety managers, officers, and advisers seeking professional recognition of their prior skills. You must be an active practitioner with at least two years’ experience.

**YOU WILL LEARN**

- With support from a personal mentor, to build your portfolio of work-based evidence which meets ProQual requirements for the award
- To write reflective reports explaining the evidence using templates which we will provide to you
- To identify and close any gaps in your H&S knowledge
- Through assessment and internal verification of your portfolio
- By being registered with awarding body ProQual

**COURSE CONTENT**

The syllabus has been designed to cover the competencies of a Health and Safety Professional. There are 10 mandatory units in the qualification, which are completed by presenting and explaining work-based evidence: 1. Promote a positive health and safety culture 2. Develop and implement the health and safety policy 3. Develop and implement effective communication systems for health and safety information 4. Develop and maintain individual and organizational competence in health and safety matters 5. Identify, assess, and control health and safety risks 6. Develop and implement proactive monitoring systems for health and safety 7. Develop and implement reactive monitoring systems for health and safety 8. Develop and implement health and safety emergency response systems and procedures 9. Develop and implement health and safety review systems 10. Maintain knowledge of improvements to influence health and safety practices.

**Accredited H&S Professional: GradIOSH, CMIOSH and ASP by Applied Learning (Level 6 NVQ Diploma in Occupational Health and Safety Practice) – HSP**

**NEW**

- **2019-2020 Schedule and Tuition (USD)**
  - **DENVER, US**
    - **1-5 JUNE 2020**
      - $4455
  - **HOUSTON, US**
    - **28 SEP-2 OCT 2020**
      - $4410
    - **25-29 NOV 2019**
      - $5035+VAT
    - **23-27 NOV 2020**
      - $5135+VAT
  - **LONDON, UK**
    - **16-20 DEC 2019**
      - $4510
    - **14-18 DEC 2020**
      - $5235+VAT

See website for dates and locations.

Any course is available in-house at your location. Contact us today. +1.918.828.2500 | petroskills.com | +1.800.821.5933 (toll free North America)
Introducing

Accredited H&S Professional: GradIOSH, CMIOSH and ASP by Applied Learning (Level 6 NVQ Diploma in Occupational Health and Safety Practice) - HSP

Achieve Chartered Membership (CMIOSH) of the Institution of Occupational Safety and Health (IOSH) by flexible, distance learning. IOSH is the world's largest health and safety professional body, and its membership credentials are recognized globally.

This is a mentored program typically lasting 12 months (532 guided hours). Each participant has a personal mentor and adviser who works with them on a flexible, one-to-one basis. Our support is tailored to meet your needs, including meetings where it is reasonable to do so. Regular communication is usually through e-conference, e-mail and telephone. You can start at any time, and you can work at a pace that suits you and your job. This qualification is accepted by IOSH for Graduate membership (GradIOSH). CMIOSH is awarded after successful application and completion of an open book examination and professional interview. The Board of Certified Safety Professionals (BCSP) has a credential agreement with IOSH to accept GradIOSH for its Associate Safety Professional (ASP) designation. ASP, once a designation in the process of becoming a CSP, is now a full certification and internationally accredited by the American National Standards Institute (ANSI).

Designed For

Experienced health and safety managers, officers, and advisers seeking professional recognition of their prior skills. You must be an active practitioner with at least two years' experience.

Course Content

The syllabus has been designed to cover the competencies of a Health and Safety Professional. There are 10 mandatory units in the qualification, which are completed by presenting and explaining work-based evidence:

1. Promote a positive health and safety culture
2. Develop and implement the health and safety policy
3. Develop and implement effective communication systems for health and safety information
4. Develop and maintain individual and organizational competence in health and safety matters
5. Identify, assess, and control health and safety risks
6. Develop and implement proactive monitoring systems for health and safety
7. Develop and implement reactive monitoring systems for health and safety
8. Develop and implement health and safety emergency response systems and procedures
9. Develop and implement health and safety review systems
10. Maintain knowledge of improvements to influence health and safety practice

For more details, see page 47 or petroskills.com/hsp
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.

**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

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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.

**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

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2019-2020 Schedule and Tuition (USD)

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<th>Location</th>
<th>Dates</th>
<th>Tuition (USD)</th>
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How can you accelerate competency and eliminate travel expenses?
Add e-Learning from PetroSkills to your development programs!

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Online Learning for Operations & Maintenance

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- Electrical
- Gas Processing
- Health, Environmental, Safety, and Security
- Instrumentation
- Mechanical Maintenance
- Pipeline Fundamentals
- Process Operations
- Production Operations
- Refinery Operations
- Refinery Process Units
- Rotating & Reciprocating Equipment
- Stationary Equipment
- Turnaround Planning

**ePetro**

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- E & P Asset Life Cycle
- Reservoir Fluids
- Exploration & Appraisal
- Development & Production
- Mature Assets & Abandonment
- Midstream
- Gas Manufacturing
- Refining
- Petrochemicals

For more information, visit www.petroskills.com/elearning or email solutions@petroskills.com
**PETROLEUM BUSINESS**

**Introduction to Petroleum Business – IPB**

**BASIC 3-Day**

Creation of shareholder value should be at the heart of every business decision. This course is designed for technical professionals in the petroleum industry who want to understand the nature of the petroleum business and how you will contribute to the financial success of your company. The course will introduce delegates to the structure of the petroleum business including supply and demand, how oil companies are organized and financed and what it takes to be financially successful. Success will be explored through an understanding of how we calculate long-term shareholder value both at the corporate and project level as well as the valuation of competitive advantage and incorporation of risk assessment in our models. Delegates will be introduced to the primary accounting financial statements and what they tell us about a company. Common accounting and economic terms and metrics will be reviewed. Participants should bring a PC with excel software to complete exercises.

**DEIGNED FOR**

Engineers, geologists, geophysicists, landmen, HR and other non-financial and accounting professionals who need an introduction to the business aspect of the petroleum industry including the interplay of finance and economic evaluation in the creation of long-term shareholder value.

**YOU WILL LEARN**

- How the petroleum business is structured and capital is raised
- What is shareholder value and how it is created
- The critical importance of seeking competitive advantage
- Economic and accounting terminology
- How to make an economic valuation of an investment and assess its competitive advantage
- How value creation impacts share price
- How shareholder value is measured
- What is risk and how it is assessed in economic evaluations

**COURSE CONTENT**

The importance of creating value for shareholders • History and characteristics of the oil and gas business • Introduction to Economic Evaluation including Net Present Value, Internal Rate of Return, and risk • Introduction to the key accounting financial statements and terms • The need for competitive advantage and how it is measured • How to develop spreadsheets to conduct economic evaluations

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**Basic Petroleum Economics – BEC3**

**BASIC 3-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, and this course will provide the fundamentals necessary to enable you to do so. 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. Each participant will receive Economics of Worldwide Petroleum Production, written specifically for PetroSkills courses.

**DEIGNED 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
- How to use economic criteria to choose investments
- Models to weigh risk and uncertainty

**COURSE CONTENT**

Forecasting oil production • Defining: “reserves”, operating expenses, capital expenditures, inflation, factors affecting 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 • Tips on economic factors in computer spreadsheet analysis • Ethics in economic analyses

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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.

**DEIGNED 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 affecting 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

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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 technology, 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 your 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.

**DEIGNED FOR**

Anyone who has new responsibilities to lead a team. Supervisors, team leaders, 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 lead the team do its work
- Recognize and resolve conflicts before they get out of control by early detection of conflicts, when they are simple 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

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**2019-2020 Schedule and Tuition (USD)**

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* plus computer charge
Managing Non-Technical Risks - MNTR

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.

DEIGNED 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 NGO’s, 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...

For more information, or to register, go to petroskills.com/mntr
Advanced Decision Analysis with Portfolio and Project Modeling—ADA

QUALIFIED 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.decisionaplications.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 modeling (similar to frequentist); 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 decision policy; 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

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2019-2020 Schedule and Tuition (USD)

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2019-2020 Schedule and Tuition (USD)
PETROLEUM BUSINESS

Fundamentals of International Oil and Gas Law

10G

INTERMEDIATE
5-Day

International Petroleum Contracts

IPC

INTERMEDIATE
5-Day

You will learn the philosophy, evolution, and fundamentals of international petroleum contracts and have an opportunity to see how each of these actually works. You will take part in life-like negotiating sessions mastering many negotiating techniques, where a mistake is a learning experience not a disaster. As you prepare for each session, you use a computerized economic model to assess the value of contract terms. This enables improved planning of negotiating strategies to achieve the desired goals by parties on both sides of the negotiating table. The classes include participants from both national oil companies and foreign contractors, which adds further realism to the exercises. Host governments and outside contractors are on opposite sides of the negotiating table, but they are not adversaries. A win-win business arrangement should be the objective of both parties, as a signed contract makes them partners. A viable contract type cannot be negotiated without an effective understanding of the underlying economics. Negotiating strategies will determine contractual terms ultimately defining the economic benefits to be realized.

Concessions and production sharing agreements are two of the contract types to be evaluated. Each participant receives a disk copy of the spreadsheets used in the negotiation workshop and a manual, which explains the fundamental principles of E&P contracts, presents examples of economic analysis, and includes a model contract.

DESIGNED FOR
Petroleum managers who deal with international oil and gas and legal matters in the course of their business, and legal professionals with little formal, specialized training in oil and gas law, but expect to deal with international oil and gas law matters.

YOU WILL LEARN HOW TO
• Recognize differences between international legal systems and transactions
• Understand legal fundamentals behind international transactions

COURSE CONTENT
Law governing international petroleum transactions (including significant differences between various national legal systems, and the sources, principles, and limits of international law as applied to petroleum transactions) • Interpretation and enforcement of treaties and private contracts • Effects of international trade (and producing country) agreements such as the E.U., NAFTA, Mercosur, and GPEC • Dispute resolution approaches, including litigation and arbitration • Procedures under and enforcement of common arbitration provisions • Legal defenses available to foreign companies, states, and state-owned or connected entities, and recognition and enforcement of judgments and arbitration awards • Basic legal concepts of ownership of mineral rights (onshore, offshore, and deep sea bed) • Expropriation and compensation issues • State-owned entities and privatization • Laws bearing on development rights • Legal interpretational issues of common contract provisions Interpretational issues for service contracts • Transfer and protection of technology and confidentiality agreements • Decisions to be made in negotiating a contract • Contractor’s risk • Contract economics • Non-financial issues • Analysis of contract provisions • Model contract • Natural gas production under international contracts • Negotiations workshop • Ethics in international petroleum operations

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For more information on dates, please visit the website or contact us.

See website for dates and locations.
### 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 interrelated 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, offshore oil and gas 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 determine 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 systems
- and more...

### 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 the 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 both the buyer and seller, as well 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...

### 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
- Methods of price analysis
- Historical analysis
- Developing company purchase price index
- Methods of cost analysis
- Development of “Should Cost”
- Types of TCO models

### Procurement/Supply Chain 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/pricing 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 highest levels of cost reductions possible from the supply chain. SOA is also available as a 5-day in-house course with expanded content.

**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/pricing analysis
- Total cost of ownership
- RFQ/handling 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
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## 2019-2020 Schedule and Tuition (USD)

<table>
<thead>
<tr>
<th>Course</th>
<th>Schedule</th>
<th>Location</th>
<th>Tuition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5-7 OCT 2020</td>
<td>HOUSTON, US</td>
<td>$3370</td>
</tr>
</tbody>
</table>
**Project Management**

**Petroleum Project and Program Management Essentials – P3ME**

**FOUNDBATION 3-DAY**

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 charts, 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

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**Project Management in Upstream Field Development – FPM2**

**FOUNDATION 3-Day**

A project does not stand alone. Not only does a project manager need to stay focused on project cost, schedule and performance targets, he or she must take a broader view. Many projects are a part of a larger field development program. Maintaining coherence among related projects is essential to success. This course will help you effectively deliver facility and infrastructure projects that are crucial for timely oil and gas production. Upon completion you will know how to use fit-for-purpose project management control tools for good project results; work the project management, drilling and completion, HSE, land, production, and transportation disciplines together for success, and control interfaces among different projects and contractors. This course addresses key requirements for repetitive projects in oil and gas programs. These projects include well flow lines, tank batteries, booster compressors, short pipelines, and meter stations that are a part of a larger field development program. Emphasis is on both conventional and unconventional resources, such as shale oil and coal bed methane. The course is taught using a blend of instruction, guided discussion, and hands-on exercises based on the instructor’s petroleum successes and failures. The exercises will include both individual and group activities.

**DESIGNED FOR**

Early career project managers, leads, engineers, and services personnel who are on field development project teams. This includes operations and facility reps, cost and schedule controllers, and buyers and logistics specialists. This course is also for the business, finance and land reps as well as other non-engineers who would benefit from an overview of oil and gas project and programs.

**YOU WILL LEARN HOW TO**

- Define the project work to be done
- Develop scopes of work, cost estimates, and schedules
- Prepare project execution plans
- Plan actions to overcome progress constraints
- Track and control progress

**COURSE CONTENT**

Field development programs • The project delivery system • Organizing resources • Engineering • Construction • Execution planning • HSE and project risk • Procurement and contracting • Cost estimating • Planning and scheduling • Progress and change

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**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 (FPM2) 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

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**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
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.

**DESIGNED FOR**
This course is for team members that work on projects installed in existing facilities. Engineers, operations managers, front-end project managers, 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 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

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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 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 it is appropriate to use each level
- How to develop an estimate basis and schedule basics 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...

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Risk Management for Upstream Capital Projects – PMRM

**INTERMEDIATE 5-Day**

This five-day, intermediate level course for project managers, project engineers, and integrated project team discipline members addresses the key areas associated with capital project risk management. The course focuses on managing risk throughout the entire project life cycle. This course is very much hands-on with class exercise case studies that focus on participant development of risk management deliverables. The class also addresses the methods that project team leaders can utilize to ensure that project team members and management buy in and are part of the risk management process.

**DESIGNED FOR**
Project managers, project engineers, and all disciplines that work on integrated project teams for upstream onshore and offshore developments. Case studies include deep-water projects with complex production components, as well as unconventional shale projects that require significant infrastructure investment.

**YOU WILL LEARN HOW TO**
- Apply risk management to a capital project throughout the entire life cycle
- Write a risk management plan and gain agreement with key stakeholders
- Engage management and project team members in the risk management process
- Systematically identify risks for your project
- Determine those risks that are owned by the project team and those owned by management
- Use risk assessment to analyze and prioritize risks for treatment
- Develop robust risk mitigation plans
- Control and monitor risk
- Incorporate risk planning into project cost and schedule
- Use the role of probabilistic cost and schedule in risk management

**COURSE CONTENT**
Risk management planning • Roles/ responsibilities, governance, and risk ownership • Identify, analyze, and respond to risk events • Types of risks: threats vs. opportunities • Risk analysis and prioritization • Risk mitigation and contingency planning • Monitor and control risk • Risk reporting and communication • High level overview of probabilistic cost and schedule peer reviews

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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 larger programs, 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 all 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
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 (IOCcs & 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

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

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 and loading effectively and contractually, 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 occurs
• 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, learning, build up 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...

2019-2020 Schedule and Tuition (USD)

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>Fee</th>
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<tr>
<td>CALGARY, CAN</td>
<td>15-17 JUNE 2020</td>
<td>$3385+GST</td>
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<tr>
<td>DUBAI, UAE</td>
<td>27-29 SEP 2020</td>
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2019-2020 Schedule and Tuition (USD)

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<th>Location</th>
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</thead>
<tbody>
<tr>
<td>HOUSTON, US</td>
<td>16-18 NOV 2020</td>
<td>$3430</td>
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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
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 51.)

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-TL
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.

Go to www.petroskills.com/ppd to register or for more information!
MR. PETER AIRD has 38 years’ experience as an oilfield drilling, well engineering, and operations specialist. Peter initially served and trained as a marine engineer officer working with major shipping companies worldwide. His skills then transferred to the oil and gas industry. He re-joined from 1987-1990 as a drilling supervisor, then worked in staff-based positions with Shell International and BP until 1993. Further skills, knowledge, and experience were gained in various global consultancy positions from 1993-2015. Peter worked in frontier Exploration Appraisal and Development subsea, deepwater, HPHT, and horizontal drilling projects. He often worked with complex wells. Project-based work experience was gained in the early 1990s with offshore UK deepwater and HPHT wells, and frontier exploration wells in North America, South East Asia (Brunei, Indonesia, Malaysia, Vietnam, China), North Atlantic, West of Britain, Norway, Faeroes, Greenland, the Black Sea, South Atlantic, Europe Mediterranean, Red Sea, and West Africa. During the last several years, Peter has been further employed as a staff-based senior and specialist drilling engineer leader with operating companies including Kerr Mcgee, Maersk Drilling Oil, Cairn Energy (UK), ONGC (India), Centrica (Norway), and Providence Resources (Ireland). His drilling specialty was further refined on a variety of subsea, horizontal, platform-in-fill, HPHT, deep and ultra-deep water drilling projects. Peter is a member of the Society of Petroleum Engineers from 1991, the Energy Institute, and is a Chartered Engineer and a registered Engineer with the UK Engineering Council from 2004. He actively participates in several industry forums and has shared his knowledge and experience through delivering deep water and other complex well design, drilling engineering, and operations training courses. He has produced multiple technical and operational treatises on oil well design, construction, engineering, and drilling operations. From 1993 he has also hosted a specialist interactive website at www.kingdomdrilling.co.uk. Peter holds an MSc in Drilling Engineering from The Robert Gordon University which he gained as a mature student.

MR. STEPHEN ASBURY is the author of six internationally published books on safety and risk management, and a highly experienced HSE practitioner and instructor. He is a Chartered Safety and Health Practitioner (CIPD), a Chartered Environmentalist (CEnv, FIEMA), and a Professional Member Emeritus of the American Society of Safety Engineers. Awarded the distinction of Chartered Engineer (CEng) in 2010, Stephen is an experienced instructor (2007-present) on our safety and HSE management programs. He has over 30 years’ risk management experience gained working in leading organizations, in consultancy, and in the London insurance market, where together, he has worked in over 70 countries on six continents. Stephen is a former member of the IOSH Council of Management (1998-2013), and three-times chair of its Health and Safety Committee. Outside of PetroSkills, he has a string of Chairships and Company directorships of several companies, including Energi Group Limited, a leading international HSE consulting company. In addition to his books, Stephen is the author of 40 technical papers and journal articles. He was awarded an MBA with Distinction (Leicester, 1995), and is presently completing a PhD (London). His first qualification was in law.

MR. GEORGE ARMISTEAD has worked over 43 years for Unocal and Chevron in various Gulf of Mexico regional offices in assignments as drilling engineer, production engineer, drilling superintendent, drilling manager, asset manager, drilling engineering director, and consulting drilling engineer. He retired from Chevron in 2005, where he had served as a consulting drilling engineer with Chevron doing project planning on the Congo River Crossing well interconnection project and teaching Drilling Engineering and Well Planning, Drilling Practices, Deepwater Drilling, and Drilling for Non-Drillers Courses for Chevron. He has extensive experience in ultra-deep, high pressure, high temperature, sour service and extended reach drilling and completion applications. During his career, George has developed a borehole fracture gradient modeling technique for well design, a split wellhead and mud line suspension wellhead systems and an extended reach planning and screening technique. George has a great interest in well design, innovative drilling and completion methods, adhering to technical excellence in drilling engineering and knowledge sharing and mentoring. George Armistead is a registered professional petroleum engineer in the states of Texas and Louisiana. George graduated with honors from Mississippi State University with a BS degree in Petroleum Engineering in 1974.

MR. PAUL M. BARRY is a petroleum engineering consultant specializing in production operations and offshore field development and management. Mr. Barry has over 44 years of international experience in gas and production engineering and management experience resident in various US locations, South America, SE Asia, the Middle East, and the North Sea. He has been a consultant and PetroSkills instructor since 2002. With PetroSkills, he was based in Perth, Australia from 2007-2008 and in Dubai, UAE, from 2003-2006, developing PetroSkills regional business in both locations. Industry experience has been as a consultant for shale oil and gas exploitation planning and multi-stage, fractured horizontal well completion practices. Previous experience has been as a field production engineering manager of an onshore oilfield re-development/brownfield project for PDVSA and partners in Venezuela which required a combination of gas lift, submersible pumps, and rod pump artificial lift completion technology, and frac-pack sand control well completions. Previous Norway experience was in the design and completion of dual string, multiple selective, underbalanced, TCP high pressure gas wells, artificial lift oil well completions, and exploration well testing and evaluation for Pertamina and ARCO partners for 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 13 TCF offshore Bali gas field. He has also worked as a field engineer in Saudi
Mr. Brett has provided consulting services in many Canadian and international projects for reservoir description and formation evaluation. Dr. Chen has demonstrated his extensive experience in providing a variety of reservoir engineering technical support, WFT technical/data interpretation practice including training of operators and clients, troubleshooting problem tests, and coordinating land and offshore projects for reservoir description and formation evaluation. Mr. Chen has provided consulting services in many Canadian and international companies in reservoir engineering, pressure transient analysis, and reservoir simulation. His experience with Schlumberger is well-rounded, providing him with a wide range of skills and experience in reservoir engineering, fluid and gas reserves and resource estimation, economic forecast and budgeting, acquisition and disposition, equity financing, and mid-stream supply studies. He also specializes in well testing and simulation, WFT formation test (WFT) design, data interpretation, and computer-based training. He has more than 20 years of petroleum engineering experience and has worked with Schlumberger in numerous international positions, providing a broad range of experience in reservoir engineering, completion and stimulation, and production optimization.

Mr. Brett has a PhD in Petroleum Engineering and a Master's Degree in Geosciences from the University of Alberta. He has also held consulting positions with Schlumberger, ConocoPhillips, and others. He has extensive experience in reservoir engineering, production optimization, and reservoir characterization. He has a strong background in geology and geophysics, and has worked on projects in a variety of settings, including offshore and onshore fields in the Gulf of Mexico, Canada, and the North Sea. He has also written numerous papers on reservoir engineering and production optimization, and has presented at numerous industry conferences. He has been an active member of SPE and other professional organizations, contributing to the advancement of reservoir engineering knowledge and practice.

Mr. Brett is a passionate and dedicated professional who has made significant contributions to the field of reservoir engineering. His expertise and experience make him an invaluable asset to any team he joins. He is highly respected in the industry and is a leader in the field of reservoir engineering. His contributions to the field have been recognized with numerous awards and honors, including membership in the AAPG, SPE, and other professional organizations. His leadership and commitment to excellence have earned him the respect and admiration of his peers and colleagues.

Our Instructors
MR. STEVE CHEUNG is the President of StevelOR Consultants, and an Adjunct Associate Professor in Petroleum Engineering at the University of Texas at Austin. He has over 35 years of experience in major oil company, academia and independent consulting. During his 30 years at Chevron, Mr. Cheung had both research and field experience in waterflood management, downhole remediation, formation damage, well stimulation, chemical EOR, well completions, oil field chemicals, reservoir characterization, and water shutoff. He taught in-house classes and trouble-shot oilfield problems around the world. He has received many SPE and AIME recognitions, including Distinguished Lectures (2003), Distinguished Member (2013), Distinguished Service Award (2016), and Regional Well Completions Optimization and Technology Award (2016). He is a member of the SPE Global Training and Soft-skill Committees. Mr. Cheung has chaired many SPE workshops, conferences and technical sessions. He holds an MS in Petroleum Engineering and a PhD in Chemistry from the University of Southern California and the University of California, Irvine, respectively.

MR. SATINDER CHOPRA, MSc, MPhil (Physics) has 27 years experience as a geophysicist specializing in processing, reprocessing, special processing and interactive interpretation of seismic data. He has rich experience in processing various types of data like VSP, well log data, seismic data, etc. as well as excellent communication skills, as evidenced by the several presentations and talks delivered and books, reports, and papers written. His research interests focus on techniques that are aimed at characterization of reservoirs. He has published 5 books and more than 25 technical papers in international journals and at international conferences. Mr. Chopra has been named Fellow of the Society of Exploration Geophysicists in 2017. He has become a fellow of the Society of Petroleum Engineers in 2018. He has been appointed to the editorial board of the Journal of Geophysical Research: Solid Earth in 2018. He is currently serving as a Director of Technical Division and Performance Enhancement at PetroSkills. Mr. Chopra holds a Masters of Philosophy in Physics (1978) and a Master's of Science in Physics (1976).

MR. KEVIN CUYLER is the Director of Technical Division Operations at PetroSkills. He is also the Discipline Manager for the Multi-Discipline, Petroleum Business and Petroleum Data Management disciplines. Prior to this role, he was the Discipline Network Operations Manager where he was responsible for the ongoing health and operations of the nineteen discipline networks in the PetroSkills Alliance, ensuring competency map alignment, consulting on competency issues and assisting with member engagement and involvement. A member of SPE, Mr. Cuyler is the Course Director for the Drilling Fluids Technology course and an instructor for the Instructor Excellence Workshop at PetroSkills. Prior to joining PetroSkills, Mr. Cuyler had 17 years of experience with Halliburton Company including the HR Global Human Asset Manager for the Cementing Product Service Line, HR Business Unit Manager for the Rig and Drilling Region Manager, Curriculum Development Manager, Division Technical Training Manager, Baroid Product Service Line Global Training Manager, Technical Instructor for Drilling and Completion Fluids, Multi-Service Field Representative and Mud Engineer. Mr. Cuyler has managed drilling fluids throughout Texas as well as deep-water operations in the Gulf of Mexico. Mr. Cuyler has a BS Degree in Wildlife and Fisheries Sciences from Texas A&M University in College Station, Texas.

DR. AKHIL DATTA-GUPTA is Professor and holder of the Laboratory endowed chair in Petroleum Engineering at Texas A&M University. He is the Chair of the Petroleum Engineering Department in College Station, Texas. He worked for BP Exploration/Research and the Lawrence Berkeley National Laboratory. He is the recipient of the 2009 John Franklin Carl Award of the Society of Petroleum Engineers for distinguished contribution in the application of engineering principles to petroleum development and recovery. Prior to that, he received the 2003 Lester C. Uren Award of the Society of Petroleum Engineers (SPE) for significant technical contributions to the field of reservoir engineering. He is also the holder of the Royal Bank of Canada Professorship in Curriculum Development Manager, Division Technical Training Manager, Baroid Product Service Line Global Training Manager, Technical Instructor for Drilling and Completion Fluids, Multi-Service Field Representative and Mud Engineer. Mr. Cuyler has managed drilling fluids throughout Texas as well as deep-water operations in the Gulf of Mexico. Mr. Cuyler has a BS Degree in Wildlife and Fisheries Sciences from Texas A&M University in College Station, Texas.

DR. MOJDEH DELSHAND is Research Associate Professor of Petroleum and Geosystems Engineering at the University of Texas at Austin. She has 20 years of experience in modeling multiphase flow, property modeling, and reservoir simulation and more than 15 years of experience in modeling and designing subsurface contaminant transport and remediation processes. She has been involved in the design of flow diagnostics of finite element modeling and new applications of UTCHM, The University of Texas chemical flooding oil reservoir simulator. She has approximately 90 technical papers in these areas. She is in charge of UTCHM development and user support. She is a Review Chairman for the SPE Journal of Reservoir Evaluation and Engineering. Dr. Delshand has a BS in Chemical Engineering from Sharif University in Iran, and an MS and PhD both in Petroleum Engineering from The University of Texas at Austin.

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.lenpda.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 Sintoft, 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 Sintoft, 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 an 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 awarded theเซลtect Lecturer of the SPE, in 2005-06, and in 2017-18.

DR. SHARI DUNN-NORMAN is a professor of Petroleum Engineering at Missouri University of Science and Technology with 35 years of industry and academic experience. She worked for Atlantic Richfield (ARCO) in domestic and international production operations, where she designed gas lift, reciprocating rod and electrical pump installations, in addition to well completions and workovers. She has taught artificial lift, production engineering and well completions for more than 20 years and has conducted a wide range of research in pipeline well flow, well construction for the protection of USWS's, hydraulic fracturing and well completions. She has co-authored and edited the book, "Petroleum Well Construction", and a number of papers related to well completions. Shari holds a BS degree in Petroleum Engineering from the University of Tulsa, and a PhD in Petroleum Engineering from Heriot-Watt University, Edinburgh, Scotland.

DR. AMR H. ELEWA has worked extensively in Oil and Gas exploration with multi-disciplinary teams for more than 23 years worldwide. He is a geological and geophysical studies team leader and has over 20 years of experience in reservoir characterization, and water shutoff. He taught in-house classes and provided technical advisor/consultant on projects throughout the world; and has extensive experience in the design and delivery of training programs. He was awarded the MAPLE Petroleum Fund Scholarship to attend the University of Leeds and an MS in Chemical Engineering from the University of Khartoum. He has published 17 publications in chemistry, 14 publications in the open-literature in petrophysics, and has numerous internal publications, memos, and training manuals with ExxonMobil. He is a member of the Society of Petrophysicists and Well Log Analysts and the Society of Petroleum Engineers. At various times in his past he has served as an assistant editor for petrophysical publications for both of these professional societies.

MR. ERIC A. FOSTER is a Geoscience Technical Advisor with PetroSkills-02001, a division of PetroSkills, in Houston. He has 40 years of operations and management experience in the oil and gas industry. Prior to joining PetroSkills, he was with Landmark and responsible for managing geoscientific and engineering consultants, representing geological, geophysical and petrophysical software applications and services for global operations. Starting as a geologist in field operations in the US, South America, North Sea, Trinidad and Mexico, he then worked as a training instructor and coordinator for worldwide operations at Core Laboratories in Dallas and subsequently moved to Calgary as Manager, Geological Operations. His background has included all aspects of formation evaluation and the application of software to geological and drilling engineering data acquisition and interpretation. He has acted as a technical advisor/consultant on projects throughout the world; and has extensive experience in the design and delivery of training programs. He was awarded the President’s Medal of Excellence from the University of California at Berkeley in 1999. Mr. Foster earned a BSc (Honors) in Geology, from the University of London; he is a registered Professional Geologist and is a member of APEGGA, AAPG, SPE, HS&G and SPWLA. He served as Publications Chairman and on symposium committees for the CWLS, co-authored a paper on computer data formats (LAS) and has compiled numerous technical papers and training materials; he is a certified tutor for online learning.

MR. LAURA S. FOULK has over 25 years of business, customer service, geologic, interpretation, engineering, management, and sales experience in the oil and gas industry. After holding multiple positions at Schlumberger and Marathon Oil, she created Integrated Geosolutions, Inc. to provide wellbore image interpretation and processing on image data from all vendors, and has been the company’s President since 2001. She specializes in reservoir characterization and has numerous technical publications and her society presentations include data, seismic data, production data and engineering data, thus providing a better understanding of reservoir performance and potential. Her teaching experience includes courses in wellbore image theory and applications, and wellbore anisotropy measurements at Colorado School of Mines, Stanford University, and for internal clients. She also taught new hire and continuing education internal seminars for Marathon. She has a BS degree in Geology from the University of New Mexico and an MS and PhD both in Petroleum Engineering from Duke University.
**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 received his BS in Chemical Engineering from the University of Chicago, holds 15 patents, and has authored over 25 professional publications. At Natco Group, 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 complex and cost escalates over time.

**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 supports the drilling and production activities of an independent with a varied portfolio of offshore oil and gas wells. He was the first Senior Completion Advisor for a major player. 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 they can go wrong and what it takes to repair, maintain, and produce; and how to best to mitigate and manage well problems. He has authored and co-authored a number of papers, ranging from polymer flow management to ice mechanics and most recently a design of an innovative ICD system for a high 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.

**MR. CURTIS L. GOLIKE** is an Independent Petroleum Engineer consulting operator out of Golden, Colorado. In addition to his consulting business, James Peak, he acts as the Managing Director of two US prospect generating companies, Emerald Peak Associates and Low Capex Reserves. He has 38 years’ experience working for three global oil and gas companies. His specific areas of expertise are in the areas of revitalizing old fields, remote and start-up operations, petroleum economics, and introducing new reservoir management technologies internationally. His personal skills are in team development, specifically international cross cultural project teams of industry professionals. He is a registered Professional Engineer in the States of Texas and Colorado. He received a Bachelor’s Degree in Geology from Colorado State University, is a member of SWPLA and SPE, and is a registered Professional Geосоiologist in the State of Texas.

**MR. RAFAEL GAY-DE-MONTELLA** is a Chemist and Chemical Engineer with 30+ years of experience. He is skilled in process engineering consulting, design in plant operations, teaching and training of professionals and operators, and has been active in the development of new technologies. His experience, although focused in water, includes the Oil and Gas, pulp and paper, food and beverage, and fine chemicals industries and environmental knowledge and experience in Steam Activated Gravity Drainage (SAGD) and Cyclic Steam Stimulation (CSS) extraction of Heavy Oil produced water. He received a Bachelor of Science in Chemical Engineering from Monash University in Australia, and a BS and MS from of University of Oklahoma. His expertise lies in seismic interpretation and author of numerous research papers and co-edited several multi-volume compendia. His expertise lies in seismic interpretation and author of numerous research papers and co-edited several multi-volume compendia. 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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. He has also been involved in the development of technical guidelines, project management and leadership roles. He holds a PhD in Civil Engineering from the University of Buffalo, New York. He is currently based in Abu Dhabi, United Arab Emirates.  

MR. JEFF HAMMAN consults on suburface characterization and provides training and technical mentoring. He has 40 years of experience with Gulf, Chevron, Marathon, and BP before creating his own LLC. As a member of a production team, he provided characterization of most reservoir types across the major basins of the globe. A substantial portion of his career has been devoted to team development, management and developing the areas of reservoir characterization, geophysics, and reservoir management. He is a petroleum geologist with 32 years of international exploration and development experience, with projects located in the Middle East, China, Indonesia, Chile, Ecuador, Peru, Colombia, US, Mexico, and many other countries. Following a mining engineering contract in Botswana, he started in the oil and gas industry in the North Sea in 1975 gaining service company experience globally with Hunting Oilfield Services. In 1981 Alan joined Dome Petroleum in Canada and over the next 20 years worked in the North Sea, East Coast, and in Western Canada onshore. In 1988 Dome Petroleum merged into Amoco and Alan worked in a global role from Houston, and in country-based roles in Congo, USA/China, and UK/Norway/Netherlands. In 1999, Amoco merged into BP Amoco (later BP) and Alan had several roles ranging from Gloucester to Houston and in country-based roles in China. Alan retired from BP at the end of 2009, and has been working as an independent consultant and advisor with 30 years’ experience in the upstream and downstream engineering and operations. He has ten years management experience with national and private oil companies. As an Associate Professor at New Mexico Tech. He has published on unconventional reservoirs. These include tight, fractured and unconventional reservoirs. His technical contributions in all areas of enhanced oil recovery (EOR) at the University of Tulsa in petroleum engineering. 

MR. ALAN HIPPMAN. CEng, FIMechE, IntPE (UK), SPE, is a resident of Colorado, having lived in Venezuela, UK, USA, Canada, Trinidad, Botswana, Singapore, and Germany and worked in many other countries. Following a mining engineering contract in Botswana, he started in the oil and gas industry in the North Sea in 1975 gaining service company experience globally with Hunting Oilfield Services. In 1981 Alan joined Dome Petroleum in Canada and in 1988 Dome Petroleum merged into Amoco and Alan worked in a global role from Houston, and in country-based roles in Congo, USA/China, and UK/Norway/Netherlands. In 1999, Amoco merged into BP Amoco (later BP) and Alan had several roles ranging from Alberta Wells Manager to Head of Drilling and Completions to Wells Director. Alan retired from BP at the end of 2009, and has been working as an independent consultant and advisor with 30 years’ experience in the upstream and downstream engineering and operations. He has ten years management experience with national and private oil companies. As an Associate Professor at New Mexico Tech. He has published on unconventional reservoirs. These include tight, fractured and unconventional reservoirs. His technical contributions in all areas of enhanced oil recovery (EOR) at the University of Tulsa in petroleum engineering.
MR. STANLEY KLEINSTEIBER is a Senior Petroleum Engineer at MHA Petroleum Consultants Inc., a Denver-based company specializing in oilfield market research and new technology franchises. In the late 1990s, he led the introduction of various innovative acidizing and fracturing technologies. He left Halliburton in 2000 to start a consulting business development, sales, and marketing. Bill has been active in SPE and served numerous roles and is involved in several research projects, optimization, and risk analysis. He is involved in several research projects, optimization, and risk analysis. He specializes in the assessment and design of fall protection systems, as well as fall protection program development. Mr. Klein holds a Bachelor of Science in Petroleum Engineering degree from the University of Tulsa and a J.D. from the University of Denver.

MR. LARRY LENS has over 41 years of experience in the petroleum industry working for Amoco and BP (33 years) and then for Talisman Energy and BP. He has served in several positions including Relationship Manager/Government and Public Affairs Manager working in Houston and London. Mr. Lens then focused on an area that he felt passionate about. He took on the role of Technical Learning and Development Consultant with extensive oil and gas exploration and production experience including technical training and petroleum engineering. He is well versed and knowledgeable on petrophysical tools and petroleum technology. Bob is an experienced course director and lecturer for petrophysical and petroleum engineering training. Prior to retirement he was Learning Leader for Geoscience and Petroleum Engineering at Shell’s Houston learning center. Previous jobs included global Petrophysical Learning Director at Rijssijk, NL and Principal Petrophysical Engineer for a deepwater development project. He also served in various technical management positions during his career prior to retiring from Shell in 2010. Bob is skilled at delivering technical presentations and he has a BS in Geology from the University of Mississippi State, an MBA from the University of New Orleans and is a Registered Professional Engineer.

MR. JOHN LOGEL is a Geophysical Consultant to various organizations as a mentor/teacher and prospect reviewer. John’s previous positions were as Chief Geoscientist North Sea for Talisman Energy Norge/UK in Aberdeen Scotland, the Lead Geophysicist in Norway, and Senior Geoscience Advisor for North American Operations in Calgary AB. Prior to Talisman, John held several technical management and advising roles with the Canadian National Resources in Calgary AB. John is a 1986 graduate of the University of Texas at Austin and has held numerous geoscience positions that he worked 19 years for Mobil in numerous assignments in Europe and North America. John has over 34 years of experience in the industry, and has worked on the discovery, delineation and development of several giant, world-class oil and gas fields throughout the world. His interests are in reservoir prediction and characterization from seismic data, understanding and quantifying risk. His latest emphasis has been in the application of geophysical techniques to better understand, predict, and exploit unconventional reservoirs effectively. He teaches enthusiastically and loves to develop technology and encourage professional growth. John is a professional Geophysicist and holds a BS and MS from the University of Idaho. He is a member of SEG, CSEG, APEGA, and AAGP. John has held several positions with the CSEG and the SEG serving on various committees, is on the curriculum committee for the DoodleTrain (CSEG), helps template development, internal conventions and held positions on the international showcase. John has authored or co-authored over 50 professional papers.

Our Instructors

Discipline icon legend on page 60
MR. DIEGO LONDONO is a Petroleum Engineer with 15+ years of experience in rigless well interventions acquired while working with major Services and E&P companies in different locations around the world. His professional experience includes coal-bed methane interventions, stimulation operations, slickline and electric line interventions, hydraulic fracturing and production testing. Mr. Londono started his career working for Halliburton as a Stimulation and Coiled Tubing Field Engineer, then for BP as Well Interventions Engineer/Company Man in rigless well interventions. He worked for ENI in the giant Kashagan offshore project in the Caspian Sea as Coiled Tubing/Well Intervention Engineer, then for BP/Cuenca Energia in Colombia as a Senior Well Interventions Engineer Consultant. For the past two years, he has worked in UAE and Saudi Arabia. Mr. Londono has been a Well Interventions instructor for the past six years, and has also been an IWCF Well Interventions certified instructor in the past.

MR. ALAIN LOUIS is a Senior Geoscience and Petroleum Engineer with more than 40 years’ international experience, both in oil and service companies. His expertise lies with the field of hydrocarbon reservoir management and characterization, along with the associated R&D activities. His recent contributions have led to the design and implementation of collaborative tools for field performance optimization and monitoring (reservoir, artificial lift, plant maintenance...), carried in TOTAL & E&P assets of Angola, Gabon, Congo, Qatar, Argentina and others. His expertise includes technical training within TOTAL and ELF in Petroleum Engineering, in particular in focusing well data acquisition to better serve a complete field development. Christiaan has also been involved in the development of fallback solutions. He has generated collaboration projects in this area between ELF, TOTAL and ENI for several years. He has held various international positions overseas in Petroleum and Reservoir Engineering. With ELF, from 1990, he delivered internally the first Logging Operations Manual for witnesses; he developed and instructed the training course, dedicated to well geologists and petroleum engineers, in planning and executing operations, logging technologies and data analysis. He has been involved in 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, Brazil, Mexico, Thailand, Malaysia, Singapore, Trinidad/Tobago, UK, Romania and Mexico. An engaging and popular speaker/tactician, Mr. Louis has received high marks from participants. A CMRP member of the Society for Maintenance and Reliability Professionals, Mr. Louis 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 2016, Mr. Louis received a Doctorate of Education from the University of Oklahoma, College of Education Hall of Fame for his 50 years of innovative education and outstanding teaching.

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.

MR. CHRISTIANA LUCAS is associate partner in Community Wisdom Partners, a consultancy specialized in the creation of mutually beneficial relationships between creative industries and communities. She 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 her 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. Her experience across technical, commercial, and non-technical disciplines allows him to communicate easily across all professional boundaries. Christians 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.

MR. JOHN MARTINEZ has 50 years’ experience in oil field production technology with a specialty in production facility revision and artificial lift operations, with extensive expertise in gas lift. This includes well deliverability, transient pressure testing, downhole equipment evaluation and selection. Surface facility design experience includes subsea and pipeline facilities, separation, metering, compression, dehydration, water treatment and disposal, and pumps. He is a specialist in revising and upgrading lift and surface facilities to reduce failures and operating cost. He is a registered Professional Engineer in Texas. He received an MS and BS in Mechanical Engineering from the University of Texas.

MR. ANDRES LOVEROLACE is a Senior 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, Brazil, Mexico, Thailand, Malaysia, Singapore, Trinidad/Tobago, UK, Romania and Mexico. An engaging and popular speaker/tactician, Mr. Loverolace continually receives high marks from participants. A CMRP member of the Society for Maintenance and Reliability Professionals, Mr. Loverolace 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 2016, Mr. Loverolace received a Doctorate of Education from the University of Oklahoma, College of Education Hall of Fame for his 50 years of innovative education and outstanding teaching.

MR. PETE LUAN is a Senior Petroleum Engineer, then for BP/Equion Energia in Colombia as a Senior Company Man in rigless well interventions. He worked for ENI in the giant Tubing Field Engineer, then for BP as Well Interventions Engineer/Company Man in rigless well interventions. He has over 30 years of 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. Christians 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.

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, 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 project portfolio management. He has 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.

MR. PETE LUAN is a Petroleum Engineer with more than 40 years' international experience, both in oil and service companies. His expertise lies with the field of hydrocarbon reservoir management and characterization, along with the associated R&D activities. His recent contributions have led to the design and implementation of collaborative tools for field performance optimization and monitoring (reservoir, artificial lift, plant maintenance...), carried in TOTAL & E&P assets of Angola, Gabon, Congo, Qatar, Argentina and others. His expertise includes technical training within TOTAL and ELF in Petroleum Engineering, in particular in focusing well data acquisition to better serve a complete field development. Christiaan has also been involved in the development of fallback solutions. He has generated collaboration projects in this area between ELF, TOTAL and ENI for several years. He has held various international positions overseas in Petroleum and Reservoir Engineering. With ELF, from 1990, he delivered internally the first Logging Operations Manual for witnesses; he developed and instructed the training course, dedicated to well geologists and petroleum engineers, in planning and executing operations, logging technologies and data analysis. He has been involved in 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, Brazil, Mexico, Thailand, Malaysia, Singapore, Trinidad/Tobago, UK, Romania and Mexico. An engaging and popular speaker/tactician, Mr. Louis has received high marks from participants. A CMRP member of the Society for Maintenance and Reliability Professionals, Mr. Louis 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 2016, Mr. Louis received a Doctorate of Education from the University of Oklahoma, College of Education Hall of Fame for his 50 years of innovative education and outstanding teaching.

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MR. CHRISTIANIA LUCAS is associate partner in Community Wisdom Partners, a consultancy specialized in the creation of mutually beneficial relationships between creative industries and communities. She 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 her 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. Her experience across technical, commercial, and non-technical disciplines allows him to communicate easily across all professional boundaries. Christians 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.
DR. HOWARD L. MCKINZIE is a practicing drilling engineer, a drilling engineer, and a drilling superintendent.

MR. JEFFREY S. McMULLAN has over 30 years of broad career growth in the upstream oil and gas industry including engineering assignments in drilling, well completions and production as well as operations supervisory, management and executive positions. He has also worked in employee selection, training and development for technical, administrative and operations personnel and is experienced in building highly successful organizations from the ground up. Jeff received a BS in Petroleum Engineering from Louisiana State University.

MR. STEVE METCALF has worked in the petroleum industry for approximately 40 years in both service and operating companies in Texas and Oklahoma. Within his career, he has held various research and engineering positions, including 11 years in AxiD Research. With Baker Hughes, he held the position of senior management in the nonmetallic minerals and supplier of imported commodities such as barite and bentonite for distinguished operators and fluids companies in Texas and Louisiana. He received his BS degree in chemical engineering at the University of Buenos Aires, Argentina.

MR. JAMES D. MORSE is an applied structural geologist and President of Computational Geology, Inc. (CG). After studying structural geology and rock mechanics at Texas A&M University, Morse worked for Amoco, gaining valuable experience mapping the complex structures of the West Texas Basin. He then spent nearly seven years in many important fields, including October (Gulf of Suez) and Thunderhorse (Gulf of Mexico), both of which are subsalt giants. Morse earned his BA from the University of Vermont and MS from Texas A&M, both in Geology.

MR. LARRY R. MOYER has over 30 years of experience in all facets of the exploration, land and production phases of the oil and gas industry. He has extensive experience developing integrated geological, geophysical and engineering interpretations for use in exploration, field development and producing property evaluation, including geological and geophysical framework and well site planning. He has also worked on developing and implementing integrated workflows to raytrace complex salt structures to determine seismic distortion and subsalt illumination. He continues to teach and consult worldwide and has worked on numerous equity studies. He has also authored or co-authored numerous professional publications and co-taught a Seismic Exploration class at University of Washington. He is also the founder and Principal of GulfRock Consulting.

MR. DAVID R. MUEDTER is a geophysical consultant specializing in seismic modeling, illumination studies, and the conversion of seismic time to depth. He is president of LumiTerra LLC in Seattle, Washington. He began his petroleum career with Amoco in New Orleans in 1982 where he processed seismic data, developed and mapped prospects, and became a specialist in VSPs and seismic modeling. In 1990, he joined the staff of the University of Texas at Austin and became a Specialist in Exploration Geophysics doing research and teaching. He is currently associated with the GulfRock Consulting Group. He has co-authored papers on the advantages of VSPs and has presented papers in many countries. He has also presented papers in many countries. He has also been involved with the Society of Exploration Geophysicists and the Society of Petroleum Engineers in the application of seismic technology to problems for maximum benefit including: 1) seismic impedance inversion for reservoir-scale reservoir architecture and pay prediction, 2) structural reconstruction software for fault geometries and trap analysis, 3) gravity modeling, 4) EarthVision, Roxar, Petrel, and Shell reservoir modeling software to integrate data and build static reservoir models for deeper fields/discussions, 7) RocGIS tools for mapping and data integration; and 8) decision analysis techniques to determine optimal miniscale basin exploration/development strategies and well planning decisions. He is experienced in working on integrated teams of geologists, geophysicists and engineers that were empowered to make decisions and were accountable for results. He served as team leader and/or lead geologist for four of these teams utilizing effective team/leadership skills working in a variety of scales and problems. He has received best paper presentation awards from the New Orleans Geological Society, run-up to best paper at the Houston Geological Society, and selected to present at SEG as a part of a best of AAPG session. He has been an instructor for new hire training and co-taught a deepwater interpretation workshop for Nautilus. He was named mentor of the year from ConocoPhillips in 2009. Mr. McGehee has an MS in Geology with Honors from the University of Oklahoma and an MS in Geology with Honors from the University of Colorado.

MR. STEVE MCKEEVER is a drilling engineer, currently working for a major exploration and production company. In his career he has worked as a roughneck, a driller, a tool pusher, an instructor at a roughneck school, a drilling equipment salesmen, a completion tool hand, a civil engineer, a drilling engineer, and a drilling superintendent.

The engineering assignments have included planning and operational support for a wide range of drilling and exploration activities worldwide with many companies. He has designed and implemented many technical solutions to problems for maximum benefit including: 1) seismic impedance inversion for reservoir-scale reservoir architecture and pay prediction; 2) structural reconstruction software for fault geometries and trap analysis; 3) gravity modeling; 4) EarthVision, Roxar, Petrel, and Shell reservoir modeling software to integrate data and build static reservoir models for deeper fields/discussions; 7) RocGIS tools for mapping and data integration; and 8) decision analysis techniques to determine optimal miniscale basin exploration/development strategies and well planning decisions. He is experienced in working on integrated teams of geologists, geophysicists and engineers that were empowered to make decisions and were accountable for results. He served as team leader and/or lead geologist for four of these teams utilizing effective team/leadership skills working in a variety of scales and problems. He has received best paper presentation awards from the New Orleans Geological Society, run-up to best paper at the Houston Geological Society, and selected to present at SEG as a part of a best of AAPG session. He has been an instructor for new hire training and co-taught a deepwater interpretation workshop for Nautilus. He was named mentor of the year from ConocoPhillips in 2009. Mr. McGehee has an MS in Geology with Honors from the University of Oklahoma and an MS in Geology with Honors from the University of Colorado.

Our Instructors
MR. MANICKAVASAN (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 to collaborate work environments for uptime utilizing a unified platform. Mr. Nadar is a graduate from Miami University, England and a chemical engineer 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.

DR. 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 asset evaluation in the upstream oil and gas industry. 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.

MR. TIM NIEMAN is President of Decision Applications, Inc., a San Francisco area based decision analysis consulting firm. His professional experience includes 20 years in leading and consulting on projects of various sizes and scopes involving the application of decision and risk analysis methodologies in the energy and environmental sectors, and other fields. He holds a BS in Geological and Environmental Consulting from the University of Toledo and a MS in Geology from the University of Pittsburgh. His background includes work in decision analysis, risk analysis, business modeling, financial forecasting, strategic planning, R&D portfolio management, software development, geology, and geophysics. Mr. Nieman was formerly Senior Decision Analyst for Geomatix Consultants, an Oakland based geological and environmental consulting firm. Prior to that, he was Director of Operations for Lumina Decision Systems, a decision analysis consulting and software firm. And prior to that, he spent 15 years with Amoco as a geophysicist, economist, and risk portfolio analyst. He has a BS in geology and an MS in geophysics from Michigan State University, and an MBA from Rice University.

MR. MIKE NOEL-SMITH is an experienced, energetic and highly adaptable management professional with a proven track record of success within corporate, military, B2B environments and international sports teams. He has strong leadership skills with experience in driving a business forward, managing risk and diverse teams worldwide. He is respected for being a trusted advisor and mentor, particularly in the management skills of Leadership, Team Development, Coaching, Analysis, Evaluation, Assessment and Training. He is an excellent communicator who is able to build relationships at all levels both internally and externally, nationally and internationally. Over the past 10 years, Mike has worked in the Gulf region of the Middle East, living for 5 of those in the United Arab Emirates where he designed a leadership development program for 700 staff members, and is currently implementing a process which ultimately assessed over 12,000 government officials, military officials and civilian companies.

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 had frequent appointments as Director of Continuing Excellence with the Saudi Aramco E&P Continuing Excellence Department. Prior to joining Saudi Aramco in 1988, 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 level consulting, training, and management development programs to 600 organizations. Ronnie has 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 American Society for Training and Development recognized him as a "Distinguished Alumnus" in 1990.

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 performed the role of a senior geophysicist, focusing on 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.

MR. WILLIAM K. OTT is an independent petroleum consultant and is the founder of Well Completion Technology, an international oil and gas consultancy based in San Francisco. He worked for Mobil Oil Corporation in the North Sea, where he was involved in the start-up of 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.

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 industry includes research into new workflows and tools, and training in the field of 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 live and on-line courses in corrosion control in the US, Latin America, 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 Practice. He is a recipient of the NACE Distinguished Service Award in March 2013. He is International Director for the NACE Foundation from 2005 to 2013.

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, Amenia, 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 California, Colorado, Illinois, Louisiana, Massachusetts, New York, Rhode Island, Oklahoma, Texas, Virginia and in Canada, India, Ireland, Israel, Italy, Turkey, Mexico, 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.

MR. ANDREW PEPPEPER is Director of This is Petroleum Systems LLC - "TIPS" - a consulting service that conducts studies, research into new workflows and tools, and training in the field of Petroleum Systems Analysis. The scope is both conventional and unconventional and global - but with current focus on the Gulf of Mexico and Permain Basin. He has held functional roles including responsibility for internal training at BP, Hess and BHP Billiton since 2000. Prior to forming TIPS, from 2012-2015 he was VP of Geoscience and VP of Unconventional Exploration at BHP Billiton. At Hess, from 2003-2012, Andy was Chief Geologist and Director of New Ventures (Conventional and Unconventional). At BP, in Houston, he led the Petroleum Systems Network from 2000-2003, after working in the team that positioned and delivered BP’s exploration dominance of the sub-salt of the deep water Gulf of Mexico. His early career as an international exploration geologist was punctuated by a rotation into the Sunbury Research Center from 1985-1986, where Andy performed technical studies and conducted research in the (then developing) fields of organic geochemistry and basin modeling. He has presented many oral papers beginning 1989, and is best known for publication of a triology of papers concerning petroleum generation and expulsion in 1995. These algorithms are now coded into modern basin modeling packages. In 1981 Andy received a BSc, 1st Class Honors in Geologic Sciences at Leeds University, UK, where he is currently a Visiting Academic.

MR. ROBERTO PEVERARO is a petroleum geoscientist and engineering consultant with over 38 years’ experience in the oil industry, including 16 years in major international companies. He specializes in reservoir engineering, geology, and geophysics. Before founding Petrocorp Consulting, Ltd., he worked at Schlumberger and BNOIC BRITOLI BP, where he held various senior level executive positions. In addition to having extensive technical authorship and publications, he is a senior member in IEEE, SEG, SPE, and SPWLA, A Recipient of SPWLA 2002 Distinguished Technical Achievement Award for Significant Technical Contributions in Formation Evaluation, and a Founder member of the European Association of Petroleum Geoscientists and Engineers. He received both graduate and postgraduate degrees in Engineering Physics, and Applied Physics and Geophysics from Technical University Darmstadt, Germany.

DR. JOHN D. PIGOTT is an internationally recognized energy expert with more than 25 years’ experience in worldwide hydrocarbon exploration-exploitation. He has been an Advisor to Foreign Energy Ministries, an Exploration Consultant for Oil Companies Worldwide, and is a Senior Consultant to major international companies; including concession design; corporate management evaluation and reorganization; regulator advisement and technical advisement. He integrated geological and geophysical data into predictive, comprehensive basin models for hydrocarbon exploration on 5 continents. He designed and implemented geologically targeted 3D-2D seismic acquisition, processing, and interpretation for field development in South East Asia, North Sea, Central America, and the Gulf Coast. He received an MA in Geography, a BA in Zoology (cum laude) and an MA in Geology from The University of Texas at a PhD in Geology from Northwestern University.

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 U.S. Marine Corps. Bill holds BS and MS degrees in Physics. He is a member of the Society of Petroleum Engineers, American Association of Petroleum Geologists, Society of Exploration Geophysicists, and European Association of Geoscientists and Engineers. 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 the successful delivery of projects that resulted in significant new reserves 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.

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Our Instructors

DR. MARTIN RAYSON graduated in Applied Sciences in 1984 before embarking on an MSc in Geophysics and Planetary Physics at the University of Newcastle. After completing his MSc in 1985, he worked as a Geophysicist in the petroleum industry in exploration business. Martin headed back to the University of Newcastle in 1986 to read a PhD in Surveying Sciences and received his first exposure to Geomatics. His thesis was entitled "Network Design Criteria for Monitoring Plate Tectonic Activity," which was completed in 1989. After graduation, Martin continued his career in the hydrocarbon exploration sector. This commenced with Halliburton Geophysical Services where he worked as a Geophysicist with responsibilities for all aspects of navigation and positioning of both land and Marine Seismic Surveys. Later, Martin moved into software research and development, where he contributed to the design and testing of applications related to marine seismic surveying. This work lead to implementing the software on many seismic survey operations globally from the Americas to Far East Asia. After completing many tours of duty, he joined Shell as their geomatics focal point. This involved working in an integrated exploration department ensuring the positional and data integrity of all seismic and drilling operations. In 2012 Martin moved from Shell to Petronas to fulfill a similar role within their Geophysical Operations team. He managed to remain with Petronas until Q1 2017 before joining Geomatic Solutions as their CEO.

DR. CLIFF REDUS is an independent engineering consultant who specializes in production system optimization and subsurface flow assurance. Prior to starting his consulting business, he was an Associate Professor of Petroleum Engineering at the University of Tulsa. He has more than 35 years of experience in reservoir engineering, production, and operations research and field operations in the area of multiphase flow. His primary areas of interest are multiphase flow in wells, flow lines and production equipment, multiphase meters and pumps, computational fluid mechanics, advanced 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 flow 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 BS in Mechanical Engineering from Texas A&M University in Kingsville, Texas, an MS and PhD, from the University of Houston, both in Mechanical Engineering.

DR. GRANT ROBERTSON is a petroleum engineering consultant in Houston, Texas. He has worked in the oil and gas industry since 1974 for Chevron, British Petroleum, Ryder Scott and Anadarko in California, Saudi Arabia and Texas. He has held various high-level technical and management positions. His work has been very diversified covering oil and gas reservoirs, onshore and offshore properties, primary, secondary and tertiary operations, and reservoir evaluation and development projects. His responsibilities have been in reservoir engineering and reservoir simulation, but he has also done production engineering and reservoir management. He has extensive experience preparing and conducting schools and workshops and has an SPE Short Course instructor since 2000. He has published technical papers in refereed journals and has written many internal publications. He has been an active member of SPE since 1975 and has held numerous positions within different SPE organizations. He received a B.S. degree in Engineering Science and a M.S. degree in Chemical Engineering from the University of Toronto. He also received a Ph.D. degree in Chemical Engineering from the California Institute of Technology.

DR. DEVLYN ROBSON is a Geomorphologist with 9 years of research experience in GIS, spatial modelling and statistical analysis. She currently works for Exprodat, providing GIS-based software training for the petroleum industry. Devlyn specializes in the use of spatial statistics for the prediction and classification of geohazards using GIS. A qualified TAP trainer, Devlyn has trained Geoscientists, Geologists and Environmental Scientists in the petroleum industry and has a BSc (Hons) degree in Geography, a MSc in Geography (GIS and Geomorphology) and a PhD in Geography (GIS and Geomorphology) from the University of Witwatersrand, South Africa.

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, SPEAPEX and a past president of the Aberdeen Chapter of the SPWLA. He has also published numerous papers in the international and regional journals.

MS. DEBORAH RYAN is a Senior Reservoir Engineer. She has thirteen years of experience in oil and gas engineering, with experience in both conventional and unconventional. Deborah has an excellent working knowledge of Petroleum/Eclipse, CMG, Arius, Petroleum Experts, IHS Harmony, PVTSim, and Microsoft Office Suite. Ms. Ryan has a Masters in Petroleum Engineering and a Bachelor’s in Chemical Engineering (with Honors), both from Curtin University of Technology in Perth, Australia.

DR. STEVE SADOSKAS is an oil and gas professional with over 35 years of experience in engineering, technical management, and leadership roles in the upstream petroleum industry. He earned his BSEE from Rensselaer Polytechnic Institute and is a member of the Society of Petroleum Engineers. His career includes tours with Schlumberger, The Expro Group, Principle Technologies, Baker Hughes, and Trican Well Services. During his Schlumberger career, Steve gained significant experience in marketing, delivery, and technical support for wireline services. At the Expro Group, he became versed in offshore well testing, drilling fluids, and completions. He has been in the downstream oil and gas arena with Baker Hughes, Steve served as General Manager of VS Fusion, a Baker Hughes/CGG joint venture for hydraulic fracturing monitoring, using microseismic and borehole seismic services. With VS Fusion, he oversaw worldwide operations, R&D, sales, and data processing functions. Trican Well Services added valuable experience in hydraulic fracturing services and in new technology Ventures. Over his career, Steve has conducted numerous presentations and has operated as a key player and technical consultant to both independents and major national and international companies. Steve has experience with most aspects of oil and gas operations, including conventional and unconventional, domestic and international, land and offshore.

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 data management. He is a member of eight professional and trade organizations and has extensive experience in engineering, research and supervision with Exxon; 8 years as Sr Vice President with May Petroleum, an independent drilling fund company; 8 years as President of Rosewood Resources, a privately-owned integrated international oil and gas company, and 7 years as President/Vice Chairman/Consultant of Harken Energy Corp., an international exploration and development company. Kent has been a member of API, SPE, IPAA, and TIPRO, is a Tau Beta Pi Fellow, and has various leadership award certificates. He has a BS in Engineering Science and an MS in Petroleum Engineering from the University of Texas at Austin.

DR. DEISY SAYYOUTH is a professor of Petroleum Reservoir Engineering at Cairo University, Egypt. He was the chairman of the Petroleum Engineering Department, and an active member in the Faculty Council at Cairo University, the Research Center Council and the Editorial Board of the Journal of the Engineering Sciences at King Saud University (Elsevier publications). Since 1986, he has been a Consultant Engineer in the areas of petroleum reservoir engineering, enhanced oil recovery, and reservoir simulation. In 1998, 2001 and 2006 he was awarded the distinguished prize of post-graduate studies supervision from the CAPCU-Cairo University. In 1998 and 2008 he was awarded an appreciation certificate for the significant contributions to the engineering profession. He has taught petroleum engineering courses at, King Saud University, and Cairo University. He was offered a visiting professor at the Petroleum Engineering Department, the University of New South Wales at Australia Dr. Sayyouh has participated in several regional projects and has supervised tens of PhD and MSc students and has published more than 120 technical papers at international conferences and bulletins. His biography appeared in the 16th Edition 1999, of the Who’s Who in the Middle East.

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' experience in analysis and decision 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 and drilling fluid technology. He is a former Chairman of API, SPE, IPAA, and TIPRO, is a Tau Beta Pi Fellow, and has various leadership award certificates. He has a 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.maneolin.com.

MR. JOHN SCRATCHER-DICKIE is a founder and President of MHA Petroleum Consultants, a Denver based petroleum consulting firm. He has more than 30 years' experience in unconventional drilling services, and has presented training courses in drilling fluids technology, while at Amoco and also gave courses on various management topics. Since retirement, Don has consulted in the Drilling and Construction industries on drilling fluid technology. He is a former Chairman of API Committee 13 on Drilling Fluids specifications and test methods. His industry awards include the American Petroleum Institute Citation for Service Award and recognition as co-author of the best paper in Drilling Engineering in 1990. He was a co-founder of the Texas Wellsite Safety Institute, and is a distinguished prize of post-graduate studies supervision from the University of Newcastle.

MR. JOHN SEIDLE is a Vice President and Senior Reservoir Engineer with MHA Petroleum Consultants, a Denver based petroleum consulting firm. He has more than 30 years' experience in unconventional drilling services, and has presented training courses in drilling fluids technology, while at Amoco and also gave courses on various management topics. Since retirement, Don has consulted in the Drilling and Construction industries on drilling fluid technology. He is a former Chairman of API Committee 13 on Drilling Fluids specifications and test methods. His industry awards include the American Petroleum Institute Citation for Service Award and recognition as co-author of the best paper in Drilling Engineering in 1990. He was a co-founder of the Texas Wellsite Safety Institute, and is a distinguished prize of post-graduate studies supervision from the University of Newcastle.
DR. SUBHASH N. SHAH is the Stephenson Chair Professor and Director of the Well Construction and Completion Research Center at the Mewbourne School of Petroleum and Geological Engineering at the University of Oklahoma in Norman. He has a distinguished career in the oil and gas industry for over 35 years, 18 years in industry predominantly with Halliburton Energy Services and 17 years in academia. He enjoys teaching at undergraduate and graduate levels and supervises students’ research leading to masters and doctoral degrees in petroleum engineering. He has, in the past, served on SPE, AAPG, and the SPEE Board of Directors. He has presented several SPE technical papers on Reserve Estimation topics and has co-authored and contributed to several SPE technical reports. He has been a member of the SPEE Board of Directors as well as an MS and PhD from the University of New Mexico, all in Chemical Engineering. He is a registered licensed professional engineer (PE).  

DR. ROBERT A. SKOPEC has worked in the upstream petroleum industry for 40 years including 35 years before retiring from Shell Oil/Royal Dutch Shell. He has also worked for both large (Dow) and smaller (Sheridan Production) independent producers. His position as Reserves Manager/ Director in each of these companies developed the knowledge he draws from to instruct on Reserves Estimation and Reporting. He has delivered in-house Reserve instruction courses for Shell and Oxy as well as being a course instructor/ lecturer on Reserves and Economics at Texas A&M University. He is a member of the Society of Petroleum Engineers (SPE) and the Society of Petroleum Evaluation Engineers (SPEE). He has been a past member of the SPE Oil and Gas Reserves Committee and currently serves on the SPE Reserves Definitions Committee. Other society service includes as an SPE Distinguished Lecturer and on the SPEE Board of Directors. He has co-authored and presented several SPE technical papers on Reserve Estimation topics as well as several published in the SPE Economics and Management Journal. He received a BS in Chemical Engineering from the University of Akron.  

DR. CARL H. SONDERGELD is Professor and Curtis Mewbourne Chair, Mewbourne School of Petroleum and Geological Engineering at the University of Oklahoma. He has over 12 years in the field of education and over 19 years with Amoco as a Special Research Associate working in rock physics. He has developed course manuals, newsletters, web pages and two software packages: Rock Properties Database and Analysis System and Unified Rock Modeling Software. He has published over 75 papers on various subjects and he is principal or co-author on 14 patents. He received a Ph.D. in geophysics from Columbia University and a B.S. in geology from Queens College of the City of New York.  

DR. JOHN P. SPIVEY has over 20 years’ experience in the petroleum industry, with interests in pressure transient analysis, production data analysis, reservoir engineering, continuing education, and software development. From 1984 to 1990, he worked for SoftSearch, Inc. (later Digtwigs Energy/Data) developing petroleum economics and engineering software. In 1990, he joined S.A. Holditch & Associates (S.H), which was purchased by Schlumberger (SBL) in 1997. While at S.AH/SBL he conducted reservoir simulation, gas storage, and tight gas application studies and taught industry short courses in well testing and production data analysis. He actively participated in on-going development of SABRE, SAH numerical reservoir simulator, and in revisions of PROMAT and the reservoir performance package that he designed and developed PROMAT, an analytical production data analysis and forecasting program, and WELLTEST, an interactive pressure transient test analysis program. In 2004, he started his own reservoir engineering consulting company, Phoenix Reservoir Engineering, and software development company, Phoenix Reservoir Software. Since 1999 he has served as Visiting Assistant Professor or Adjunct Assistant Professor at Texas A&M University, teaching undergraduate and graduate classes in gas reservoir engineering and pressure transient analysis, and serving on several graduate student committees. He is the editor of the SPE Reprint Series Vol. 52, Gas Reservoir Engineering, and Vol. 57, Pressure Transient Testing Journal. He has numerous papers on Pressure Transient Testing and has published numerous papers and articles in industry journals and trade publications. He received a BS Physics from Abilene Christian University, an M.S. in Physics from the University of Washington, a PhD in Petroleum Engineering from Texas A&M University, and is a registered professional engineer in Texas.  

DR. TOM J. TEMPLES is a consulting geologist and geophysicist with over 30 years of experience in geology, geophysics, health and safety relating to both the petroleum and environmental industries. He is an adjunct professor at Clemson University and was formerly a Research Associate Professor at the University of South Carolina. He has extensive experience in subsurface mapping, seismic interpretation, sequence stratigraphy, seismic interpretation, petroleum geology, and geophysics. He is a former Vice President and Exploration Manager of independent oil producers where he was responsible for exploration and generation of prospects for drilling as well as the risk assessment and budget preparation. Prior to this he was Senior Geotechnical Advisor to the Department of Energy and served in various capacities with Texaco. He received a B.S. from Clemson University, a MS from University of Georgia and a PhD from the University of South Carolina.  

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/AMC. 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. 

DR. ESTES C. (E.C.) THOMAS served Shell Oil Company in various assignments for 32 years and retired as a Petrophysical Engineering Advisor. He formed Bayou Petrophysicists in 1999 and currently co-authors time-part and provides technical training in shafty sand analysis and analysis of other petrophysics, and serves the SPE and SPFWLA as a technical editor in various assignments. His professional career interests and publications have spanned many topics including development of revolutionary core analysis methods for handling and measuring the petrophysical properties of unconsolidated sands; reservoir heterogeneity; and 3D interpretation and reservoir characterization techniques. He has served two terms on the Board of Directors as Treasurer. He has also been recognized by his peers and is a recipient of numerous industry and academic awards. He has a BS from the MS University of Baroda as well as an MS and PhD from the University of New Mexico, all in Chemical Engineering. He is a registered licensed professional engineer (PE). 

MR. ROD SIDLE has over 35 years in the upstream petroleum industry and academic 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.  

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DR. JOHN (JACK) B. THOMAS has more than 45 years of diverse work experiences in which he has conducted or worked on hydrocarbon projects in most of the active petroleum-bearing basins of the world. He is recognized as an expert in reservoir characterization of conventional and unconventional reservoirs including those in tight gas, coalbed methane, all types of siliciclastic and carbonate reservoirs. He has presented seminars in more than 26 nations on aspects of these topics. Currently he is PetroSkills Petrophysicists Discipline Manager and course instructor. He has authored or co-authored two books on applied and practical petrophysics plus numerous papers on the topic. His academic teaching experiences have been in the areas of petrology, petrophysics, reservoir geology, and environmental geology. While the AAGP Geoscience director, he led a tenfold increase in titles published including digital and book releases. He has received honors for work on the local in the Rocky Mountains, South America, and Asia. He is currently President of a Society of Petroleum Engineer’s Distinguished Lecturer in 1994-95 traveling Southeast Asia, the Middle East, and the United States focusing on the importance of rock-log correlation in reservoir characterization. Professional memberships include the AAPG, SPE, SPFWLA, TGS, RMAG. He is past president of the SEPM Clastic Diagenesis Research Group, Sigma Xi (Local), and Sigma Gamma Epsilon. He received BA and MS degrees from the Miami of Ohio University and a PhD from the University of Oklahoma. 

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/AMC. 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.  

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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. 

MR. DAVID M. TUBBS has over 39 years of industry experience predominantly in offshore operations. He has worked in most major basins of the United States, Central and Northern New Sea and the North Atlantic. He started his career in 1980 with Standard Oil of Ohio (Sohio) and continued with BP after the merger. From there David worked a variety of roles with Louisiana Land and Exploration (LL&E), Burlington Resources and Leor Exploration before starting his consulting career with his own firm Lain Engineering LLC. David has extensive experience in all types of drilling, completion, and workover operations, particularly HPHT sour service drilling and floating drilling. He oversees the drilling of Burlington's Deep Bossier field development in East Texas and oversaw the procurement and factory acceptance testing of most of the Burlington project manager for the construction of the Ensco 7500. He is a member of SPE and a registered professional engineer in Texas. 

MR. ROBERT (BOB) V. WESTERMARK is a seasoned professional with over 36 years of experience spanning all major petroleum producing regions in the world. He received a BS in pre-veterinary medicine from the Colorado School of Mines and an MBA in finance from the University of Denver. Mr. Westermark has authored and co-authored over 24 papers in the fields of reservoir engineering, multilateral, horizontal, multilateral, and wellbore control. His experience includes partnering programs. Mr. Westermark has also managed a research drilling test facility and two US Department of Energy multi-million-dollar projects. He is retired president of Grand Directions, LLC, drilling low cost horizontal wells for the parent company Grand Resources, Inc. and other partners. Mr. Westermark has authored and co-authored over 24 technical papers and he has been the instructor for numerous public and in-house courses, ranging from basic drilling classes to casing design and well control. In addition, he has taught advanced topics including horizontal drilling and multilateral completions. In this capacity, he communicates clearly with all levels of students, field and office employees, management, third party contractors and partners, and the public. He received a BS degree in Petroleum Engineering from Montana College of Mineral Sciences and Technology.

MR. SCOTT J. WILSON has 25 years of vaying oil and gas experience spanning all major petroleum producing regions in the world. He is a Vice President with Ryder Scott Company, L.P., with offices in Houston, Denver and Calgary. Prior to joining Ryder Scott, he was a Principal Engineer with the Atlantic Richfield Company, advising on well performance issues. He has taught over 100 sessions on NODAL analysis, gas reservoir engineering, production forecasting, and advanced reservoir engineering. He coordinated the development of several Windows based NODAL and Decline programs, two of which are the primary tools used at the Prudhoe Bay and Kuparuk oil fields. He is a Registered Professional Engineer in Alaska, Colorado, and Wyoming, a member of SPE and SPEE, has authored several technical papers, and holds two US Patents. He received a BS in petroleum engineering from the Colorado School of Mines and an MBA in finance from the University of Colorado.

MR. LARRY WOLFSON has 34 years’ experience in planning and supervising well construction, including ERD, slim-hole and sub-sea wells. He received a BS in mechanical engineering from California State University Northridge, an MS in petroleum engineering from the University of Tulsa, and is a registered petroleum engineer in California.

MR. RICHARD (DICK) G. WRIGHT has over 25 years of worldwide oil field experience, including management and implementation of directional drilling services and also has over 6 years’ experience training. His oilfield management experience includes resident positions in Southeast Asia and the Middle East. His areas of specialty include drilling operations technical training and drilling team leadership training. He is fluent in Spanish and is widely traveled in Central and South America. He received a BS in pre-veterinary medicine from New Mexico State University and an MBA in International Management from the American Graduate School of International Management.

MR. CLYDE YOUNG has over 30 years of diverse experience in operations and maintenance of production and processing facilities. This includes significant experience in operations and development of management systems for gas processing and water/wastewater treatment facilities. This includes operating procedure development, training program development, compliance auditing, vulnerability assessment, emergency planning and mechanical integrity program development. Mr. Young provides many of our clients with PHA services, compliance audits and Hazards Reviews. Mr. Young has presented at the Mary K. O’Conor Process Safety Symposium and written several papers that have been published in various industry publications. Mr. Young holds a BS in Social Sciences from the University of Wyoming- Laramie Wyoming.
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