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™, ActiveLearn™, 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

Ford Brett
CEOPetroSkills

Cover Image:
Aerial view of Zhangye 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.

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

GEOLOGY
8 Geology Progression Matrix
9 Basic Petroleum Geology – BG
10 Basin Analysis Workshop: An Integrated Approach to the Exploration and Evaluation of Conventional and Unconventional Resources – BA
9 Carbonate Reservoirs – PCR
10 Computational and Transporational Structural Styles – CPST
9 Computer-Based Subsurface Mapping - CSIM
10 Deep-water Turbidite Depositinal Systems and Reservoirs – DWTS
9 Development Geology – DG
10 Geophysical Techniques for Solving Reservoir Management and Field Development Problems – GTS
9 Geochemistry: Tools for Effective Exploration and Development – MGT
9 Geological and Geophysical Characterization of Heavy Oil Reservoirs – HORC
9 Geomechanics for Heavy Oil – HGOM
10 Integrated Carbonate Reservoir Characterization – ICR
9 Mapping Subsurface Structures – MSS
10 Naturally Fractured Reservoirs: Geologic and Engineering Analysis – FR
10 Operations Geology – OG
10 Petroleum Systems Analysis – PSA
9 Production Geology for Other Disciplines – PGGD
9 Prospect and Play Assessment – PPA
9 Sandstone Reservoirs – SR
11 Sequence Stratigraphy: An Applied Workshop – SSS
12 Structural Styles in Petroleum Exploration – ST

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13 3D Seismic Attributes for Reservoir Characterization – SARC
14 Advanced Practices in Exploration and Development of Unconventional Resources - EUDR
15 Advanced Seismic Stratigraphy: A Sequence – Wavelet Analysis Exploration – Exploitation Workshop – ADS
16 Applied Seismic Anisotropy for Fractured Reservoir Characterization – ASAIF
15 AVO, Inversion, and Attributes: Principles and Applications – AVO
15 Basic Geophysics – BGP (Also available as a Virtual/Blended course)
16 Introduction to Seismic Stratigraphy: A Basin Scale Regional Exploration Workshop – ISS
16 Seismic Imaging of Subsurface Geology – SSDG
16 Seismic Interpretation – SI
16 Seismic Positioning Data Management – SDPDM
17 Seismic Velocities and Depth Conversion – SVDIC
17 Use of Full Azimuth Seismic and Microseismic for Unconventional Plays – FANS

WELL CONSTRUCTION / DRILLING
18 Well Construction / Drilling Progression Matrix
17 Basic Drilling Technology – BDT
18 Casing and Cementing – CAC
19 Casing Design Workshop – CDW (Virtual/Blended course)
19 Cementing Practices – Cementing II – CEP
20 Deepwater Well Engineering – DWE
20 Directional, Horizontal, and Multilateral Drilling – DHD
21 Drill String Design and Optimization – DSOD
21 Drilling Fluids Technology – DFT
19 Drilling Practices – DP
20 Fundamentals of Casing Design – FCD
21 Managing Wellsite Operations – MWC
20 Offshore Drilling Operations - CODO
21 Primary Cementing – Cementing I – PCE
21 Stuck Pipe Prevention – Train Wreck Avoidance™ – SPP
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<td>ePetro - Online Learning for Petroleum Professionals</td>
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<td>Sign Up for Emails</td>
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<td>New Course - Accredited H&amp;S Professional</td>
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</tbody>
</table>
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 TRAINING
WHEN YOU NEED IT,
WHERE YOU NEED IT.

DO YOU HAVE TEAM TRAINING NEEDS? WE CAN HELP!

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.

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

**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.

**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:

**Virtual Instructor-Led Training Session**
- PetroCore® Reference Articles
- Moderated Discussion Forum
- E-Learning

**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/ultra gas and enhanced oil recovery technologies.

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

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

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

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 class exercises, and 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 wellbore 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 ● Wellhead equipment and trees ● 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...

Field Study – Heavy Oil Resources – Hofs

BASIC 3-Day

FIELD TRIP
This course is geologically and technically focused but instructed in such a manner that all disciplines and experience levels will understand. Technologies for mining and in-situ production of bitumen from the Athabasca oil sand region are reasonably recent commercial applications and the future levels of production face uncertainty because of highly debated environmental challenges. The field course takes the participant to the rock; explaining complex relationships and issues emanating from the depositional and structural framework.

DESIGNED FOR
Anyone of any discipline who wants a hands-on understanding of the Athabasca Oil Sands.

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 sand mining methodology ● Environmental challenges for Alberta’s bitumen resources ● Current status and future plans for reclamation mining activities

BDC is also available as a self-paced, virtual course which is an enhanced version of the face-to-face public session.

VIRTUAL DELIVERY $3930
PETROSKILLS.COM/BDCONLINE

2019-2020 Schedule and Tuition (USD)

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2019-2020 Schedule and Tuition (USD)

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<td>OKLAHOMA CITY, US</td>
<td>7-11 DEC 2020</td>
<td>$5000+VAT</td>
</tr>
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† includes field trip
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 TO
• 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 resources
• 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 heavy oil 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 • Other commercial thermal in-situ methodologies • 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
• 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/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 • Other commercial thermal in-situ methodologies • Application of Cold Heavy Oil Production with Sand (CHOPS) in Canada and other non-thermal heavy oil recovery methods • Field examples and development strategies • 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 and improvements 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 differences and critical reservoir properties to identify the sweet spots
• Evaluate gas and oil in place
• Apply different resource 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 P5P (proven developed proved) and PUD (proved undeveloped) categories

COURSE CONTENT
Current shale plays and their global impact • Reservoir characterization and evaluation • Bitumen and heavy oil definitions and introduction • Geology, history, and development of Calgary 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/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 • Other commercial thermal in-situ methodologies • Application of Cold Heavy Oil Production with Sand (CHOPS) in Canada and other non-thermal heavy oil recovery methods • Field examples and development strategies • Overview of thermal well completions and production facilities • Reserves and economics

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 airline industry training. Other high-risk industries began to incorporate CRM into their organizations to reduce the number of incidents. However, of recent, those and other industries have seen performance improvements with the incorporation of CRM. Introducing and practicing NTS has reduced nonproductive time thus improving performance delivery. The oil and gas industry has only recently started to introduce CRM skills. Initially the industry introduced CRM/NTS into well control training post the Deepwater Horizon (DWH) incident, as several DWH investigations and reports referenced human factor causes. IADC and IWCF have accredited enhanced well control training which requires CRM/NTS components. Several operators and contractors have started to include CRM/NTS in their “drill the well on paper” or “drill the well on simulator” exercises, recognizing non-productive time improvements.

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

2019-2020 Schedule and Tuition (US$)

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<th>2019-2020 Schedule and Tuition (US$)</th>
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<td>HOUSTON</td>
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<td>MIDDLES</td>
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<td>DENVER</td>
<td>11-15 NOV 2019 $4320</td>
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</table>

* plus computer charge

See petroskills.com/ocrm for more information.

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)
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:

<table>
<thead>
<tr>
<th>Geophysics</th>
<th>Geology</th>
<th>Petrophysics</th>
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<tbody>
<tr>
<td>Geophysical, technical support, and administrative personnel</td>
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### Basic Petroleum Geology

What is Basic Petroleum Geology? For all practical purposes it closely resembles the freshman level course that a non-science major at a university would take to satisfy the science requirement. Presentation is oriented toward topics of interest to the petroleum industry. While high school chemistry and physics might help in understanding a very few selected topics, the course is designed for those with no technical training (and those who studiously avoided science in school). Primary objectives of the course are to broaden your geological vocabulary, explain selected geological principles and processes, and describe how certain petroleum reservoirs and source rocks are formed.

**Designed for**

Petroleum industry personnel in need of basic geological training, including engineering, geophysical, technical support, and administrative personnel.

**You Will Learn**

- About plate tectonics and petroleum
- About geological time and history
- The fundamentals of rock formation and deformation
- The essentials of various depositional environments
- How rock characteristics are related to petroleum reservoirs and source rocks
- How to correlate electric logs and recognize depositional environments
- How to make contour maps and cross sections
- Elements of geophysics and exploration
- How geology bears directly on engineering practices

**Course Content**

Minerals and rocks • Plate tectonics • Geological time • Weathering and erosion • Deposition • Diagenesis • Reservoirs • Structural geology and petroleum • Origin, migration, and trapping of petroleum

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

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

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<td>28 SEP-2 OCT 2020</td>
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**Computer-Based Subsurface Mapping**

**FOUNDATION 5-Day**

For geoscientists, contour maps have long been one of the most critical 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

---

**Carbonate 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 geoscientists, 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 rate 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

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**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/production 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 • Shelves • 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

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**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 get the most out of every map. Concepts 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 Groshong’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 and understand the intuitive interface
- 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 (Allan) 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 distribution • Relationships between stratigraphic separation and heave & throw • Faults on isochore 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

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

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* plus computer charge
**Geochemistry: Tools for Effective Exploration and Development – MGT**

**FOUNDATION 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 flow progression. The class gives special attention to three key applications of oil 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 flow 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 not, 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 isotope 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

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**Geomechanics for Heavy Oil – HOGM**

**FOUNDATION 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, geometrical 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 geometrical behavior of heavy oil fields in response to thermal operations and shows how different modeling approaches may be implemented to predict this 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 • Geometrical characterization • Mechanical Earth Models (MEMs)

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

- **CALGARY, CANADA 7-9 OCT 2019** $3205+GST
- **5-7 OCT 2020** $3265+GST

* plus computer charge

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**Geological and Geophysical Characterization of Heavy Oil Reservoirs – HORC**

**BASIC 3-Day**

As both heavy oil and bitumen are a global resource, they are fast becoming an asset base for many energy companies. Economic development of heavy oil reservoirs requires an accurate characterization of the rocks as well as the fluids contained therein. As heavy oil properties are different from conventional oil, its exploration and production requires special seismic strategies and rock physics models. Geophysical characterization of heavy oil reservoirs is thus the heart of production of this resource.

**COURSE CONTENT**

- Mechanisms for the formation of heavy oil • General phase behavior of hydrocarbons and heavy oil • Properties of heavy oil and rock physics analysis • Geophysical approaches to characterization of heavy oil reservoirs • Measuring and monitoring heavy oil properties • Methods of extraction of heavy oil (CHOPS, SAGD, etc.) • Challenges for heavy oil production • Seismic monitoring of hot and cold heavy oil production • Optimization of Canadian heavy oil production through reservoir characterization • Environmental issues • Jobbery exercises on each of these units

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**Petroleum Systems Analysis – PSA**

**FOUNDATION 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 familiarly 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 better 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**

- 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 and Reservoir Characterization and modeling • Volumes • Well planning • Reservoir appraisal • Field development • Uncertainty analysis

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**Production Geology for Other Disciplines – PGD**

**FOUNDATION 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 key to understanding the practical impact of geological models and uncertainty on appraisal and development. Without a common understanding between geologists 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 that are slated 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
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**COURSE CONTENT**

- Correlation and stratigraphy • Structural Interpretation • Seismology • Clastic/carbonate deposition including an introduction to Unconventional Reservoirs • Reservoir Geology and Reservoir Characterization and modeling • Volumes • Well planning • Reservoir appraisal • Field development • Uncertainty analysis

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2019-2020 Schedule and Tuition (USD)

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See website for dates and locations.
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 Mioene delta complexes in Venezuela, Cretaceous incised valleys in the US, Paleozoic 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, shoreface 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 of 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–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 learn 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 the different hydrocarbon-bearing structural styles in map and cross–section
• Differentiate 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 • Palaeostrophic restoration of cross sections • Structural validation criteria • Sequential restoration and growth history • Regional arches and domes • Compaction and subsalt solution • Wrench faults: simple, convergent, and divergent • Conjugate and domino-style strike-slip regimes • Thin-skinned fold-thrust belts • Fault-related folds • Duplexes • Basement-involved contraction • Vertical and rotational block uplifts • Inversion: dip-slip to strike-slip • Thin-skinned extension • Basement-involved extension • Half-graben and full graben rift systems • Domino-style extension • Diapirs • Salt sheets • Reho and convex regional pseudoeisensional 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
Extensional terranes provide some of the world’s largest known and most prolific oil and gas basins and are the fundamental underpinning of most continental and deepwater basins. As one of the most common structural styles, they are represented on all continents and form most continental shelves. The advent of 3D seismic technologies has revolutionized structural mapping, but the most realistic 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, and seismic data along with model analogs to support structural interpretation in a wide range of extensional environments: thin-skinned environments along with the underlying, often hyperextended passive margins as well as intracontinental rifts. Fault linkage, relay ramp, transfer systems, and intrabasinal structural geometries are investigated in 3D using predictive kinematic and restorative thinking. The course covers the field level all the way up to basin-scale architecture, and the role of salt and strike-slip tectonics in the development of extensional basins. The typical traps related to extensional geometries are surveyed using real-world examples, with some review of deformational effects on reservoir quality. Exercises include typical seismic examples and field studies. The fundamentals of fracture dynamics are covered in connection with the evolution of extensional faults, as are such important topics as fault sealing issues and inversion. The instructor is happy to accept examples from your company for analysis in the class as one of the demonstration exercises. The 3-day classroom course is followed by a 2-day field trip to the Death Valley area to reinforce the material from the classroom.

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/geochemical/geophysical tools for the regional to local evaluation of conventional and unconventional resource play 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
• Delinate migration pathways through space and time
• Evaluate seal/trap quality
• Geovatalize the kinetic model
• Rank and quantify 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
Geothermal • Geothermal Criticals • Geothermal Criticals • Migration Criticals • Reservoir Criticals • Seal and trap criticals • Timing Criticals • Risk and decision-making

2019-2020 Schedule and Tuition (USD)

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* includes field trip

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* includes field trip

† plus computer charge

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+1.918.828.2500 | petroskills.com | +1.800.821.5933 (toll free North America)
Deep-water Turbidite Depositional Systems and Reservoirs – DWT

INTERMEDIATE 5-Day

Deep-water Turbidite Depositional Systems and Reservoirs is a course that offers a unique opportunity to examine modern, ancient, and subsurface examples of data from turbidite reservoirs. The process of lithification of data types, including analog data that was collected expressly to solve subsurface issues, will be offered to validate subsurface interpretations. The course combines review of state-of-the-art and historical theories for turbidite and debris-flow deposition and process including many case studies of reservoir architecture and sand-body quality and distribution with an introduction to new concepts, ideas, and methods in turbidite reservoir geology. Participants will be introduced to the limitations of conventional models for turbidite reservoirs and taught how to build enhanced predictive models using a combination of subsurface, outcrop, and modern sea-floor data. Through practical exercises and discussions, participants will experience the relative importance of a broad range of subsurface data. 3D seismic data from a range of locations will illustrate the quality and level of reservoir resolution possible when using modern technology. Modern sea-floor data from several turbidite basins will be available and participants will receive instruction on interpretation. Criteria for identification and interpretation of injected sandstones will be discussed. Special note: sessions in Nice and Kīkēa will include field trips. The seven-day sessions will be combined field and classroom based sessions. There will be four days in the classroom with lecture material and field exercises on exploration and production, and three days in the field examining spectacular deepwater sections of either the Arnot Sandstone Formation in Nice, Ross Sandstone Formation in Kīkēa, or the Point Lobos Submarine Canyon and Pigeon Point Formation in Monterey, California. For Nice, a moderate degree of physical fitness is required. For Kīkēa, the going is easier in the field.

DESIGNED FOR

Exploration and production geologists and geophysicists, stratigraphers, reservoir engineers, and petrophysicists.

YOU WILL LEARN HOW TO

• Interpret turbidite depositional environments using data from cores, cuttings, and wireline logs
• Prepare predictive facies maps
• Apply modern stratigraphic concepts to turbidite reservoirs
• Predict reservoir size, shape, trend, and quality

COURSE CONTENT

Review of turbidite settings, processes, models • Turbidite systems at outcrop • Rock analogs for the subsurface (including injection sand) • Modern deepwater systems • Alternative reservoir geometrics • Seismic character of deepwater systems • Borehole/wireline characteristics • Significance and use of various tools • Correlation of reservoir units • Predictive models for sand distribution • Critical data input to reserve models • Definition of pay

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, deposition 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.

DESIGNED FOR

Reservoir, development, and exploration geologists; geophysicists; petrophysicists; log analysts; petroleum engineers; and experienced technicians.

YOU WILL LEARN HOW TO

• Select optimum drill sites for field development
• Use log and rock data to identify reservoir rock, non-reservoir rock, and pay
• Determine fluid distribution in a field and identify reservoir compartments
• Estimate field reserves through the life of a field
• Characterize carbonate and clastic rocks by productivity
• Construct geologic reservoir models
• Determine field drive mechanism
• Apply seismic analysis to reservoir development
• Determine depositional characteristics to optimize development
• Compile a development plan
• Use economic techniques to evaluate different development plans

COURSE CONTENT

Characteristics that impact field development • Determining recoverable hydrocarbons • Reservoir fluid properties • Influence of capillarity reservoirs • Volumetric reserve estimation and calculation • Stratigraphic influence on production • Controls on reservoir rock, barriers, and hydrocarbon distribution • Describing reservoir rock in carbonate and clastic rocks • Determining recoverable hydrocarbons • The impact of drive mechanism • Seismic applications • Development drilling: optimizing hydrocarbon recovery • Economic impact on field development • Subdividing the reservoir into working units • Reservoir pore space configurations • Building a static reservoir model using deterministic and stochastic techniques • Key factors affecting the development of fractured reservoirs • Impact on barriers on field development • Secondary and tertiary field development • Rejuvenating old marginal fields
**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 flow unit characterization
- Apply knowledge of petrophysical, sedimentological petrophysical tools to characterize and evaluate carbonate reservoirs
- Recognize and better 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 diageneric
- 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 geological models to understand reservoir heterogeneity and architecture

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

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**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 progress 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 drill reports
- Describe drilling cuttings and cores
- Evaluate the impact on the field development plan
- Prepare and compile operation 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

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

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<tr>
<td>KUALA LUMPUR, MYS</td>
<td>7-11 DEC 2020</td>
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**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 both quantitative, probabilistic play and prospect assessment procedures that are consistent and repeatable allowing for direct comparisons play to play or prospect to prospect. In addition to volume data, 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, geochemists, 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 when to use 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 efficiency • Probability methods • Risk analysis • Hydrocarbon charge assessment: procedures for estimating possible amounts of oil and gas generated, migrated, and trapped in prospects • Prospect assessment workshop: • 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 judging and using assessment results and the importance of basic geologic data

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

<table>
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<td>$5335+VAT</td>
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<td>* plus computer charge</td>
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**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 fractures 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 waterflow sweep efficiency

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

<table>
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<th>Location</th>
<th>Dates</th>
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<td>LONDON, UK</td>
<td>8-12 JUNE 2020</td>
<td>$5335+VAT</td>
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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)
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:

| Mr. Peter Bartok | Ms. Nancy House | Dr. Walter Lynn | Dr. Tom Temple |
| Mr. Bob Brune | Mr. John Logel | Dr. David Muerdter | Dr. John Pigott |
| Mr. Satinder Chopra | Dr. Heloise Lynn | |

### Geophysics Course Progression Matrix

<table>
<thead>
<tr>
<th>Geology</th>
<th>Geophysics</th>
<th>Petrophysics</th>
<th>Reservoir, Production and Drilling</th>
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<tr>
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<tr>
<td>Basic Petroleum Geology (Page 16)</td>
<td><strong>Seismic Interpretation</strong> (Page 17)</td>
<td><strong>Seismic Interpretation</strong> (Page 17)</td>
<td><strong>Seismic Interpretation</strong> (Page 17)</td>
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<td>Basic Petroleum Technology Principles (Page 18)</td>
<td><strong>Seismic Interpretation</strong> (Page 17)</td>
<td><strong>Seismic Interpretation</strong> (Page 17)</td>
<td><strong>Seismic Interpretation</strong> (Page 17)</td>
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<tr>
<td>Production, Geology for Other Disciplines (Page 16)</td>
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<td><strong>INTERMEDIATE</strong> (Page 17)</td>
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<tr>
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<td>Production, Geology for Other Disciplines (Page 16)</td>
<td><strong>Advanced Practices in Exploration and Development of Unconventional Resources</strong> (Page 17)</td>
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<td><strong>SPECIALIZED</strong></td>
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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**

**2019-2020 Schedule and Tuition (USD)**
- **Calgary, Canada:** 20-24 July 2019 - $4355+GST
- **Houston, USA:** 16-20 March 2020 - $4410
- **Kuala Lumpur, Malaysia:** 21-25 September 2019 - $5325
- **London, UK:** 15-19 November 2019 - $5030+VAT
- **London, UK:** 16-20 November 2020 - $5135+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 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 wavelength in the seismic data and its limit of resolution
- Seismic velocities as they relate to rock properties and the imaging process
- The relationship between seismic velocities and pore pressure
- Pore pressure prediction
- Seismic data processing and seismic migration
- Prestack, poststack, 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

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 processing steps leading to final interpretable seismic images provided by current state-of-the-art imaging techniques. The course focuses on 3D seismic data. By the end of the course, the participant will understand and appreciate the many 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.

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.

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-offs 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 statics 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

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 PSTM data. Also included in this class is when to reprocess the data and how to communicate with the processor in order to produce the best velocity model and depth image.

DESIGNED FOR
Early-career geoscientists and engineers, especially seismic interpreters, and anyone who needs to understand the basic theory and procedures for creating velocity models and converting seismic data from time to depth. This is a foundation level course. It is neither designed nor paced for the experienced velocity modeler or processor.

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, internal, RMS, stacking, migration, P-wave, and S-wave
- Velocity: definition and comparison of the many types of velocity including average, internal, RMS, stacking, migration, P-wave, and S-wave
- Velocity Inputs: accuracy and regional extent of each, including shot shots, VSPs, sonic logs, time/depth functions, well picks and pseudo velocities, seismic velocities, and horizons for structural control
- Synthetic Seismograms: creation, upsampling, and tie to seismic data
- Advanced synthetics including synthetic-gather creation, Zoeppritz equations, ARI, 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 raytracing, migration, and uncertainty
- Introduction to Advanced Topics: anisotropy, pore-pressure prediction, geostatistics, and forward modeling

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

21 SEP-13 NOV 2020  US$4325
4 MAY-26 JUNE 2020  US$4325
PETROSKILLS.COM/BLENDED-BGP

2019-2020 Schedule and Tuition (USD)

HOUSTON, US
18-22 NOV 2019  $4225
23-27 MAR 2020  $4310
16-20 NOV 2020  $4310
LONDON, UK
15-19 JUNE 2020  $5035+VAT

2019-2020 Schedule and Tuition (USD)

DUBAI, UAE
20-24 SEP 2020  $5550+VAT
HOUSTON, US
18-22 MAR 2020  $4410
KUALA LUMPUR, MY
18-22 NOV 2019  $5220
16-20 NOV 2020  $5325

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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 geodetector 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 diverted from their activities by having to resolve mis-ties 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 workflows 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

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 actual producing unconventional basins. Several spreadsheet tools are provided to allow for quick look reviews.

DESIGNED FOR

Geoscientists, engineering, 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

COURSE CONTENT

Introduction to shale classification, mineralogy, physical and chemical attributes • Determining porosity, permeability, and water saturation in unconventional reservoirs • Biostratigraphy, sequence stratigraphy, and anoia in unconventional reservoirs • Petrophysical and geophysical techniques in unconventional reservoirs; rock physics and brittleness • Geochemistry, kerogen typing, thermal effects, and reserve estimation • Physical parameters affecting unconventional resources: capillary pressures, properties, pressure, seal capacity, etc. • Using global and regional stress maps • Application of the Mohr circle • Determination of frac gradients • Leak-Off Test (Minifrac) and microseismic • Water disposal and aquifer contamination • Economic evaluation of unconventional reservoirs • Volumetric assessment considering free and adsorbed gas • Risk assessment, common risk segment (CRS) analysis

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.

YOU WILL LEARN HOW TO

• Clearly understand how hydrocarbons affect the seismic image
• Use direct hydrocarbon indicators and AVO in the assessment of projects
• Understand the limits of seismic resolution
• Integrate these technologies into an interpretation project
• Better understand the nature of the seismic image as it relates to hydrocarbons
• Utilize the information available in the literature from experts in this rapidly developing part of seismic imaging

COURSE CONTENT

Seismic fundamentals as they relate to defining the seismic image • An inventory of direct hydrocarbon indicators, including AVO • Risk rating prospects that display AVO anomalies • Understanding rock properties and the effect of pore filling material • AVO and how it relates to the typical production zones around the world with various ages and depths of burial • Various methods of displaying AVO effects in the seismic data • Acquisition and processing considerations to display hydrocarbons as a pore filling material • Various approaches to seismic modeling and fluid replacement • Rock properties and pore filling material from seismic inversion • Spectral decomposition and seismic attributes as other ways of extracting reservoir information from the seismic image • Methods of combining attributes as they relate to prospectivity

Introduction to Seismic Stratigraphy: 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 a firm, well-established geological and geophysical fundamentals. When properly applied, seismic stratigraphy provides a powerful tool for analyzing the geological and petrophysical attributes helping to describe a basin’s evolution and the resulting effects upon its spatial and temporal variation in hydrocarbon potential. Seismic stratigraphy chronostratigraphically constrains both the seafloor for its petroleum and fault 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, even 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 elastic and cationic depositional system sequences and the role of autocyclic processes and the effects upon reservoir architecture and seal potential
• Systematically reconstruct a basin’s geohistory which provides the critical foundation for its petroleum and fault mechanical analysis and effective exploration

COURSE CONTENT

Introduction: philosophy/history • Geophysical fundamentals • Breaking out operational sequences • Introduction to fault interpretation • Chronostratigraphy construction and interpretation • Sea level curves, accompanying reservoirs and cycle orders • Vail sequence theory and sequence hierarchy • Carbonate sequences • Stacking sequences • Seismic facies • Paleo-environmental analysis • Geohistory reconstruction • Optimizing exploration

2019-2020 Schedule and Tuition (USD)

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<th>End Date</th>
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<td>5-Day</td>
<td>$5335+VAT</td>
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</tbody>
</table>

*plus computer charge

See website for dates and locations

Any course is available in-house at your location. Contact us today.
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 applied by modern commercial software and practiced by interpretation service companies. Participants will focus on case studies, attribute recipes for particular objectives, reservoir workflows and seismic attribute jeopardy exercises to 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 that 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 other 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 at a basic 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 ADF)
- Understand the strengths and weaknesses of geovisualization using and misusing synthetics, seismic inversion, and VSP
- Determine fault mechanical stratigraphy through proper interpretation of fault imaging
- Understand the differences, weaknesses, and strengths of both the Valley with the Galloway 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 parasequence sets
- Interpret clastic and carbonate depositional system responses to allocyclic and autocyclic processes and the effects upon reservoir architecture and seal potential
- Optimal interpretation parasequence 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 Galloway 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 hydrafactoring to produce. The emphasis of the lectures is steering the participants’ work assignments. Field data case histories and laboratory data illustrate the principles and practices of calibrating azimuthal travel times and azimuthal prestack amplitudes against dependent 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 control the data that reveal its presence, and other times because they didn’t understand the benefits that properly recorded and processed anisotropic 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 hydrafracturing 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 procedures; quality-check during acquisition; interpret the final processed data; model different interpretations.
- Identify the support data required for successful fracture / in-situ stress analysis. Recognize seismic anisotropy, its causes, and what happens to projects that ignore ubiquitous anisotropy. Identify the two types of seismic anisotropy, and how each appears in seismic 3D/4D.
- Use anisotropy for your benefit. Classic analysis of azimuthal anisotropy requires seismic reflectors, that is, your reservoir must be within a sedimentary rock sequence. If your reservoir is in fractured basement rocks, you will learn practical techniques to interpret the reservoir and guide the drilling program. Bring your properly acquired and recorded dataset(s) - they could demonstrate the principals of the morning lectures.

COURSE CONTENT

Fundamentals of reflection-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, Yeoman science 101 • Hydraulic fracturing 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 dots • Examples II: integration and interpretation • Pitfalls, benefits, FAQs • Wrap-up discussion

GEOPHYSICS 17

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 seismic interpretation of 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 microseismicity to plan, monitor, evaluate, and diagnose stimulations will find this course useful.

YOU WILL LEARN HOW TO

- Specify what geology 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 horizon stimulation
- 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 result
- Weigh field deployment options
- Assess stimulation designs

COURSE CONTENT

Fundamentals of reflection-seismic reseismic 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, Yeoman science 101 • Hydraulic fracturing 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 dots • Examples II: integration and interpretation • Pitfalls, benefits, FAQs • Wrap-up discussion

2019-2020 Schedule and Tuition (USD)

2019-2020 Schedule and Tuition (USD)

<table>
<thead>
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<tr>
<td>HOUSTON, US</td>
<td>3-7 AUG 2020</td>
<td>$4610</td>
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<td>$5335+VAT</td>
</tr>
</tbody>
</table>

See website for dates and locations.

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+1.918.828.2500 | petroskills.com | +1.800.821.5933 (toll free North America)
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 Multilaterals 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. Richard Carden
- Mr. Aaron Klein
- Mr. Hector Moreno
- Mr. Bob Weistmair
- Mr. Peter Aird
- Mr. Steve MetCalf
- Mr. Dave Wright
- Mr. George Armstrong
- Mr. Mark Hacker
- Mr. Steve McKeefer
- Dr. Don Schmidt
- Mr. Larry Wolfson
- Mr. Kevin Cuyler
- Mr. Hector Moreno
- Dr. Subhash Shah
- Mr. Aaron Klein
- Mr. Steve McKeefer
- Mr. Steve MetCalf
- Mr. Dave Wright
- Mr. Peter Aird
- Mr. George Armstrong
- Mr. Mark Hacker
- Mr. Steve McKeefer
- Dr. Don Schmidt
- Mr. Larry Wolfson
- Mr. Kevin Cuyler
- Mr. Hector Moreno
- Dr. Subhash Shah
- Mr. Aaron Klein
- Mr. Steve McKeefer
- Mr. Steve MetCalf
- Mr. Dave Wright
- Mr. Peter Aird
- Mr. George Armstrong
- Mr. Mark Hacker
- Mr. Steve McKeefer
- Dr. Don Schmidt
- Mr. Larry Wolfson
- Mr. Kevin Cuyler
- Mr. Hector Moreno
- Dr. Subhash Shah

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**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. The various components and procedures are discussed in greater detail with explanations of the basic science concepts which guide these processes. Subjects include descriptions of drill bits, directional drilling, drilling fluids, solids control, cementing, casing, well bore stability, well control, measurement-while-drilling techniques, stuck pipe, lost circulation, and well bore hydraulics. Some technology enhancements are included to improve understanding of drilling operations for all participants, with or without a science background. A discussion of clay mineralogy helps understand well bore instability and drilling fluids. A discussion of pressure and pressure effects helps explain many of the procedures and problems associated with drilling wells. Rocks behave differently under pressure and understanding this behavior helps in understanding drilling performance. Some discussions of drilling include mathematical explorations for those involved with the engineering aspects of drilling operations; however, the concepts and intent of these mathematical equations will be explained in simple terms. After all various components and procedures are discussed, the information contained in morning reports is explained and used as a summary of the course content.

**Designed for**

Petroleum and production engineers, completion engineers, geoscientists, managers, technical supervisors, service and support personnel, entry level drilling engineers, drilling operations personnel, drilling office support staff.

**You will learn**

- About drilling equipment and how it is used
- Drilling terminology and abbreviations
- Keys to 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 drillers - understanding their terminology • Understanding the abbreviations and acronyms associated with drilling • Rig equipment and types • Types of drill bits • MWD • Drill strings • Drilling solids management • Mud tank arrangements • Drilling fluid properties • Well control • Cementing • Casing design • Hole problems (stuck pipe, lost circulation) • Well control • Directional drilling operations and tools • Safety

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

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<tr>
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† includes field trip

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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 jobs. The course uses a process-based perspective that takes participants from initial casing depth and size 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 • Well head equipment

Well Design and Engineering – WDE

FOUNDATION 10-Day

Well Design and Engineering integrates all major well design technologies from pre-spool 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 a team 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
Drilling engineers, completion engineers, and drilling supervisors involved with drilling operations and well planning.

YOU WILL LEARN HOW TO
• Understand the responsibilities of a well planner as a designer and project manager
• Review offset analysis and data gathering
• Understand the influence of completion design and production requirements on well design
• Identify trajectory design issues and their influence on torque and drag, wellbore stability, and future intervention
• Develop specific casing design skills including casing cost-effectiveness; design load case development; burst, collapse and tension calculations; controlling load and safety factor determination and select appropriate size, weight and grade
• Perform cement slurry and displacement volume calculations
• Complete drill string and BHA designs and failure prevention assessment for each hole section, and review for directional well design
• Understand different bit types and applications, and perform calculations to support bit run economics
• Optimize hydraulics for each hole interval based upon wellbore, fluids and drill string configurations
• Compile risks to well delivery, and develop mitigations and contingency plans
• Develop minimum rig capability specifications to deliver well requirements
• Present and defend a well plan to management

2019-2020 Schedule and Tuition (USD)

2019-2020 Schedule and Tuition (USD)

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Drilling Fluids Technology – DFT

FOUNDATION 5-Day

LAB VISIT

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 in the class 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 lead-time.

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

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 10414-4.1
• 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 nonaqueous 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

2019-2020 Schedule and Tuition (USD)

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<td>DUBAI, UAE</td>
<td>11-15 MAY 2020</td>
<td>$5135+VAT</td>
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</table>

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 in the class 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 lead-time.

DESIGNED FOR
Drilling supervisors, drilling engineers, toolpushers, 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/Wellhead
• Evaluate and implement cementing programs
• Design and implement bit and hydraulics programs
• Incorporate directional drilling and deviation control
• Evaluate and recognize 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

2019-2020 Schedule and Tuition (USD)

2019-2020 Schedule and Tuition (USD)

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<td>$7720</td>
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### Casing Design Workshop – CDW

**PetroSkills**

**PetroAcademy**

<table>
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<th>COURSE DESCRIPTION</th>
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<td><em>- Online Learning Activity/Reading</em></td>
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<td><em>- Exercise(s)</em></td>
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<td>Opening Session: Overview</td>
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<td>2</td>
<td>2.5 Introduction to Casing Design</td>
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<td>3 Select Casing Depth and Sizes</td>
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<tr>
<td>2</td>
<td>0.5 Select Casing Depth and Sizes</td>
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<tr>
<td>3</td>
<td>Calculate Collapse and Burst Loads</td>
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<td>Casing Load Determination</td>
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<td>Casing Selection for Collapse, Burst, and Axial Design</td>
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<td>4</td>
<td>Calculate Combined Load Effects, Adjust and Make Final Selection</td>
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<td>Final Casing Design with Combined Loads</td>
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<td>Workshop Wrap-up</td>
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<td>5</td>
<td>Optional session - Creating Detailed Design for Portfolio Well</td>
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**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.

**DESIGNED FOR**

Drilling engineers, service personnel involved in developing well plans, and managers interested in learning about the well design process.

**YOU WILL LEARN HOW TO**

- Select casing setting depths based on pore and fracture pressure data as well as other criteria
- Determine casing 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

**Additional Considerations**

- Workshop Wrap-up
- Optional session - Creating Detailed Design for Portfolio Well

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**Fundamentals of Casing Design – FCD**

**COURSE DESCRIPTION**

**FOUNDATION 5-Day**

Casing design is an integral part of a drilling engineer’s work scope. This course 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.

**DESIGNED FOR**

Drilling engineers, service personnel involved in developing well plans, and managers interested in learning about the well design process.

**YOU WILL LEARN HOW TO**

- Select casing setting depths based on pore and fracture pressure data as well as other criteria
- Determine casing 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
Primary Cementing – Cementing I – PCE

FOUNDATION 4-Day
Cementing is a key factor in the well construction plan. The base cement used in the design 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

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

Cementing Practices – Cementing II – CEP

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)

DELMAR, US 29-07 JULY 2019  $4135
HOUSTON, US 2-04 DEC 2019  $3245
2019-2020 Schedule and Tuition (USD)
HOUSTON, US 2-04 DEC 2019  $3245
2019-2020 Schedule and Tuition (USD)
HOUSTON, US 28 OCT-1 NOV 2019  $4685
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Deepwater Well Engineering – DW

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+ 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
• Clarify the potential impacts of geohazards, such as shallow gas and water flows, hydrates, salt, and tar
• Identify well control constraints and calculate kick tolerance
• Develop specific casing design skills, including impact of metocean environmental conditions on structural pipe design, casing point selection, annular pressure buildup design strategies, and use of US COM Well Containment Screening Tool
• Assess DW cementing technologies and make appropriate choices for a DW well
• Develop designs for DW drill strings, BHAs, and landing strings
• Clarify well design issues for both riserless and post-riser phases of well construction
• Define drilling fluids for a DW well, assess and address any unique issues
• Compile risks to well delivery; develop mitigations and contingency plans
• Consider abandonment requirements in well design

COURSE CONTENT
Floating drilling rigs and equipment • Unique challenges of deepwater • Shallow hazards • Deepwater planning cycle • Subsea BOP equipment • Subsea well control issues • Structural pipe design for bending • Riserless drilling • Casing shoe depth considerations in Structural pipe design for bending • Riserless equipment • Subsea well control issues • Consider abandonment requirements in well design • Compile risks to well delivery; develop mitigations and contingency plans • 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/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 wellbore path 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 vectorial and cartographic interpretations
• Interpret dogleg severity and the problems associated with dogleg severity
• Plan a two-dimensional directional well
• Plan horizontal wells based on the objectives of the 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
• Directionally 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
• Optimize 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 J Wire (window) through active listening and conducting crucial conversations is exercised throughout the course. The 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 facilitation of wellsite 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 competencies
• Manage communications to improve wellsite 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 sensibilities • 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>Date</th>
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Explore the Unconventional.

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

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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. 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 protocols, 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.

FOR MORE INFORMATION ON THESE PROGRAMS, VISIT US AT www.petroskills.com/unconventional
OR EMAIL US AT unconventional@petroskills.com | +1.918.828.2500 or 1.800.821.5933 (toll free North America)
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:

**Geology and Geophysics**

- Dr. Ahmed Badriuzzaman
- Dr. Andrew Chen
- Dr. Amir Elewya
- Mr. Eric Foster
- Ms. Laura Foulk

**Petrophysics**

- Mr. Paul Gardner
- Mr. Jeff Hansen
- Mr. Bob Lippincott
- Mr. David Patrick Murphy
- Mr. Roberto Peveraro

- Dr. Steve Sadowskas
- Dr. Robert Skorpec
- Dr. John Sweeder
- Dr. Carl Sanderfeld
- Dr. John Spivey

- Dr. E.C. Thomas
- Dr. Jack Thomas

**Reservoir Engineering**

**Production and Drilling**

---

**Foundations of Petrophysics – FPP**

**FOUNDATION**

Petrophysics is fundamental to all aspects of the petroleum business. Principles, applications, and integration of petrophysical information for reservoir description will be discussed in depth. Through a combination of class discussion and exercises/workshops, participants will learn how to conduct competent quick-look evaluations. Using data from open hole logs, logging-while-drilling, and core data you will evaluate porosity, permeability, and saturation in a variety of reservoirs. Knowing how to integrate petrophysical information with other data sources will improve participants’ ability to assess technical risk when examining hydrocarbon opportunities.

**DESIGNED FOR**

Geoscientists and engineers with less than twelve months’ experience using petrophysical data and other technical staff at all experience levels wanting a fundamental background in the petrophysics discipline.

**YOU WILL LEARN HOW TO**

- Understand and apply a basic level of theory and operation of major petrophysical tools
- Calibrate porosity and permeability values from core and log sources for improved saturation calculations
- Apply basic open hole logging, borehole seismic, image, and LWD/MWD
- Analyze and integrate log, core, geoscience, and engineering well data for well and field development projects
- Select petrophysical tool combinations for specific applications
- Assess the impact of petrophysical analyses on technical uncertainty estimates of reservoirs

**COURSE CONTENT**

Fundamental concepts of petrophysics • Depositional systems and petrophysical rock parameters • Nature of porosity and permeability • Basic rock properties: theory and quicklook techniques • Mudlogging • Core analysis, acquisition, interpretation, and quality checks • Theory and basics of resistivity, radioactivity, acoustic tools • LWD/MWD versus open hole logging • Determination of rock types using core and logs • Petrophysical impact on economic uncertainty • Evolving petrophysical technologies • Overview of cased hole logging

**YOU WILL LEARN HOW TO**

- Assess the impact of petrophysical analyses on technical uncertainty estimates of reservoirs.
- Select petrophysical tool combinations for specific applications.
- Assess the impact of petrophysical analyses on technical uncertainty estimates of reservoirs.
- Analyze and integrate log, core, geoscience, and engineering well data for well and field development projects.
- Apply basic open hole logging, borehole seismic, image, and LWD/MWD.
- Calibrate porosity and permeability values from core and log sources for improved saturation calculations.
- Understand and apply a basic level of theory and operation of major petrophysical tools.

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

**VIRTUAL DELIVERY $4325**

PETROSKILLS.COM/FPPONLINE

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

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<th>Location</th>
<th>Dates</th>
<th>Tuition</th>
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<td>HOUSTON, US</td>
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Any course is available in-house at your location. Contact us today.
2019-2020 Schedule and Tuition (USD)

ABERDEEN, UK
24-28 FEB 2020 $5165+VAT

DENVER, US
31 AUG-4 SEP 2020 $4435

HOUSTON, US
16-20 DEC 2019 $4395
16-14 FEB 2020 $4440
15-19 JUNE 2020 $4440
14-18 DEC 2019 $4440

KUALA LUMPUR, MYRS
3-7 AUG 2020 $3585

LONDON, UK
9-13 NOV 2019 $5465+VAT
12-16 NOV 2019 $5220+VAT
19-23 NOV 2019 $5200+VAT
26-30 NOV 2019 $5215+VAT

PERTH, AUSTRALIA
28 OCT-1 NOV 2019 $5270+GST
21-25 SEP 2020 $5375+GST

2019-2020 Schedule and Tuition (USD)

HOUSTON, US
23-27 NOV 2020 $4895

LONDON, UK
27-31 JULY 2020 $3910+VAT

CALGARY, CAN
14-18 SEP 2020 $4410
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 diagnostics
• Determine the optimal fiber interrogation units for your application
• Design a basic program for a fiber surveillance
• 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 $3850+VAT
HOUSTON, US 27-29 JULY 2020 $3310

Integration of Rocks, Log and Test Data – ILC

INTERMEDIATE 5-Day

This course provides the background necessary to address the more complex reservoir evaluation and productivity challenges within exploration, field appraisal, and field development. The key fundamentals of rock properties, logging tools, and engineering data required to solve these problems are reviewed. The concepts are illustrated with a series of real world examples that become increasingly complex as knowledge is gained in the class. Emphasis is placed on solving problems in a workshop format.

DESIGNED FOR
Petrophysicists, petroleum reservoir engineers, geologists, and geophysicists who have a basic understanding of petrophysics, geology, and engineering and need a more advanced understanding of how to integrate the different data sets together to more completely understand reservoir performance. It is recommended that participants have a basic knowledge of logging fundamentals. The basics of logging will be reviewed in the class.

YOU WILL LEARN HOW TO
• Identify clastic and carbonate rock types based on productivity differences
• Determine key reservoir rock parameters needed for a more accurate reservoir evaluation
• Use cuttings, sidewall cores, and cores to determine reservoir parameters
• Design an integrated interpretation
• Calculate Vclay
• Calculate porosity using porosity logs in complex lithologies
• Determine what percentage of porosity contributes to production
• Calculate Sw using different methods
• Determine pay and pay classes
• Tie rock and well log information to production performance

COURSE CONTENT
Objectives of integration • Key rock properties for formation evaluation • Impact of depositional environment and rock properties
• Petrophysical rock type • Texture, porosity, and permeability • Clay impact • Summary of basic logging tools • Subsurface rock sampling • Use of subsurface pressure data and evaluation • Relative permeability • Capillary pressure application to pay determination • Basic methodology for an integrated interpretation • Rock typing • Catalog approach • Clastic and carbonate rock types • Important reservoir rock parameters • Cementation and saturation components GEC fluid sensitivity • Review of production profiles • Overview of pressure transient analysis • Calculation of Vclay/Vshale • Calibration of core and logs • Calculation of porosity using porosity logs in complex lithologies • What is effective porosity
• Calculation of SW using different methods
• Determining pay and pay classes

2019-2020 Schedule and Tuition (USD)

HOUSTON, US 11-15 NOV 2019 $4425
DENVER, US 26-30 NOV 2019 $4545
HOUSTON, US 10-14 AUG 2020 $4040

Nuclear Magnetic Resonance (NMR) Petrophysics – NMRR

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 is 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 characterisation 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 (mimenomics)
• 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 2019 $4980+VAT
HOUSTON, US 6-10 NOV 2020 $5600+VAT
HOUSTON, US 10-14 AUG 2020 $4050

Shaly Sand Petrophysics – APS

INTERMEDIATE 5-Day

This course tackles the important and nontrivial problem of practical formation evaluation in shaly sand provinces. The presence of clay minerals and shaly laminations strongly affects the physical properties of the reservoir rock and induce significant effects on the response of most logging tools; these perturbations often result in low resistivity/low contrast pay zones that can be significant hydrocarbon producers but are often overlooked. A properly designed analytical program (cores and logs) for the evaluation of shaly sands can add significant reserves in existing fields and can allow for the rapid identification of potential by-passed pay zones in exploration wells. The course is practical and participants are given laboratory and field problems to emphasize the instruction. At the end of the course, the participants will be able to identify and evaluate pay intervals in shaly sands.

DESIGNED FOR
Petrophysicists, geologists, geophysicists, engineers, and explorationists involved in all phases of reservoir evaluation in shaly sand provinces.

YOU WILL LEARN HOW TO
• Determine the nature, volume, and distribution of clay minerals and shaly sands in shaly sand and their impact on the analyses of cores and logs
• Integrate petrophysical, core, and log data to significantly improve reservoir evaluation in shaly sands and other rock types containing significant amounts of microporosity
• Bring order out of chaos on porosity-permeability cross-plots using rock typing
• Evaluate effective and total porosity, fluid saturations, and productivity of shaly sands using time-tested specific methods
• Evaluate the strengths and weaknesses of advanced logging tools for characterization of shaly sands

COURSE CONTENT
Review of log interpretation techniques in clean formations • Core analyses and applications of specific core testing • Petrophysical analysis (thin section, X-ray diffraction SEM/EDS) for shaly sand evaluation • The nature of clay minerals and shaly laminations and how they are distributed in shaly sands • Influence of clay minerals and shaly laminations on petrophysical properties • Occurrence of clay minerals and shaly laminations in reservoir rocks and relation to depositional environment and diagenesis • Integration of petrophysical, core, and log data for evaluation of shaly sands • Effects of clay minerals and shaly laminations on log responses in shaly sands; various methods of shale content evaluation • Models for porosity and saturation determination: total and effective porosity; and Archie, Waxman-Smits, Dual Water and Juhricz saturation methods • Prediction of permeability and producibility from logs in shaly sands: Identification of bypassed pay • Use of advanced logs (NMR, BH, Dipmeters) integration with core data for purposes of evaluation

2019-2020 Schedule and Tuition (USD)

DENVER, US 11-15 MAY 2020 $4545
HOUSTON, US 4-8 NOV 2019 $4465
LONDON, UK 6-10 JULY 2020 $5275+VAT
Applied Rock Mechanics – ARM

SPECIALIZED 3-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. Part of the course is dedicated to the rock mechanics field and the importance of understanding the physical principles of rock mechanics. In Applied Rock Mechanics, students are provided with basic theory, laboratory demonstrations, hands-on exercises, and computer modeling demonstrations. Study of rock mechanics can help students learn the practical application of rock mechanics in various environments.

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 (PN) tools. The latter can compute multiple petrophysical parameters simultaneously and delineate gas better, especially in low porosity, but add to data and interpretation complexity. The course addresses measurement-to-interpretation techniques used by various producers 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 locally, and perform in-house interpretation if needed.

Wireline Formation Testing and Interpretation – WFT

5-Day
Formation testing and sampling tools (FTS) with wireline and while-drilling are widely used in exploration/appraisal and reservoir development projects. Over the last two decades, modern tools, such as MDT, PCI, RTG, and FRF, have emerged to become one of the critical formation evaluation means in drilling projects with high cost-risk and high reward environments. In recent years, FT tools while-drilling provide alternative 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 of multidisciplinary formation 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 FTs work: configure toolstrings and design plan a test program
• Perform QA/QC pressures and sampling data in real-time
• Interpret pressure gradient data for fluid densities and contact levels
• Understand pressure connectivity/continuity and compartmentalization
• Quantify uncertainties of data interpretation results
• Interpret graphical techniques (scatterplot, excess pressures, normalization)
• Design and interpret mini-DST and VI data

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

- **Mr. Jeff Aldrich**
- **Dr. Rausaud Archer**
- **Dr. AbriR Bokka**
- **Mr. Rodolfo Camacho-Velasquez**
- **Dr. Aneal Datta-Gupta**
- **Mr. Mladen Delich**
- **Dr. Iskander Dvashiev**
- **Mr. Greg Ernst**
- **Dr. Chris Galas**
- **Dr. Monty Keiser**
- **Mr. Greg Hazlett**
- **Mr. Richard Henry**
- **Dr. Chun Heh**
- **Dr. Russell Johns**
- **Mr. Larry W. Lake**
- **Mr. David Patrick Murphy**
- **Dr. Grant Robertson**
- **Mr. John Spivey**

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**Geology and Geophysics**

- **Applied Rock Mechanics (Pace 27)**
- **Wireline Formation Testing and Interpretation (Pace 27)**
- **Integration of Pressure, Log and Test Data (Pace 26)**
- **Production Logging (Pace 44)**
- **Capillarity in Rocks (Pace 31)**
- **Petrophysics of Unconventional Reservoirs (Pace 25)**

**Petrophysics**

- **Interpretation of Reservoir, Log and Test Data (Pace 25)**
- **Reservoir Fluid Properties: Preparation for Reservoir Engineering and Simulation Studies (Pace 31)**
- **Reservoir Engineering for Other Disciplines (Pace 30)**
- **Applied Reservoir Engineering (Pace 29) (Also available as a Virtual/Blended course)**
- **Evaluating and Developing Heavy Oil Resources (Pace 7)**

**Reservoir Engineering**

- **Uncertainty and Resource Evaluation (Pace 35)**
- **Stratigraphic Applications to Reservoir Simulation, Characterization and Management (Pace 25)**
- **Naturally Fractured Reservoirs: Geologic and Engineering Analysis (Pace 24)**
- **Integrated Reservoir Modelling (Pace 33)**
- **Reservoir Characterization (Pace 33)**
- **Reservoir Management for Unconventional Reservoirs (Pace 33)**

**Chemical Enhanced Oil Recovery Fundamentals (Pace 30)**

**Development Modeling / Field Development**

- **Decline Curve Analysis (Pace 34)**
- **New Opportunities in Old Fields: Analysis and Design (Pace 25)**
- **Horizontal and Multilateral Wells: Analysis and Design (Pace 34)**
- **Enhanced Oil Recovery with Gas Injection (Pace 31)**
- **Horizontal and Multilateral Wells: Completion and Stimulation (Pace 40)**

**Production and Drilling**

- **Formation Damage: Causes, Prevention and Remediation (Pace 42)**

**Petroleum Business & Professional Development**

- **Petroleum Project Management (Pace 56)**

**Health, Safety, Environment**

- **Applied Environmental Management Systems (Pace 46)**
- **Applied Occupational Health and Safety Management Systems (Pace 46)**
- **Fundamentals of Process Safety (Pace 46)**
- **Risk Based Process Safety Management (Pace 46)**

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**Basic**

- **Basic Reservoir Engineering (Pace 29)**

**Basic Petroleum Engineering Practices (Pace 6)**
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

FOUNDATION 10-Day

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 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, Havlena-Odell method, gas material balance, volumetric, compaction, water drive, and compartmentalized reservoirs • Oil well testing: radial flow theory, wellbore storage and skin, drawdowns, buildsups, 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 pressure profile solutions, rate sensitive skins, multi-rate testing, gas well deliverability • Hurst van Everdingen, Carter Tracy, and Peltowsich methods of aquifer analysis and description • Immiscible displacement: fluid displacement process, fractional flow, Buckley Leverett, Wedge • Description of coning, cusping, and over/under running, critical rates calculations, breakthrough times, horizontal well applications • Gas reservoirs: volumetric, water drive and compartmentalized reservoirs • Oil cap expansion, combination drive, naturally fractured and critical reservoir fluid reservoirs • Gas field developments: characteristics, deliverability issues, contracts, planning tools- oil field developments: development phases, reservoir characterization, sweep and recovery, production policies • Reservoir simulation: why simulate? Various simulation models, simulator types, setting up a simulator model

TO LEARN MORE, VISIT

Petroskills.com/BR-BLENDED

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

16 MAR-31 JULY 2020  US$7570
24 AUG 2020-8 JAN 2021 US$7570

16 MAR-15 MAY 2020 US$4325
24 AUG-23 OCT 2020 US$4325

Petroskills.com/BR-BLENDED

2019-2020 Schedule and Tuition (USD)

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Workshop Structure

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

2019-2020 Schedule and Tuition (USD)

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

16 MAR-31 JULY 2020  US$7570
24 AUG 2020-8 JAN 2021 US$7570

PETROSKILLS.COM/RE-BLENDED

TO LEARN MORE, VISIT

Petroskills.com/RE-BLENDED
Reservoir Engineering for Other Disciplines  

**FOUNDATION**
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 upstream 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-Didden 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, productivity of vertical and horizontal wells
- Aquifer influx and immiscible Displacement. Fluid displacement process, fractional flow, Buckley-Leverett, Wedge, water under running, and gas overriding
- Coning and Cusping: 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 reservoir
- 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)**
- **ABERDEEN, UK**
  - 16-22 Nov 2019 $5020+VAT
  - 17-23 Aug 2020 $5135+VAT
- **DENVER, US**
  - 6-10 July 2020 $4405
- **HOUSTON, US**
  - 28-31 Oct 2019 $4710
  - 26-30 Oct 2020 $4410
- **KUALA LUMPUR, MY**
  - 2-6 Dec 2019 $5220
  - 30 Nov-4 Dec 2020 $5220
- **THE HAGUE, NLD**
  - 21-25 Sep 2020 $5135

* plus computer charge

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Well Test Design and Analysis - WTA

**FOUNDATION**
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 gain 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
- Horizontal wells, Naturally fractured reservoirs

**2019-2020 Schedule and Tuition (USD)**
- **HOUSTON, US**
  - 7-11 Oct 2019 $4325
  - 12-16 Oct 2020 $4325
  - 14-18 Sep 2020 $5135+VAT
- **LONDON, UK**
  - 10-14 Aug 2020 $5135+VAT

* plus computer charge

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Enhanced Oil Recovery Fundamentals - ORE

**FOUNDATION**
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 explores 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 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 processes: 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
- Miscible methods
- Chemical methods
- Thermal methods
- Technical challenges: current and future R&D directions, facilities modifications and personnel training

**2019-2020 Schedule and Tuition (USD)**
- **BAKERSFIELD, US**
  - 7-11 Oct 2019 $4270
  - 19-23 Oct 2020 $4305
- **HOUSTON, US**
  - 9-13 Dec 2019 $4325
  - 8-12 Dec 2020 $4410
  - 10-14 Aug 2020 $5135+VAT

* plus computer charge

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Chemical Enhanced Oil Recovery Fundamentals - EORC

**SPECIALIZED**
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 corresponding to particular field conditions. Examples of laboratory and field performances are presented. Simulation exercises are used for each process.

**DESIGNED FOR**
Engineers, geoscientists, management 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 who want to gain a better understanding of the concepts, practices, benefits, and limitations of chemical EOR methods.

**YOU WILL LEARN HOW TO**
- Evaluate benefits and limitations of different chemical EOR processes
- Select laboratory tests and perform screening 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 and effects of 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
- Sulfactant-brine phase behavior
- Alkaline/detergent 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 Optimization/ Water Shutoff Methods
- Overview of conformance control options (i.e. bulk gel, CDG, PRP, Bright Water)
- Gel properties
- Laboratory screening
- Field examples and designs
- Reservoir simulators for conformance control methods

**2019-2020 Schedule and Tuition (USD)**
- **HOUSTON, US**
  - 27-31 July 2020 $4610

* plus computer charge
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 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 maintaining expected 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 interested in any aspect of hydraulic fracturing, water injection and production, well testing, and well maintenance.

YOU WILL LEARN HOW TO
• Select the appropriate capillary pressure measurement method for a set of desired results
• Closure correct a set of mercury/air capillary pressure data
• Fit and analyze capillary pressure data using Thorneer, Liverett-J, and Brooks-Corey methods
• Determine the representativeness of a set of capillary pressure curves within a zone of interest
• Estimate permeability from a mercury/air capillary pressure curve
• Calculate pore throat sizes from a capillary pressure curve
• Create a synthetic capillary pressure curve and estimate the air permeability from a petrophysical analysis
• Obtain values for interphase tension
• Convert mercury/air capillary pressure curves to hydrocarbon/water capillary pressure curves
• Determine saturation-height distribution in a single-pore system rock or in a multiple-pore system rock
• Determine irreducible water saturation
• Estimate the length of a transition zone
• Determine clay-bound water using Klein-Hill-Shirley method
• Compare/contrast capillary pressure data with NMR data
• Determine the maximum column of hydrocarbon that a specific sealing layer can sustain without leaking

COURSE CONTENT
Capillary pressure applications in reservoir characterization • Rock properties from mercury/air capillary pressures • Capillary pressure data representativeness • Capillary forces in reservoir rocks; their measurement • Capillary pressure data fitting methods • Representing a large number of capillary curves (averaging) • Permeability from capillary pressure curves and petrophylography • Saturation-height functions • Surface phenomena, capillarity, wettability, and interphase tension • The competition between capillary and gravity forces • Relationship between capillary and residual saturations • Interpretation of single and multiple pore system rocks • Clay-bound water • Capillary pressure vs. NMR • Seal capacity

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Intermediate 5-Day
This course is designed to cover state-of-the-art techniques/workflows for history matching, geologic 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 streamlines 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/validation in a mature field, and well completion optimization for an unconventional reservoir
• Use permeability predictions, facies identification, and upscaling
• Use commercial tools for history matching

Course content
History Matching: fundamentals and workflow • Simulation equations • Reservoir Simulation: 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

2019-2020 Schedule and Tuition (USD)

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<td>3-7 AUG 2020</td>
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* plus computer change

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, upscaling to simulator model and finally, proper history matching and future predictions in the presence of uncertainties. This course is important to 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 compositional 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

2019-2020 Schedule and Tuition (USD)

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<tr>
<td>London, UK</td>
<td>11-15 MAY 2020</td>
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* plus computer change

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 standard (SPE-PRMS) and regulator’s (US SEC) versions of the 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 estimates.

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 robustness of modern techniques in your reserve estimates
• 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 records

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/committal letters, bank lending evaluations • Economics and entitlements impact on reserves • Geopolitical topics: case studies, reserves in unconventional reservoirs and/or IOER/EDP projects, ethics

2019-2020 Schedule and Tuition (USD)

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* plus computer charge

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 by-passed pay, 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 involving 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 your expertise, 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 for 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 continuity
• 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 flow units • Reservoir/production monitoring and uncertainty analysis • 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>London, UK</td>
<td>20-24 JULY 2020</td>
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Reservoir Management

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 where 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 • Welfare and surface systems • Well testing and automated production systems • Economic impact of operating plans • Identifying and acquiring critical data, data acquisition, and analysis • Maximizing economic recovery and minimizing capital investment, risk, and operating expenses • Timing of field development of implementation of reservoir management plan • Case histories and analysis • Importance of reservoir characterization and drilling and operating plans • Primary recovery, pressure maintenance, and secondary and tertiary recovery • Responsibilities for team members

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. CBI 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 (DFTs & PBU’s)

COURSE CONTENT

Reservoir Management and the role of the reservoir engineer • Unconventional reservoirs: quality recognition and development life-stages • A review of the fundamentals of volumetric in unconventional reservoirs • Rate and recoverable volumes prediction: before development • Rate and recoverable volumes prediction: after development • Pressure transient testing: appropriate methods; design and analysis • Life-of-field surveillance planning • Solving common unconventional reservoir management problems: setting initial spacing • Solving common unconventional reservoir management problems: developing drilling sequence • Reservoir simulation versus non-simulation tools • Uncertainty issues

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 kinks. 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 simulator.

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 Loverett displacement • One dimensional water oil displacement • Model components, types, and modern gridding methods • Two dimensional displacement • Grid orientation and refinement • Routine and special core analysis • Single phase up-scaling of geo-cellular model parameters

2019-2020 Schedule and Tuition (USD)

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12-16 OCT 2020 $5235+VAT
19-23 OCT 2020 $4505
7-11 OCT 2019 $5135+VAT
27 APR-1 MAY 2020 $4510
15-17 JUNE 2020 $3325+GST
15-17 JUNE 2020 $3325+GST
2-6 JULY 2020 $4550
7-11 OCT 2019 $4590
7-11 OCT 2019 $5150
12-16 OCT 2020 $5235+VAT

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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 reservoir 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, Stag’s, P/t2 vs. Gp, etc.) for rate and reserves analysis
• Use advanced 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 multilaterals
• Production decline type-curves: introduction and historical background, how to use modern Fetovich type-curves for forecasting production
• Brief discussion of unconventional gas/oil reservoir decline analysis and production forecast

2019-2020 Schedule and Tuition (USD)

BAKERSFIELD, US 4-5 Nov 2019 $2640
HOUSTON, US 11-12 Nov 2019 $2995
OKLAHOMA CITY, US 20-21 Jul 2020 $2965

* 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 with the operation and management of gas reservoirs; geoscientists working with gas reservoirs in field development and expansion 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.”
“Exercises were practical and useful.”

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, coaled 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, involving 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 and 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 development projects
• 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
• Geologic structure characteristics
• Classification of advanced wells
• Reservoir inflow performance at different boundary conditions
• Wellbore flow and integrated well performance
• Conventional production and cross flow in multilateral wells
• Formation damage in horizontal and multilateral wells
• Well completion and combined effect of completion 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

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/flow behavior to reservoir management strategies in naturally fractured reservoirs
• Evaluate the impact of natural fractures on hydraulic fracturing 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 examples of 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

See website for dates and locations.

2019-2020 Schedule and Tuition (USD)

HOUSTON, US 2-6 Nov 2019 $4610
LONDON, UK 8-12 Jun 2020 $5335+VAT

* plus computer charge

See website for dates and locations.

Any course is available in-house at your location. Contact us today.
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 than can be realized with effective utilization of the natural drive mechanism(s) and the appropriate use of improved recovery methods
• Identify under-draining 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 • Exploitation Opportunities: reservoir enhancement that can be achieved through infill drilling, re-development of mature waterfloods, infill drilling, its utility, application, and value; horizontal and multiwell lateral technologies and 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 techniques
• 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 upgridded geologic models
• Perform streamline assisted history matching of reservoir models
• Apply streamline simulation for complex reservoir geometries and flow processes

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 evaluation, appraisal, and development phases of the resource life cycle.

The course is based around the Petroleum Reserve Management System (PRMS), Variations needed to conform to other national standards such as the SEC, N-51, SR&I, 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 offtasks, tight gas, CBM/CSG, 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 ‘related technology’
• Create a unconventional reserve growth portfolio
• Minimize unconventional reserve write-downs

COURSE CONTENT
Fundamentals of unconventional reservoirs • 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 • Resource data collection programs • Reserve accounting • Reserve portfolio management • Alternate evaluation approaches • Ethics and public information releases

1920-2020 Schedule and Tuition (USD)

Baker Hughes, LLC
2020-2021 Schedule and Tuition (USD)

Bakersfield, CA 30 Mar-3 Apr 2020 $4555
17-21 Nov 2019 $5645+vat
1-5 Dec 2019 $5335+vat
6-10 Dec 2020 $5705+vat
6-10 Dec 2019 $4525
13-17 Jul 2020 $5610
17-21 Jul 2020 $4610
8-12 Aug 2020 $5335+vat
15-19 June 2020 $5335+vat

See website for dates and locations.

Denver, CO 23-27 July 2020 $4650
Houston, TX 16-20 Dec 2019 $4525
14-16 Dec 2020 $4610
21-25 Oct 2018 $5335+vat
19-23 Oct 2019 $5335+vat
13-17 March 2020 $4555

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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 needs—both applied and advanced—see page 40.

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

- Dr. Mohamed Badruzzaman
- Mr. Mason Gomez
- Dr. mosque
- Mr. Diego Londono
- Dr. Ali GhAllAmBor
- Dr. Shariq
- Mr. Larry Britt
- Dr. Omar Barkatt
- Dr. Shariq Dunn-Norman
- Mr. Rafael Gay-de-Montellano
- Dr. James Lea, Jr.
- Mr. Aron Horn
- Dr. Carlos Palacios
- Mr. Steve McCall
- Dr. Jeffery McMullan
- Mr. Kenneth Sawth
- Dr. Phil Nitz
- Mr. William Ott
- Mr. Aarjadev
- Dr. Subhash Shah
- Mr. Kyle Travis
- Mr. Hugo Vargas
- Mr. Bob Wettewmark
- Mr. Scott Wilson
- Dr. Carlos Palacios
- Dr. Jeffery McMullan
- Mr. Kenneth Sawth
- Dr. Phil Nitz
- Mr. William Ott
- Mr. Aarjadev
- Dr. Subhash Shah
- Mr. Kyle Travis
- Mr. Hugo Vargas
- Mr. Bob Wettewmark
- Mr. Scott Wilson
**Production Operations 1 – PO1**

**FOUNDATION**

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

**DESIGNED FOR**

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

**YOU WILL LEARN HOW TO**

- Recognize geological models to identify conventional and unconventional (shale oil and gas and heavy oil) hydrocarbon accumulations
- Understand key principles and parameters of well inflow and outflow
- Build accurate nodal analysis models for tubing size selection and problem well review
- Design and select well completion tubing, packer, and other downhole equipment tools
- Plan advanced well completion types such as multilateral, extended length, and intelligent wells
- Design both conventional and unconventional multi stage fractured horizontal wells
- Apply successful primary casing cementing and remedial repair techniques
- Select equipment and apply practices for perforation device selection
- 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
- Produce accurate nodal analysis models for tubing size selection and problem well review
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- 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**

**Production Operations 1 – PO1**

**FOUNDATION**

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 • Wellheads, 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

**WORKSHOP STRUCTURE**

**BLENDEN LEARNING**

- Virtual Instructor-led Training
- Online Learning

**COURSE CONTENT**

Importance of the geological model • Reservoir engineering fundamentals in production operations • Understanding inflow and outflow and applied system analysis • Well testing methods applicable to production operations • Well completion design and related equipment • Primary and remedial cementing operations • Perforating design and applications • Completion and workover well fluids • Well intervention: wireline, hydraulic workover units, and coiled tubing • Production logging • Artificial lift completions: rod pump, gas lift, ESP, PCP, plunger lift, and others • Problem well analysis • and more...

**PETROSKILLS.COM/PO1-BLENDED**

- Virtual Instructor-led Training
- Online Learning
Well Stimulation: Practical and Applied — WS

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 broadly covered in the PetroSkills Production Operations 1 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 or the acting, 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/basin reservoir properties • Formation damage - how and why it happens • Non-acid damage removal technologies • 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 slickwater treatments • The frac chart • Hydraulic fracturing quality control and safety • Energized fluids - application and safety

Surface Production Operations — PO3

BASIC

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

DESIGNED FOR

All field, service, support, and supervisory personnel having interaction with Facilities Engineers and desiring to gain an awareness level understanding of the field processing of production fluids. The course details the basics of oilfield corrosion prevention, detection, and treatment • Internal workings of separators, pumps, compressors, valves, dehydrators, acid gas treatment towers, and other treating equipment • A wide range of produced fluid measurement and analysis techniques. • A description of treating equipment whether located on the surface, offshore platform, or sea floor

COURSE CONTENT

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

Coiled Tubing Interventions — CTI

FOUNDATION

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 main production phases of oil and gas wells around the world.

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 (2+ different pumping and mechanical interventions including coiled tubing drill out and coiled tubing drilling), and how to deal with fatigue and corrosion. Nitrogen equipment and calculations required for constant / variable temperature and corrosive/nitrogen interventions are also covered.

The final part presents an extensive coverage of emergency responses and contingencies to deal with in 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’s 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 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 and define coiled tubing string limits
• Recognize, prevent, and manage corosive and sour conditions and their impact
• Work safely with 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 • Operations limits • Pumping operations • Mechanical operations • CT drilling operations • Life estimation (fatigue) • Corrosion • String management • Checklists • Nitrogen • Emergency responses and contingencies

2019-2020 Schedule and Tuition (USD)

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
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<td>Houston, US</td>
<td>11-15 OCT 2019</td>
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Performance Analysis, Prediction, and Optimization Using Nodal Analysis – PO2

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.

**Foundation 5-Day**

**Course Content**

- Geo-mechanics: what makes an unconventional gas field successful?
- Unconventional oil, shale, tight sands, and unconventional resources
- Unconventional reservoirs • Basis of fracture horizontal wells • Horizontal well objectives in completions and multiple fracture stimulated shale reservoirs • Introduction to the Geo-mechanics: what makes an unconventional reservoir?
- Apply nodal analysis, and gas deliverability planning programs can be provided.

**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 Objective**

- Inflow/Outflow Models in SNAP
- Artificial Lift and Transient tests
- Exercises

**Intermediate Description**

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 under-performing 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 that they regularly perform or are required to technically review well inflow/outflow analysis.

**You Will Learn How To**

- Recognize the limitation 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.

**Schedule and Tuition (USD)**

- **CALGARY, CAN**
  - 24-28 Aug 2020: $4305
  - 7-11 Oct 2019: $4325
  - 12-16 Oct 2020: $4410
  - 20-24 July 2020: $4410
- **HOUSTON, US**
  - 8-12 June 2020: $4435
  - 16-20 Nov 2020: $5350
  - 15 Sep-6 Oct 2020: $US3990

*Virtual Schedule and Tuition (USD)*

- **KUALA LUMPUR, MALAYSIA**
  - 16-20 Nov 2020: $5350

*Virtual Schedule and Tuition (USD)*

- **DENVER, US**
  - 16-20 Nov 2020: $5350

TO LEARN MORE, VISIT PETROSKILLS.COM/ NODAL-VIRTUAL
Downhole Remediation Practices for Mature Oil and Gas Wells – DRP

FOUNDATION 5-Day

Downhole Remediation for Mature Oil and Gas Wells is presented from a practical point of view. Discussions include decision processes for selection, design, and application of methods that are supported by field experiences and research results. Principal focus is production-related near wellbore damage and remedial water control practices.

DESIGNED FOR
Asset managers, drilling and completion engineers, petroleum engineers and geologists, independent producers, production managers and engineers, reservoir managers and engineers, field supervisors, company executives and officials, field personnel with operating and service companies.

YOU WILL LEARN HOW TO
• Diagnose and develop removal and prevention techniques for wellbore damage due to scale, paraffin, asphaltene, corrosion, and erosion
• Understand sources, causes, and effects of water production
• Design remediation applications (both mechanical and chemical) for reducing excess water production
• Design sand control applications and understand how to fix damaged screens and gravel packs
• Understand how and when to apply remedial cementing practices and what tools and job considerations are critical
• Apply these techniques to a specific well problem that you bring into the classroom from your current field assignment

COURSE CONTENT
Production-related near wellbore damage • Scale • Paraffin • Asphaltenes • Corrosion • Erosion • Well diagnostics • Removal techniques • Prevention techniques • Wellbore stabilization • Understanding unwanted water production • Extent of the problem • Causes and effects of water production • Monitoring and evaluation techniques • Diagnostics • Defining required attributes and placement controls • Fitting solutions to problems • Remedial water control • Challenges and solutions • Environmental considerations • In-wellbore control • Near-wellbore techniques • Matrix applications • Fractures and voids • Water control • Bringing it all together • Engineered process • Initial screening • Reservoir characterization • Simulation • Case studies

Hydraulic Fracturing Applications – HFU

INTERMEDIATE 5-Day

The course reviews the basic concepts of hydraulic fracturing and the broad applications of the technique. Fracturing technology benefits and limitations in all types of sandstone and carbonate reservoirs are explained. It considers the critical components of the fracturing process, and it expands on the steps and data input requirements to effectively select stimulation candidates, plan, design, and implement hydraulic fracturing treatments. The use of modeling as an important tool to design and analyze treatments, how it can be effectively used in practical applications, and its limitations are explained. In addition to the technical presentation, the course contains many practical exercises and class problems based on case histories.

DESIGNED FOR
Production, reservoir, and drilling engineers, and others who have a basic understanding of hydraulic fracturing and need to enhance their knowledge about fracturing concepts and applications.

YOU WILL LEARN HOW TO
• Identify the data requirements and steps that have to be implemented to properly design hydraulic fracturing treatments
• Evaluate and select stimulation candidates, and apply hydraulic fracturing concepts to various types of reservoir conditions to optimize well productivity
• Recognize opportunities for substantial production improvements by application of effective hydraulic fracturing treatments
• Collect pertinent well data and information needed to plan, design, implement, and evaluate fracturing treatments for the most common types of reservoirs
• Realize the strengths and limitations of hydraulic fracturing theory as it relates to field applications
• Become an active participant in the different phases of typical hydraulic fracturing treatments

COURSE CONTENT
Introduction to the fracturing process and mechanics • Fracture design concepts and methodologies • Fracturing fluid additives and proppant • Strengths and limitations of fracturing applications • Production increase • Factors involved in field implementation • Acid vs. proppant fracturing • frac packing concepts • Waterfracing concepts • Horizontal well fracturing • QA/QC of fracturing treatments • Methods to evaluate fracturing treatment success

Advanced Hydraulic Fracturing – AHF

SPECIALIZED 5-Day

This advanced course is designed for those who have a practical understanding of the applications of hydraulic fracturing and want to expand their knowledge. The course provides the details and discussion of fracturing concepts usually accepted or assumed in fracturing applications. The strengths and limitations of various approaches to fracturing treatment design are also covered. Attendees should leave the advanced course with a better understanding of the hydraulic fracturing process and how it relates to post-fracture well performance, after working on real fracturing cases design and analysis throughout the course.

DESIGNED FOR
Production, operations, and completions engineers who are actively involved in hydraulic fracturing applications and desire a more in-depth understanding of hydraulic fracturing theory and applied concepts. It is designed for engineers that have some fracturing experience or those who have already attended the PetroSkills intermediate level Hydraulic Fracturing Applications course.

YOU WILL LEARN HOW TO
• Better understand rock properties and rock mechanics related to fracturing applications
• Better understand fracturing fluid mechanics and proppant transport
• More effectively design fracturing treatments through better understanding of factors influencing hydraulic fracturing applications
• Use pre-fracture injection test data and real-time fracturing treatment data in fracturing applications to define fracture parameters and improve frac treatment design
• Consider factors influencing post-frac fracture conductivity and well cleanup
• Realize the strengths and limitations of existing hydraulic fracturing technology and fracture models
• Expand fracturing applications to fit a wider range of reservoir types and conditions

COURSE CONTENT
Rock properties and fracture mechanics related to the fracturing process • Fracturing fluid mechanics • Propellant transport • Pre-fracture injection test analysis • Fracture closure • Fracture monitoring and fracture measurement • Fluid leak-off • Re-fracturing considerations • Review of existing fracturing modeling software • Evaluation of post-fracture well performance

Acidizing Applications in Sandstones and Carbonates – ASC

INTERMEDIATE 5-Day

Although acidizing is the oldest method of well stimulation, it is often applied with mixed results. It remains, however, a valuable tool for improving well productivity. The key to acidizing success is in the understanding of how it works, the optimum conditions for its application, and proper evaluation of well response after the acidizing treatment. The instructor will present many of the practical aspects of acidizing applications and help provide a better understanding of acidizing as a tool for enhancing well performance.

DESIGNED FOR
Engineers and other personnel involved with the daily operation and management of producing oil and gas wells; production engineers and reservoir engineers involved with well stimulation applications would also benefit from attending this course.

YOU WILL LEARN HOW TO
• Assess a well’s need for acid stimulation
• Recognize the strengths and limitations of acidizing for stimulation purposes
• Investigate production problems from the standpoint of damage removal and improvement in well production
• Analyze acid treatments strategically to improve success
• Approach acidizing applications from a practical viewpoint
• Recognize opportunities for enhancement of acidizing treatments using non-acid fluids

COURSE CONTENT
Well stimulation objectives • Types of formation damage • Influence of skin factor • Production improvement with skin removal • Well stimulation and reservoir management • Perforating techniques and well stimulation • Acidizing for well stimulation • Chemistry of sandstone acidizing • Chemistry of carbonate acidizing • Acid additives • Treatment diversion • Acid fracturing • Rules of thumb • Types of acids • Sandstone acidizing guidelines • Carbonate acidizing guidelines • Re-stimulation of acidized wells • QA/QC in acidizing applications • Safety precautions

2019-2020 Schedule and Tuition (USD)

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2019-2020 Schedule and Tuition (USD)

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2019-2020 Schedule and Tuition (USD)

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<td>MIDLAND, US</td>
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<tr>
<td>HOUSTON, US</td>
<td>11-15 MAY 2020</td>
<td>$4510</td>
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Any course is available in-house at your location. Contact us today.
PRODUCTION AND COMPLETIONS ENGINEERING

Artificial Lift Systems – ALS

FOUNDATION 5-Day

This course combines 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 PCC plunger lift, 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. 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 PVT properties and inflow performance calculations related to artificial lift
• Understand and apply multiphase tubing and pipe 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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| CALGARY, CAN | 11-15 MAY 2020 | $4380+GST | 25 | 10
| LONDON, UK | 14-18 OCT 2019 | $9060+VAT | 25 | 10
| 19-23 OCT 2020 | $5160+VAT | 25 | 10

Artificial Lift for Unconventional Wells – ALLUW

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 efficiently. 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 area/states. All 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 5).

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 artificial lift solutions specific to unconventional wells and the latest practices.

YOU WILL LEARN HOW TO

• Understand the importance of identifying and agreeing on the objectives of production optimization and artificial lift early in the well planning cycle
• 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, how to construct and profitably use relevant IPR curves
• 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 challenges and issues in operating artificial lift 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/display

COURSE CONTENT

Artificial lift objectives, value, rate and recovery, cost • Differences between conventional and unconventional wells • Applying Nodal Analysis and using IPR curves • and more...

2019-2020 Schedule and Tuition (USD)

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| DENVER, US | 27 APRIL-1 MAY 2020 | $4500 | 25 | 10

See website for dates and locations.

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, pumps, wellhead/ stuffing box, sucker rods/ siker 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 viscosity are addressed. The course also covers beam pumps and rod production in horizontal wells, optimum placement of the pump, deviation surveys, and performance of gas separators. New methods of deepening the point of intake for horizontal and unconventional wells are presented with field cases. One personal computer is provided, at additional cost, for every two participants.

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 PCO’s (in/on and VSD types)
• Identify and select option 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 • Belts • 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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| MIDLAND, US | 28 OCT-1 NOV 2019 | $4370 | 25 | 10
| 26-30 OCT 2020 | $4455 | 25 | 10

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 selecting 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 products, and cost differences. Comparisons are made to other lift methods to help facilitate the optimum method selection. Problems related to solids production, gas handling and viscosity 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 and monitoring 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

2019-2020 Schedule and Tuition (USD)

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<td>+1.918.828.2500</td>
<td>petroskills.com</td>
<td>+1.800.821.5933 (toll free North America)</td>
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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 calculate 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 plungers 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.
• Insure production when operating plunger lift.
• Know when conventional plunger ceases to work, what are other workable plunger related systems to switch to for continued 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, and cycle set points • Drawdown capability of plunger lift • IPRs 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 fields, deeper wells, and higher temperature and pressure reservoirs. Although gas hydrate issues dominate the thermodynamic design, waxes, asphaltpheres, 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 individuals 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 assurance system.
• Understand the thermodynamic modeling of steady state and transient multiphase flow in offshore production systems.
• Evaluate and compare mitigation and remediation techniques for: gas hydrates, paraffin (waxes), asphaltpheres, 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 • PV/T analysis and fluid properties • Steady state and transient multiphase flow modeling • Hydrate, paraffin, and asphaltpheres control • Basics of scale, corrosion, erosion, and sand control • Fluid property and phase behavior model • 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 new demanding drilling, completion, and production methods. Additional concerns relate to the common lost production or injectivity following workers 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, 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 properties 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 well that may be damaged: production performance, pressure analysis, production logging • Damage removal: non-acid approaches, acidizing, and bypassing damage with hydraulic fracturing
**COURSE CONTENT**

**YOU WILL LEARN HOW TO**

- Relate reservoir and well performance to time
- 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

**DESIGNED FOR**

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

**YOU WILL LEARN ABOUT**

- Relate reservoir and well performance to time
- 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

**COURSES 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; Reservoir calculations: P/Z plots, energy plots, water influx, abnormal pressure effects; diagnostic testing based on production data.

**YOU WILL LEARN HOW TO**

- Maximize gas production using optimized diverting 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

**COURSES CONTENT**

Recognize symptoms of liquid loading in gas wells; Critical velocity to analyze wells loading or nodal. Optimize techniques with nodal analysis.

**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

**COURSES CONTENT**

Overview scale, water and deposition; Scaling potential: Factors affecting deposition; Scale Identification and removal; Scaling tendency/L.S. Rice U ScaleSoftPit's software; Scale prevention and inhibition

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**Scale Identification, Remediation and Prevention Workshop – SIR**

**PetroSkills PetroAcademy**

**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 supervisors, 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 HOW TO**

- Recognize corrosive conditions and monitor corrosion rates
- Select and apply corrosion inhibitors
- Predict and treat emulsions
- Understand and control water foaming
- Select and apply scale inhibitors
- Control gas hydrate formation
- Predict and control paraffin (wax) deposition
- Evaluate methods for scale control
- Scavenge low concentrations of H2S
- Select and apply water clarifiers
- Select chemicals for use in deep water
- Select environmentally friendly chemicals

**COURSE CONTENT**

Corrosive agents; Corrosion inhibitor selection and application; Predicting and monitoring corrosion rates; Basics of oilfield emulsions; Demulsifier selection and field application; Foams; Defoamers; Foam basics; Field application of foams; How defoamers 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 H2S scavengers; Application of H2S 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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**Virtual Schedule and Tuition (USD)**

**13 OCT-29 OCT 2020**

**US$1630**

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**Production Chemistry – OGPC**

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

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

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

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**Virtual Schedule and Tuition (USD)**

**10-14 AUG 2020**

**US$3235+VAT**
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.

**COURSE CONTENT**
- Wellbore environment and tool deployment considerations
- Depth control issues and natural gamma ray logging
- Cement bond logs
- Ultrasonic imaging logs
- Conventional production logging: conventional production logging
- Temperature and single-element spinners fundamental
- Two-phase flow fundamental
- Inspection logs
- Production logging in horizontal wells fundamental
- Downhole environment core
- Horizontal well logs
- Temperature and single-element spinners fundamental
- Horizontal wells fundamental
- Oil and gas sand control
- Oil and gas sand control
- Horizontal well sand control
- Horizontal well applications
- 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
- 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**
- 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**
- Analyze production logging data
- Interpret production logs
- Evaluate well completions
- Design production logging programs
- Evaluate well performance
- Identify sand control problems
- Select the proper sand control technique
- Perform successful sand control

2019–2020 Schedule and Tuition (USD)

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<tr>
<td>LONDON, UK</td>
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RMP is also available as a virtual course which is an enhanced version of the face-to-face public session.

2019–2020 Schedule and Tuition (USD)

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<td>3-7 AUG 2020</td>
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### 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 cases. Technologies for produced water recovery will be discussed.

**DESIGNED 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) ratio • Deoiling technologies, traditional, deviations, and future • Alkalinity and hardness concepts, softening and silica removal, hot and warm lime softening • Ion exchange softening technology, SACAs 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

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

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### 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 aspects of 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. Hydrofracturing aspects of unconventional resources plays, including conductivity, proppant selection, and practices, are discussed. A combined practical and technical theme is employed, with emphasis on economy and efficiency in designing, completing, and producing horizontal and multilateral wells.

**DESIGNED 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 completions 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 operations

**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 • Geosteering • 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

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

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* plus computer charge

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### Applied Water Technology in Oil and Gas Production – PF21

**FOUNDATION 5-Day**

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

**DESIGNED FOR**

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

**YOU WILL LEARN**

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

**COURSE CONTENT**

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

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

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* plus computer charge

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### Gas Lift – GLI

**INTERMEDIATE 5-Day**

Gas lift is one of the most widely used artificial lift techniques. Participants will investigate the impact of tubing sizing, gas lift valve selection, gas lift mandrel spacing, gas lift valve design, casing pressure, surface choke size, gas volume, etc., on well design and operation. Participants will practice mandrel spacing design and gas lift valve design, surveillance, and optimization at the well and field level using actual field data including the use of software programs. After attending this course, participants will be able to identify, diagnose, and analyze, and solve gas lift problems. Computer software will be used/demonstrated during the course. The class includes pictures and videos of most important equipment components while being applied, to further participate understanding. The course emphasizes techniques to maximize production. New developments at various stages of development and application are also covered.

**DESIGNED FOR**

Production engineers and operations staff responsible for designing gas lift installations and/ or performing surveillance and optimization on wells using gas lift; appropriate for staff at all levels of gas lift expertise and has been given exposure to both production engineers new to gas lift as well as industry gas lift consultants.

**YOU WILL LEARN HOW TO**

- Select the appropriate gas lift systems and equipment
- Design continuous-flow gas lift systems
- Analyze operating gas lift systems
- Increase production from your wells using gas lift technology and optimization
- Improve the economics of gas lift operation

**COURSE CONTENT**

Gas lift concepts and data • Inflow/Outflow • Nodal analysis • Equilibrium curves • Gas lift equipment and valve mechanics • Valve selection and calibration • Unloading • Mandrel spacing and step-by-step, complete gas lift design for a well • Temperature effects on valves • Determine the Pr托 • Orifice sizing techniques • Lift gas rates for best economics • Causes and solutions of instability • Gas lift surveillance and measurement • Analysis of flowing pressure gradient surveys • Analysis of GL surface charts and measurements • Gas allocation and field optimization • Use of computer software for gas lift design, troubleshooting, and optimization

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

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* plus computer charge
Competent 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 affirmative fall protection program.

DESIGNED 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 evacuating or entering an aerial lift
- The regulations and standards for scaffolding
- How to minimize the dangers of falling objects
- About the initial ANSI fall protection standards and the new ones within the Z359 family
- The difference between certified and non-certified anchors
- 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 lifeline 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.

COURSE CONTENT

- 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

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 to failures.” Participants will receive a template OHS-MS 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 OH&S-MS (i.e. ILO OSH 2001, ISO/HSE-MS) 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 application 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 organisations with limited access to specialist H&S advice.

COURSE CONTENT

- Successfully design and use the principle elements of an OH&S-MS in a typical petrochemical organisation
- Identify and integrate key tools associated with OH&S management, including HazID, risk assessment, JSAs, PTW, 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

Risk Based Process Safety Management – HS45

FOUNDATION 5-Day

This course introduces process safety management in the oil and gas industry, the elements and benefits of process safety management systems, and tools for implementing and managing a system. In this course the participant will learn to use tools and techniques for managing process safety. The Center for Chemical Process Safety’s (CCPS) book titled “Guidelines for Risk Based Process Safety” or “RPS5 Guidelines” will be the test for this course. Participants complete exercises and select 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.

COURSE CONTENT

- 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 safe 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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2019-2020 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)
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)
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 what 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 preventive and predictive maintenance • Identifying critical equipment • Developing organizational competence • Presenting your action plan

2019-2020 Schedule and Tuition (USD)

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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

2019-2020 Schedule and Tuition (USD)

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Comments From Participants in our Virtual PetroAcademy Courses

Applied Reservoir Engineering
“The instructor was a true pleasure to learn from, both in the asynchronous sessions, and in the prerecorded videos. He had an excellent command of the subject matter, and presented ideas clearly and with common sense and humour.” - Michael

Production Operations 1
“I liked the flexibility to be able to handle the course load at my own pace. Not having to take two weeks off work and travel to Houston was a deciding factor.” - Jacob

Applied Reservoir Engineering
“I liked being able to spend an extended amount of time on a topic...” - Nicole

Check out our virtual and blended courses! Go to petroskills.com/online
How can you accelerate competency and eliminate travel expenses? Add e-Learning from PetroSkills to your development programs!

**ePilot**

Online Learning for Operations & Maintenance

ePilot™ is over 1400 hours of technical skills and safety training used at over 500 sites worldwide. Topics include:

- Core Competency
- 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™**

Online Learning for Petroleum Professionals

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

- Oil & Gas Industry History
- 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
**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.

**DESIGNED FOR**

Engineers, geologists, geophysicists, landmen, HR and other non-finance and accounting professionals who need an introduction to the business aspects 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 is it 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

---

**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.

**DESIGNED FOR**

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

**YOU WILL LEARN**

• How to evaluate the economic viability of a project
• Cash flow techniques applicable in economic evaluations
• 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 effecting oil and gas prices • Cash flow techniques • Economic criteria: interest, hurdle rate, time value of money, selection, ranking criteria • Risk, uncertainty: types of risk, mathematical techniques, probabilistic models, uncertainty in economic analysis • Tips on economic factors in computer spreadsheet analysis • Ethics in economic analyses

---

**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. Contracting, budgeting and financing, accounting, and contractual arrangements, which also significantly impact the economic viability of a project, are covered. Participants practice cash flow techniques for economic evaluations and investigate frequently encountered situations. Participants are invited to submit their own economic problems (in advance), if appropriate. Each participant will receive Economics of Worldwide Petroleum Production, written specifically for PetroSkills courses.

**DESIGNED FOR**

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

**YOU WILL LEARN**

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

**COURSE CONTENT**

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

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**Essential Leadership Skills for Technical Professionals** – OM23

**BASIC**

5-Day

In the oil and gas industry, skilled and competent leadership is extremely important for safety, productivity, and asset management. The 21st century brings new emphasis on leaders, new communication technologies, increased focus on safety, information overload, workforce dynamics, asset integrity, and many other concerns which challenge even the most proficient leader/manager. How do we blend these new challenges with tried and true wisdom of success? There are skills to learn that will help you be more effective, with less stress. In this seminar/workshop you will explore your internal drivers and learn how to combine them with 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.

**DESIGNED FOR**

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

**YOU WILL LEARN HOW TO**

• Become a more effective leader by overcoming the “tyranny of the urgent” with better time management
• Make better decisions by assessing when to make what kind of decisions
• Help others develop themselves by unleashing their career motivation
• Have more effective communications with technical and non-technical teams by developing the patience to let the team do its work
• Recognize and resolve conflicts before they get out of control by early detection of conflicts, when they’re simpler and have less impact
• Develop the ability to lead an empowered team of technical professionals by more effective delegation
• Reduce your own stress level by teaching yourself how to lower your stress with clearer thinking
• Learn assessment techniques for your 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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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)
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.

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

COUSE 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

Managing Non-Technical Risks – MNTR

BASIC

4-Day

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

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

YOU WILL LEARN
• About important trends in the relationship between business and society
• To make the business case for active management of non-technical risks
• Essential concepts of stakeholder engagement, including dealing with activist stakeholders
• How to set up the internal structure and collaboration model to respond effectively to the external world
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COUSE CONTENT
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For more information, or to register, go to petroskills.com/mntr

2019-2020 Schedule and Tuition (USD)

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Economics of Worldwide Petroleum Production – EWP

5-Day

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

DESIGNED FOR
Managers, supervisors, and operating personnel concerned with costs, profitability, budgets, the company bottom line and other aspects of economic analysis of petroleum production on a project, corporate, and worldwide basis, who have had some previous experience in this area.

Due to similarity in content, PetroSkills recommends that participants take this course if they have some experience in this field as the course content is more advanced than Expanded Basic Petroleum Economics. Take one or the other, but not both courses.

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

YOU WILL LEARN HOW TO
• Use cash flow techniques in economic evaluations
• Evaluate and choose investment opportunities
• Use models to weigh risk and uncertainty
• Evaluate decision alternatives using predictive techniques
• Evaluate how projects affect the corporation

COURSE CONTENT
• Pricing: natural gas, marker crudes, OPEC, spot and futures markets, transportation
• Production rate: mathematical models
• Cash flow: revenue, capital and operating costs, spreadsheets
• Economic evaluation: present value concepts, sensitivity and risk analysis, decision trees, royalty, sources of capital, incremental economics, sunk costs, inflation
• Budgeting: examples and exercises, long-range planning
• Cash versus write-off decision: depreciation, depletion, and amortization
• How to read an annual report: statements, financial ratios, what is and is not included, reading between the lines

Worldwide business operations: concessions, licenses, production sharing contracts, joint ventures, cost of capital, sources of funding, debt and equity
• Performance appraisal: buy/sell assessments
• Computer economics software

Tips on format and inclusion of economic factors in computer spreadsheet analysis
• Ethics in economic analyses

2019-2020 Schedule and Tuition (USD)

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Risk analysis: technique used to identify the cause and effects of events or actions. In the oil and gas industry, risk analysis is used to identify potential risks and to assess the impact of these risks on the project.

COURSE CONTENT
• Analysis of decision trees, probability diagrams, and decision models
• Decision tree analysis: concept, practice, and software
• Decision tree analysis: sensitivity, risk, and uncertainty analysis

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Cost Management – CM

5-Day

Few problems threaten the petroleum businesses more than uncontrolled costs. Economic realities have made it necessary for most companies to operate with a “lean and mean” philosophy. As the price of our products fluctuates widely, the most vulnerable companies are those that are ineffective in understanding and managing their costs. The ability to properly manage costs is now paramount in a company’s success and even their ultimate survival. As the energy industry goes through its most monumental changes since the 1970s, the companies that can identify efficiencies and inefficiencies will be able to react to the challenges of the global market place, thus generating higher profits.

This seminar is an introduction to Practical Cost Management techniques designed to help the participant better understand the underlying dynamics of cost using recent events and trends, using relevant exercises, timely case studies and role-playing techniques.

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

YOU WILL LEARN HOW TO
• Understand the different cost classifications and cost drivers
• Determine and monitor the behavior of costs
• Build your own activity dictionary
• Design management control system that works
• Understand the principles of Activity Based Costing (ABC)
• Analyze capital projects using the proper tools and techniques
• Manage and not mismanage costs
• Develop tools to use for managing costs

Evaluating the decision to make an investment: the decision to invest in an asset or project.

COURSE CONTENT
• Decision Modeling: application of OA process for modeling; influence diagrams; judgments 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 oil field simulation); 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

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Advances in Decision Analysis with Portfolio and Project Modeling – ADA

5-Day

Specialized

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

DESIGNED FOR
Evaluation engineers, analysts, managers, planners, and economists. This course is intended for professionals involved with developing project evaluation, portfolio, and other forecasting and assessment models. Prior background in decision analysis is expected. Before registering, please visit http://www.decisionapplications.com/ada-pre-read-to review a course prerequisites list and to take a short self-assessment quiz.

YOU 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 OA process for modeling; influence diagrams; judgments 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 oil field simulation); 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

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Advanced Decision Analysis with Portfolio and Project Modeling – ADA

5-Day

Specialized

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

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

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

COURSE CONTENT
• Decision Modeling: application of OA process for modeling; influence diagrams; judgments 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 oil field simulation); 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

2019-2020 Schedule and Tuition (USD)

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Joint Operations • Accounting and Reporting

- Different accounting elements
- Accounting for financial statements
- Classifying revenues, standards, and policies
- Constructing the basic language of business; accounting rules, host government representatives, and their lawyers.

**DESIGNED FOR**

Petroleum managers who deal with international oil and gas 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 OPEC • 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 • Labour bearing on development rights • Legal interpretational issues for service contracts • Transfer and protection of technology and confidence in business information • Developing agreements and unitization operations • Environmental protection laws • Criminal and civil liability for oil spills • Impeachment and guaranty issues • Bribery laws • Marketing and transportation • Petroleum futures

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

**FOUNDATION 5-Day**

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

**DESIGNED FOR**

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

**YOU WILL LEARN HOW TO**

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

**COURSE CONTENT**

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

**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**

Exploration and production managers, national oil company managers, government representatives, and others in the oil industry who expect to be involved in negotiating, administering, reviewing, managing, directing, and overseeing international exploration and production contracts between host governments and outside contractors.

**YOU WILL LEARN HOW TO**

- Distinguish between different types of contracts
- Understand the economics terms of an E&P contract
- Determine the economic value of various contract terms
- Negotiate and assess the value of contractual terms

**COURSE CONTENT**

- Types of international petroleum contracts • Important principles and terms in all contracts • Host governments and contractors contract objectives • Specific features of E&P contracts; dividing the production • Outline of a typical contract for E&P • Contract operating issues • Funding petroleum development programs • How the contractor is paid • 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

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

- **FOUNDATION 5-Day**
  - **price**
  - **location**
  - **date**

- **INTERMEDIATE 5-Day**
  - **price**
  - **location**
  - **date**

- **STRATEGIC THINKING: A TOOL-BASED APPROACH 3-Day**
  - **price**
  - **location**
  - **date**

- **2019-2020 Schedule and Tuition (USD)**
  - **Dubai, UAE**
  - **price**
  - **location**
  - **date**
  - **Houston, US**
  - **price**
  - **location**
  - **date**
  - **Kuala Lumpur, MYS**
  - **price**
  - **location**
  - **date**
  - **London, UK**
  - **price**
  - **location**
  - **date**

凡课程均在您所在位置开放。欢迎联系。
**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, onshore/oﬀshore production, or other industry operations.

**YOU WILL LEARN**

• How to provide better customer service for long lead or critical materials and spare parts essential to the success of any well field operation, offshore platform, refinery, gas plant, or chemical processing facility

• How to establish the best methods of inventory analysis and create performance measures for min/max and order point systems

• How to use supplier stock programs, consigned inventory, and integrated supply chain elements

• and more...

2019-2020 Schedule and Tuition (USD)

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**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 the beneﬁt of both the buyer and seller, and as a result, provides a competitive advantage and improved proﬁts.

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

**YOU WILL LEARN**

• The Supplier Relationship Management Maturity Model

• Importance of SPM in continuous improvement

• and more...

2019-2020 Schedule and Tuition (USD)

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**Strategic Procurement and Supply Management** – 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

2019-2020 Schedule and Tuition (USD)

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**Contracts and Tenders**

**Fundamentals** – SC41

**FOUNDATION** 3-Day

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

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

**YOU WILL LEARN**

• How to better manage project and legal risks with the contracting process

• How to successfully manage disputes and contract performance issues

• and more...

2019-2020 Schedule and Tuition (USD)

<table>
<thead>
<tr>
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**Cost/Price Analysis and Total Cost Concepts in Supply Management** – SC64

**INTERMEDIATE** 3-Day

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

SC64 is also available as a 5-day in-house course with expanded content.

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

**YOU WILL LEARN**

• Importance of cost/price 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 • Historical analysis • Developing company purchase price • Index methodology • Cost analysis • Major elements of cost • Requesting supplier cost info • Sources of cost information • What and how important are supplier overheads • How much profit should the supplier make • Economic price adjustment clauses • Total costs of ownership models • How to combine price and performance to obtain TCO

2019-2020 Schedule and Tuition (USD)

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<th>Dates</th>
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Petroleum Project and Program Management Essentials – P3ME

**FOUNDATION 3-DAY NEW**

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

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

**CORE 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 coherency 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 service 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 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

**CORE 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 modeling, production estimating, drilling, and facility design is challenging. The tools and techniques covered in this course will help you meet that challenge. Upon completion you will know how to make better decisions in field development that lead to high value and low cost; develop integrated plans to run the overall program; and develop key deliverables for each stage of development to reduce uncertainty. Instruction, guided discussions and in-depth work tasks are used. You may choose a case study from several real-life situations that are based on the instructor’s petroleum experience. Or you may bring the details of one of your own current programs.

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

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

**CORE 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 in-depth 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, 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**
- 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

**CORE 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 and resources
- Project control techniques
- Work breakdown structure
- Planning and scheduling
- Organization and resources

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

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</tbody>
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* +1.918.828.2500 | +1.800.821.5933 (toll free North America)

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

COURSE CONTENT

• Ensure operations staff buy into objectives
• Tackle unique brownfield constructability
• Resolve issues using an oversight board
• Minimize surprise work with due diligence
• Stage development to manage plant

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 play 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

DESIGNED FOR

Brownfield project management experience are required. A project leader should take during each stage of project and select the best concept for development; and coordinate the work effectively with operations, maintenance and shipping. Instruction, guided discussion, and in-depth work tasks based on the instructor’s brownfield project management experience are used. Offshore and onshore examples are used. The sharing of experience in this course make the sessions challenging and insightful.

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 this advanced course you will learn how to: identify opportunities that project management controls for project success; and more...

COURSE CONTENT

• How to effectively manage project changes
• How to develop an estimate basis and schedule
• The different schedule levels and when is it appropriate to use each level
• How to develop an estimate basis and schedule
• How to effectively manage project changes

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

DESIGNED FOR

Program 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.

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 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 project 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.

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

DESIGNED FOR

Projects 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

• 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

Risk Management

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 II – FPM63**

**SPECIALIZED 5-Day**

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

**DESIGNED FOR**

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

**YOU WILL LEARN**

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

**COURSE CONTENT**

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

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**Advanced Project Management Workshop – APMW**

**SPECIALIZED 3-Day**

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

**DESIGNED FOR**

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

**YOU WILL LEARN HOW TO**

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

**COURSE CONTENT**

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

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**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, projects ultimately fail due to poor execution or engineering/construction. With a focus on construction, this course provides the tools necessary to establish the proper field organization to manage engineering and procurement, which are two key inputs to construction success. The case study focuses on a construction project that is challenged in the field (due to poor prior 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, and buildup of field indirect changes, 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...

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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 and the common mistakes that lead to claims and disputes
- 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

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

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>Enrollment Fee</th>
<th>VAT/MST Fee</th>
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</thead>
<tbody>
<tr>
<td>CALGARY, CAN</td>
<td>15-17 JUN 2020</td>
<td>$3385+MST</td>
<td>$4285+VAT</td>
</tr>
<tr>
<td>DUBAI, UAE</td>
<td>27-29 SEP 2020</td>
<td>$3385+MST</td>
<td>$4285+VAT</td>
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<tr>
<td>HOUSTON, US</td>
<td>16-18 NOV 2020</td>
<td>$3430</td>
<td>$3430</td>
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</tbody>
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See website for dates and locations.

+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.
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-trained from 1987-1991 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 subsupa, deepwater, HPHT, and horizontal drilling projects. He often worked with complex wells. Project-based work experience was gained in the early 1980s 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 & Marathon Oil, Cairn Energy UK, ONGC (India), Centrica (Norway), and Providence Resources (Ireland). His drilling speciality 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 Marine 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. JEFFREY (JEFF) ALDRICH is a Vice President and Senior Geoscientist with MHA Petroleum Consultants Inc., a Denver-based petroleum consulting firm. He has over 30 years of global oil and gas experience working from frontier exploration through appraisal and large development projects. His expertise is in unconventional reservoirs, prospect evaluation, reserve determinations and multi-discipline and multi-culture team dynamics. Prior to joining MHA, he held various management and technical positions with Dant Energy, an Australian global unconventional gas company. Previously, Jeff has worked in staff-based positions with Shell International and BP until 1993. He has a BS in Geology from Vanderbilt University and an MS in Geology from Texas A&M University. He is an active member in the AAPG, SPE, RMAG, DWLS, DIPS and is a Certified Petroleum Geologist (#3791). He has co-authored over 25 papers and technical presentations. He is a recipient of several professorship, research, teaching and merit awards and listed in the Who's Who in Science and Engineering. He received a B.S. in Chemical Engineering from the University of Queensland, Australia in 1979 and has spent 35 years in the energy field leading research, application, and instructing casad and open-hole nuclear techniques. With Pacific Consultants and Engineers, based in California, Ahmed consults for the USGS and OGC for USGS since 1997. He has over 28 years of combined experience in applying and evaluating for Pertamina and ARCO partners for Bontang LNG project. 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, subsurface pumps, and rod pump artificial lift completion technology, and frac pack sand control well completions. Previous Indonesia 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
He also performed studies on the role of CO2 and diagenesis in the sub-
Mr. Eric A. Foster is a Geoscience Technical Advisor with PetroSkills-OGCI based 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 geoscience 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. He has also been developing new training for cased-hole nuclear logging and production logging courses. He has a BS in Chemistry from Oklahoma State University and a PhD in Physical Chemistry from the University of Illinois. He holds postdoctoral fellowships at the Max Planck Institut for Stromungsforschung in Gottingen, Germany and the University of Tokyo, in Canada. He was also a visiting assistant professor in chemistry at the University of Houston. He has 27 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 the past he has served as an assistant editor for petrophysical publications for both of these professional societies.

Dr. Akhil Datia-Gupta is Professor and holder of the LaGuer enterpried chair in Petroleum Engineering at Texas A&M University 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 Carll 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 ExxonMobil Early Career Research Award. He has published more than 250 papers in refereed journals, in international conferences, and in books and holds or over 25 US patents. He is an expert in oil and gas reservoir characterization and stimulation processes, especially in the areas of flow in porous and fractured media, surface and underground water interaction, chemical and biological processes in reservoirs, and advanced numerical solutions. His work encompasses research related to geological characterization, waterflooding, and production processes. He also serves as an Associate Editor for SPE Jot, Executive Editor for SPE Reservoir Evaluation and Engineering, and serves on the editorial boards of several journals. He is also a Fellow of the Petroleum Society of APEGGA and an Advisor at the Petroleum Society.

Dr. MR. GREG ERNESTER is the Reserves and Technical Assurance Manager with Addax Petroleum in Geneva, Switzerland. Addax is an exploration and production company active in West Africa, the North Sea and Kurdistan. Prior to joining Addax in 2015, he was a consulting engineer for 11 years with MHA Petroleum Consultants, Inc., (MHA), a Denver based petroleum engineering firm. At the time of his departure from MHA, he was the Managing Partner. From 2000 to 2003, he was the Offshore Engineering Manager for Santos in Australia. Prior to joining Santos, he held various reservoir engineering and management positions with Atlantic Richfield Company (ARCO) in Houston, Los Angeles, and Dallas. Mr. Ernstner’s final position with ARCO in 2000 was the Engineering & Geoscience Manager for the Rounde el Bagul miscible gas injection project in Algeria. Mr. Ernstner has over 30 years of varied petroleum engineering experience with particular emphasis in gas and gas condensate reservoir engineering, miscible flooding, reservoir simulation, reserve assessment, economic evaluations and field development planning. Mr. Ernstner received his BS in Chemical and Petroleum Refining Engineering from the Colorado School of Mines in 1981. As of October 2006, Mr. Ernstner is a Registered Petroleum Engineer.

Dr. Dale Fitz has 36 years of experience as a petrophysicist doing open-hole and cased-hole log interpretation and production logging in both exploration and production environments. He spent over 34 years working for ExxonMobil. About half of this time was spent doing research on shaly sand petrophysical methods, cased-hole nuclear logging techniques, and high-angle/horizontal well logging techniques. The remaining time was spent in various exploration and production environments including the development of high-angle/horizontal drilling programs and providing cased-hole nuclear and production logging support for difficult production challenges worldwide. During this time, he was heavily involved in developing and delivering training worldwide to ExxonMobil and affiliates on basic well logging, cased-hole nuclear logging, and production logging. Since retirement, Dale has been heavily involved in volunteer work for the Boy Scouts of America, serving as Assistant Scoutmaster. He also received a Bachelor of Science in Engineering from Texas Tech University.

Dr. Shari Dunn-Norman is a professor of Petroleum Engineering at Texas A&M University and holds the Dr. Shari Dunn-Norman Professorship in Petroleum Engineering. She was named as a Distinguished Teaching Fellow in 2020 and received the 2021-2022 Outstanding Faculty Service Award. Dr. Dunn-Norman is a member of APEGGA, AAPG, SPE, HGS, and SPWLA. She is also a member of the Society of Petroleum Engineers and a member of the Professional Geologists Association of Alberta. She has published over 60 technical papers and has been a presenter at numerous international conferences. Her research interests include well test analysis, reservoir fluid characterization, and reservoir management. Dr. Dunn-Norman received her BSc in Petroleum Engineering from the University of Alberta and her PhD in Petroleum Engineering from the University of Calgary.

Dr. Philipp B. Elewa is a Senior Geophysicist with Murphy Oilfield Technology in Houston, Texas. He has 15 years of experience in the oil and gas industry, including time spent at ConocoPhillips, Halliburton, and now Murphy Oilfield Technology. His expertise lies in the application of geophysical data to the petroleum industry, with a focus on seismic data analysis and interpretation. Dr. Elewa has published numerous papers and presentations on various topics related to geophysics and reservoir engineering. He is a member of various professional societies, including SEG, AAPG, and the Society of Petroleum Engineers. His research interests include the application of geophysical data to reservoir characterization, fluid identification, and reservoir property estimation.

Dr. Ali Diyashev is a member of the Society of Petroleum Engineers and the American Association of Petroleum Geologists. He has over 40 years of experience in the oil and gas industry, including work with gas and oil reservoir engineering, well completions, production engineering, and reservoir management. His expertise includes Europe’s first field development on the North Sea. He is also the Discipline Manager for the Multi-Discipline Program in the Petroleum Business and Petroleum Data Management Operations at PetroSkills. He has over 40 years of experience in the oil and gas industry, including work with gas and oil reservoir engineering, well completions, production engineering, and reservoir management. He has over 30 publications and has received numerous awards, including the SPE Cedric K. Ferguson Certificate for Technical Editor (1996). He has also received the SPE Cedric K. Ferguson Certificate for Technical Editor (1996) and the AIME Rossitter W. Raymond Award. He is a member of the SPE and the SEG and has a PhD in Petroleum Engineering from Heriot-Watt University.

Dr. Mr. Satinder Chopra, MSc, MPhil (Physics) has 27 years’ experience as a geophysical specialist in processing, 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 characterizing reservoirs. He has published 5 books and more than 140 papers and abstracts and likes to make presentations at any beckoning opportunity. His work and presentations have won several awards, the most notable ones being the CSEG Meritorious Service Award (2005), SEG Best Poster Award (2007), CSEG Best Luncheon Talk Award (2007) and several others. He is a member of SEG, CSEG, CSERP, EAGE, AAPG, CHOA (Canadian Heavy Oil Association), APEGA (Association of Professional Engineers, Geologists and Geophysicists of Alberta) and SPE (Society of Petroleum Geoscientists). Mr. Chopra holds a Master of Philosophy in Physics (1978) and a Master’s of Science in Physics (1976).

Dr. Ali Diyashev is a member of the Society of Petroleum Engineers and the American Association of Petroleum Geologists. He has over 40 years of experience in the oil and gas industry, including work with gas and oil reservoir engineering, well completions, production engineering, and reservoir management. His expertise includes Europe’s first field development on the North Sea. He is also the Discipline Manager for the Multi-Discipline Program in the Petroleum Business and Petroleum Data Management Operations at PetroSkills. He has over 40 years of experience in the oil and gas industry, including work with gas and oil reservoir engineering, well completions, production engineering, and reservoir management. He has over 30 publications and has received numerous awards, including the SPE Cedric K. Ferguson Certificate for Technical Editor (1996). He has also received the SPE Cedric K. Ferguson Certificate for Technical Editor (1996) and the AIME Rossitter W. Raymond Award. He is a member of the SPE and the SEG and has a PhD in Petroleum Engineering from Heriot-Watt University.

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GeoSolutions, Inc. to provide wellbore image interpretation and processing on data from all vendors, and has been the company’s President since 2001. She specializes in reservoir characterization through integration of geophysical and geologic data, including seismic data, geologic data, and well logs, and is a respected expert in the field of geology.

**DR. THEODORE (TED) FRANKIEWICZ** has over 30 years of experience in the oil industry with Occidental Petroleum, Unocal Corp., NatoCo Group (now Cameron), and currently, SPE/Services, Inc. He has a Ph.D. in Physical Chemistry from the University of Chicago, holds 15 patents, and has authored over 25 professional publications. At Unocal, he was responsible for developing the water treatment systems, which were installed in the Gulf of Thailand to remove mercury and arsenic as well as residual oil from the produced water. At NatoCo 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/operatorial experience in oilfield chemistry, design of process equipment, and the development of process systems has provided him with unique insights into the issues that challenge operators as their water production and water treatment complexity and costs escalate over time.

**DR. CHRIS GALAS** is a senior reservoir engineer whose main interests are in numerical simulation, reservoir studies, and EOR. He started his career in 1981 with BP Canada, where he worked on the in-situ combustion project at Wolf Lake, as well as other thermal, chemical, and EOR projects. He has extensive experience in reservoir engineering which involved 20+ years of oilfield experience. He has taught on ‘The Art of History Matching’ in numerical simulation. A 2003 evaluation of studies carried out in the early 1990’s showed that predictions from simulation were closer to actual field performance. He holds a BA from Cambridge University, an MSc from London University, and a PhD from the University of Calgary, all in Physics. Chris is a registered Professional Engineer in Alberta, Canada.

**MR. PAUL S. GARDNER** has over 30 years of experience in the oil and gas industry in a number of capacities within research and operational organizations. He is an instructor for sessions associated with Petrophysics and Well Log Analysis. His expertise spans most aspects of petrophysics and reservoir characterization, and he has carried out, or been part of a team completing numerous projects in a variety of geologic environments. He was the founder of the petrophysical organization at Marathon’s Petroleum Technology Center. He has also held a number of management positions associated with reservoir characterization, petrophysics, and technology integration. He has served in a number of capacities associated with technology identification and advancement including the Board of Directors for the Research Partnership to Secure Energy for America, the Technology Screening Committee for the Houston Technology Center, and he was a member of the Council of the Rice University’s Rice Alliance for Innovation and Entrepreneurship. He received a Bachelor’s Degree in Geology from Colorado State University, is a member of SWPLA and SPE, and is a registered Professional Geoscientist in the State of Texas.

**MR. RAFAEL GAY-DE-MONTIELLA** 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 wastewater treatment, also includes the design and development of wastewater treatment facilities for municipal and industrial applications. Recently, Rafael has been involved in water treatment of tracking waters and is proficient in using OLI, ROSA, and other CA modeling tools as well as extensive experience in MEE, and MVC evaporators. He has also worked with several high to low pressure steam boilers and has designed steam systems for complete mills and refineries.

**DR. ALI GHALAMBAR** (now retired) was an American Petroleum Institute Endowed Professor and Head of the Department of Petroleum Engineering and Director of Energy Institute at the University of Louisiana at Lafayette. Professor Ghalambor has more than 35 years of industrial and academic experience. He has served as a consultant to many petroleum production and service companies as well as governmental agencies, professional organizations, and the United Nations. Dr. Ghalambor has authored or co-authored 14 books and 150 papers in various journals. He received numerous invited technical presentations and courses in Drilling & Well Completion worldwide. He has received many awards including the Distinguished Achievement Award for Petroleum Engineering Faculty, Production and Operations Award, Distinguished Service Award, DeGolyer Distinguished Service Medal, and the Distinguished Member Award by the Society of Petroleum Engineers. Dr. Ghalambor served as a Commissioner on the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. He has held many positions in the Society of Petroleum Engineers (SPE) including Director of the Central and Southeastern North America Region on the SPE Board of Directors and Chairman of the SPE North America Region Water Committee. He received a BSc from Colorado Polytechnic Institute and State University and an MS and BS from the University of Southerwestern Louisiana. He is a registered professional engineer.

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

**MR. CURTIS L. GOLIKE** is an Independent Petroleum Engineering consultant operating out of Golden, Colorado. Curtis has worked in the oil and gas industry in a number of capacities within research and municipal applications. Recently, Rafael has been involved in water treatment of tracking waters and is proficient in using OLI, ROSA, and other CA modeling tools as well as extensive experience in MEE, and MVC evaporators. He has also worked with several high to low pressure steam boilers and has designed steam systems for complete mills and refineries.

**MR. MASON GOMEZ** is a Licensed Petroleum Engineer (LA#26313) with 30 years diversified experience including production/reservoir/drilling engineering, offshore field development/mature field optimization, unconventional drilling/completions, operator/service company perspectives, engineering, sales, operations management, human resource development, and project management roles. He received a BS degree in Petroleum Engineering from Stanford University. Within PetroSkills, he teaches 8 courses across the Curriculum, responsible and able to support the overall organization as VP, Learning.

**DR. G. MICHAEL GRAMMER** is a full Professor and holds the Chesapeake Energy (endowed) Chair of Petroleum Geology at Oklahoma State University. Dr. Grammer received his PhD in 1991 at the University of Miami’s Rosenstiel School of Marine and Atmospheric Science and has over 25 years of industry-related experience in carbonate reservoirs, sequence stratigraphy and carbonate reservoir characterization. His current research interests involve the various aspects of high resolution sequence stratigraphy applied to exploration problems, interrupted only by brief periods of work with Forest Oil and Midland Valley Exploration in Denver. He is a member of AAPP, AGU, GSA, and RMAG, and is a certified petroleum geologist (#55112) and a Texas Professional Geologist (#733). He is the author of numerous research papers and co-edited several multi-author compendia. His expertise lies in seismic interpretation and integration with structural analysis, fracture analysis, regional synthesis, and prospect and play evaluation. He holds his PhD from Monash University in Australia, and a BS and MS from University of Illinois at Champaign-Urbana.

**DR. JAMES W. GRANATH** is a consulting structural geologist based in Denver, Colorado, who has worked in academia as well as the minerals and petroleum industries. Since 1976 he has taught at SUNY Stony Brook and spent 18 years in Conoco in research, international exploration, and new ventures. In 1999 he opened a consulting practice focused on structural geology and tectonics as applied to exploration problems, interrupted only by brief periods of work with Forest Oil and Midland Valley Exploration in Denver. He is a member of AAPP, AGU, GSA, and RMAG, and is a certified petroleum geologist (#55112) and a Texas Professional Geologist (#733). He is the author of numerous research papers and co-edited several multi-author compendia. His expertise lies in seismic interpretation and integration with structural analysis, fracture analysis, regional synthesis, and prospect and play evaluation. He holds his PhD from Monash University in Australia, and a BS and MS from University of Illinois at Champaign-Urbana.

**MR. TON J.T. GRIMBERG** is an Instructor/Coach for Shell’s introductory course for graduates. He teaches Geology, Geophysics, Petrophysics and some aspects of Reservoir Engineering. His Shell career spanned 25 years in Petrophysics, Reservoir Engineering, Rock Mechanics, etc. He developed a range of qualities such as strategy development, planning, negotiating, personnel management, organizational development, change management, commercial techniques and economic planning. He received a certification and PhD in Physics from the University of Amsterdam.

**MR. MARK HACKLER** is currently serving as the Houston Regional Director for Files & Associates. He has more than 32 years of work experience. His technical background and work experience qualify him as an expert in the areas drilling project management, project planning and engineering practices. Areas of particular interest, education, and research include project management, reservoir engineering, and reservoir management technologies. He has served in roles from a Project Drilling Engineer to a Project Manager. Responsibilities have included project management and drilling engineering service efforts for domestic and international energy organizations. His experience includes implementing project management and organizational learning efforts for projects and teams by developing and evaluating processes to manage and improve overall project performance. He has participated in over 50 well construction training courses and over 300 operational drilling workshops. Mr. Hackler has also managed full implementations of corporate well construction and planning processes. Additional experience includes well planning, operations and post analysis and improvement efforts for projects in Australia, Papua New Guinea, China, Angola, Peru, Brazil, Columbia and Venezuela. Most recent experience has included well planning and operational support for...
Dr. W. Greg Hazlett is an instructor and part owner of PetroSkills, and President of W. G. Hazlett & Assoc. LLC. As Vice President of PetroSkills, he designed competency-based training programs, evaluated course materials and instructors, taught training courses, and led project management and consulting projects. Dr. Hazlett was Vice President of Gemini Solutions, Inc., where he was in charge of the petroleum and geological engineering consulting group. Dr. Hazlett specializes in performing reservoir characterization, engineering and simulation studies. Studies include deep water Gulf of Mexico oil and gas fields, a granite gas reservoir offshore India, steamfloods in California and unconventional tight gas plays in North America and Peru. In 2011 he was client manager, engineering and engineering and construction advisor for Texaco as a steamflood project manager in Colombia, and as a reservoir and simulation engineer in both research and Kuwait operations. Dr. Hazlett was a Lecturer at Texas A&M University and an Associate Professor at New Mexico Tech. He has published on petroleum engineering topics, served as SPE coordinator for the Reservoir Engineering, Gas Technology, and Fluid Mechanics and Oil Recovery Processes committees, and has published as an expert witness. Dr. Hazlett has BS, MS and PhD degrees in petroleum engineering from Texas A&M University and is a registered Professional Engineer in Texas.

Mr. Richard Henry has ten years management experience of multidisciplinary teams including construction projects, JIT manufacturing, and (petroleum) field audits. He has twenty-five years reservoir engineering experience including simulation, field management and reserves determination, and forty years’ experience of reservoir characterization and subsurface information technology. He holds a BSc Industrial Engineering (Honors, 1987) and a MSc in Petroleum Engineering from the University of the West Indies, St. Augustine, Trinidad (1997). He is a graduate of Texaco’s elite (30 candidates selected worldwide) and intensive (6 month) reservoir management training program (1998).

Ron Hinn is the EVP for Sales and Member Engagement for PetroSkills. He is a people oriented manager, possessing strong leadership and communication skills. A registered professional engineer, Ron’s 39-year career has spanned numerous roles including staff engineering, engineering supervision, corporate knowledge management and professional staffing and competency development. Ron is an active supporter of global engineering accreditation programs, evaluated course materials and instructors, taught training courses, and led project management and consulting projects. Ron received a BS degree from the University of Tulsa in petroleum engineering.

Mr. Alan Himpan is a professional production specialist at a consulting company. Optimization Knowledge LLC, established in 1991 after a 38-year career with ConocoPhillips. At ConocoPhillips he specialized in holistic production optimization and was a leader of the Artificial Lift Network for 10 years. He also was leader of the Gas Lift Optimization Team at Dubai Petroleum Company for 3 years. Larry has served on the Board of Directors of the Artificial Lift Research and Development Council since 2008. He has written/co-authored 11 SPE papers and has presented over 30 talks ranging from the application of artificial lift, velocity string compression and interpretation to integrated production modeling and real time optimization. Larry has conducted training courses for hundreds of industry and ConocoPhillips engineering, operations, and maintenance personnel on artificial lift, compression, production optimization, systems nodal analysis, integrated production modeling, and gas well deliquification. He received a BS in Chemical Engineering from Oklahoma State University.

Dr. Howard D. Johnson is a Shell Professor of Petroleum Geology at the Imperial College London. His extensive experience in the Petroleum Geology industry includes research, teaching, writing, and consulting in exploration, production and reservoir engineering. He also has wide experience in delivering technical courses, including Development Geology, Sedimentology, Reservoir Characterization and Modelling and Basin Analysis. He consults for many companies such as BP, ExxonMobil, Shell and PETRONAS. His microseismic for understanding hydraulic fracture geometry for optimization of development of unconventional resources (tight sands or shale), use of VSPs, (zero offset, 2D, 3D and 4D) for reservoir characterization, reserve calculation or exploration evaluation in technically difficult or geologically complex areas. As a technical leader, she has contributed to the development and cost effective use of emerging technologies for evaluating and understanding unconventional reservoirs. These include borehole and surface
MR. STANLEY KLEINSTEIBER is a petroleum engineer with over 25 years of management, operations, teaching, research, and consulting experience with national and private oil companies. As an Associate Professor of Petroleum Engineering, he taught graduate and undergraduate students at the University of Western Colorado, Lafayette, Colorado where he also served as a consultant for several companies. His career includes assignments with ONGC (National Oil Company of India), ARCO Offshore (now BP), BJ Services, Agio Oil and Gas, Schlumberger / Holditch, Miller and Lents and SKAL-TEX Corporation. He is widely published in technical literature and was the Chairman of the National SPE Committee on Monographs. His technical expertise includes the design and supervision of production and well completion operations, formation damage and sand control, reservoir management, technology transfer and contract negotiations. He actively participated in several technology transfer agreements with various Indian, Chinese, and Russian companies. He is fluent in English, Russian and several Indian languages.

Recently he was nominated as a member of the Russian Academy of Natural Sciences US Section. He received a M.S. and Ph.D. in petroleum engineering from the University of Tulsa, Mscow, Russia and a degree in law from Gujarat University, India.

MR. AARON L. KLEIN is a Senior Petroleum Engineer with MHA Petroleum Consultants Inc., a Denver-based petroleum consulting firm. Mr. Kleinsteiber has over 24 years of petroleum engineering experience and has authored or co-authored papers dealing with production decline type curve analysis, CO₂ flooding, and depletion of a rich gas condensate reservoir by nitrogen injection. Since joining MHA he has performed reservoir engineering studies in numerous US basins, Canada and Australia, as well as co-developed an in-house gas reservoir engineering course for several clients. Mr. Kleinsteiber has been a Western Business Unit Technology Co-instructor where he was an internal consultant to the business unit’s engineering staff in the Rocky Mountain and Mid-Continent regions. Mr. Kleinsteiber and his colleagues at Amoco developed the initial plan of depletion for fields in Wyoming and Utah using compositional numerical simulation. His specific contributions were in the areas of fluid property characterization, well testing and simulation studies for various development options. Mr. Kleinsteiber also directed continued development of MHA’s GAS3D reservoir simulator and software for production decline type curve analysis. He received a BS in petroleum engineering with highest honors from the University of Oklahoma in 1978.

MR. THOM KRAMER is a safety consultant and structural engineer with 22 years of experience. As a dually registered professional engineer and certified safety professional, he has spent much of his career consulting with clients to reduce risk for workers at heights. He specializes in the assessment and design of fall protection systems, as well as fall protection program development. Mr. Kramer is Vice Chair of the ANSI Z359 Committee and chairs two subcommittees (ANSI Z359.1 and ANSI Z359.2). His contributions were in the areas of fluid property characterization, the editor or coauthor of more than 100 technical papers, four textbooks and the editor of three bound volumes. Previously, he worked for Shell Development Company in Houston, Texas and was chairman of the department from 1989 to 1997. Formerly, he held the Shell Distinguished Chair and the W.A. (Tex) Moncrief, Jr. Centennial Endowed Chair in Petroleum Engineering. Currently, he holds the W.A. (Monty) Moncrief Centennial Chair in Petroleum Engineering. He has served on the Board of Directors for the Society of Petroleum Engineers (SPE), as well as on several of its committees. He has received many awards/recognition including the 1996 Anthony F. Lucas Gold Medal of the AIME, the Degeyer Distinguished Service Award in 2002, the 1999-2000 Billy and Claude F. Hock Distinquished Research Award and The 2000 Eori Pioneer Award. He received the SPE distinguished Service award in 2000, was named an SPE Honorary Member in 2006 and has twice been an SPE distinguished lecturer. In 2001, was chosen as a member of the Texas Society of Professional Engineers Dream Team. He is a member of the National Academy of Engineers, and received a BSE and PhD degrees in Chemical Engineering from Arizona State University and Rice University, respectively.

MR. JAMES F. LEA, JR. is an instructor of industry courses and is involved in industry production and artificial lift related projects. He has received the SPE award for "Legends of Artificial Lift." He spent 20 years with Amoco Corporation and was involved in consulting on flowing/ lifting wells, testing, and research on lift methods, creating new computer programs for lifted and flowing wells, teaching production schools, and monitoring JIPs on pipeline flow, artificial lift, erosion, corrosion, and control. He was a member of the SPE Artificial Lift Committee for elevated Pipeline, pumps, gas lift, and artificial lift systems, and is a member of the panel for the ESP roundtable. He has been an SPE Distinguished Lecturer two times and has presented and organized numerous conferences for artificial lift. He played a major role in organizing the Denver Gas Well De-Watering forum, which is continuing after multiple-successful occurrences. He has authored book or co-authored the book "Deliquification of Gas Wells." (Elsevier, the chapter of the new SPE productions Handbook on Artificial Lift Selection and other book chapters, as well as over 65 technical papers and articles on artificial lift systems. He received the SPE Production Engineering Award in 1996 and was the recipient of the 1990 J. C. Stormeiger Award from SWPCSC, Lubbock, Texas, given to individuals who have made outstanding contributions in the field of petroleum engineering. He is a Registered PE in Texas, has 9 US patents, and received a BSME and MSME in Mechanical Engineering from Cal Poly in San Luis Obispo and a PhD from Southern Methodist University.

MR. JEFFREY (JEFF) LELICK has over 33 years petroleum industry experience with Amoco, BP, and TNK-BP. Starting as a geologist in Denver, he has worked and managed exploration – appraisal and development – production stage projects, as well as business development, strategy, commercial, and organizational capability areas. After working in most western US basins, Middle East New Venture access, and Amoco’s corporate headquarters, he was Exploration Manager in Cairo responsible for building the Nile Delta effort, Gas Asset Manager in India, Development Manager in Caspian/Black Sea and focused on LNG projects. He has worked in the North Sea. The latter part of his big company career involved discipline management, including people strategy, competency definition and development, global resource allocation, and hiring. His last position was Technical Capability Director for TNK-BP in Moscow. Jeff has a BA in geology from Dartmouth College, an MS in geology from the University of Montana, and an MBA.

MR. LARRY LENS has over 41 years of experience in the petroleum industry working for Amoco and BP (33 years) and then for PetroSkills (8 years), as well as now working with the Denver Museum of Nature and Science (2019). He received a B.S. in Geology from the University of Nebraska-Lincoln on the Permian-Triassic rocks of Wyoming, USA. During his early career he worked extensively as a Geologist in the Texas Gulf Coast and West Texas regions in the United States. He later expanded into the international arena working Gabon and Congo after which he became Amoco’s Regional Geologist for Africa and Middle East. He was Country Manager for PetroSkills in Ghana, Consulting Geologist in New Orleans (where Amoco subsequently merged), and then returned to Denver to work for PetroSkills. He is then Geology Discipline Manager (Chief Geologist) for Amoco’s Worldwide Exploration Group. Mr. Lens later transferred to Denver to build a new exploration team to help increase Amoco’s North American natural gas production later returning to the international arena as Relationship Manager/ Government and Public Affairs Manager working with Gabon, Mozambique, and Libya focused on the Middle East, but that he felt passionate about. He took on the role of Technical Learning and Development Manager for BP E&P globally. This took him from the work on the Training and Education strategy which was a part of BP’s commitment to gain entry into Libya. He led BP’s Education and Training Department in Tripoli, Libya which had considerable success having both an external focus in relation to BP’s Training & Education commitment with the National Oil Corporation of Libya as well as an internal focus on training and development within BP. Mr. Lens also had a leading role in establishing and managing the BP Libya Trainee and Scholarship programs. These programs were tailored to be totally emblazoned with BP’s E&P early development program called the Challenge Program. After retiring from BP in late 2009, Mr. Lens took on a leading role in developing the PetroSkills Accelerated Development Programs across all the E&P disciplines, having spent twelve years based in the Middle East. Larry has a MS degree from the University of Georgia and a BS degree from the University of Michigan both in Geology.

MR. ROBERT (BOB) G. LIPPINCOTT is an Employee 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 retiring from Shell in late 2010, Bob was a Relationship Manager/Government and Public Affairs Manager working with the countries of Gabon, Mozambique, and Libya and focused on the Middle East, but that he felt passionate about. He took on the role of Technical Learning and Development Manager for BP E&P globally. This took him from the work on the Training and Education strategy which was a part of BP’s commitment to gain entry into Libya. He led BP’s Education and Training Department in Tripoli, Libya which had considerable success having both an external focus in relation to BP’s Training & Education commitment with the National Oil Corporation of Libya as well as an internal focus on training and development within BP. Mr. Lens also had a leading role in establishing and managing the BP Libya Trainee and Scholarship programs. These programs were tailored to be totally emblazoned with BP’s E&P early development program called the Challenge Program. After retiring from BP in late 2009, Mr. Lens took on a leading role in developing the PetroSkills Accelerated Development Programs across all the E&P disciplines, having spent twelve years based in the Middle East. Larry has a MS degree from the University of Georgia and a BS degree from the University of Michigan both in Geology.

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/NL 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 positions with Amatokarbo Canada, and Petro-Canada in Calgary and before that he worked 15 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...
MR. PETER 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 in helping companies with large capital projects and has demonstrated a strong ability to drive significant cost improvements. He has worked on numerous projects, project execution plans, program management, risk management, and partnering and change management in many different countries.

MR. PETE LONDO is a Petroleum Engineer with 19 years of experience in rigless well interventions acquired while working with Shell and with Schlumberger. He has also been an IWCF Well Interventions Engineer consultant. For the past two years, he has been a Well Interventions Engineer with a service company in the United States. He started his career as a field engineer in the giant Kashagan offshore project in the Caspian Sea as a Field Engineer/Well Intervention Engineer. He has been a BP Equinor Energia in Colombia as a Senior Well Interventions Engineer consultant. For the past two years, he has worked in the Middle East. He has been a WICF Well Interventions Engineer consultant. His recent contributions have led to the design and implementation of collaborative tools of field performance monitoring and optimization (reservoir, artificial lift, plant maintenance, etc.), and in total E&P asset management. He has been a keynote speaker and technical program chair for numerous conferences and workshops, and has generated collaborations in this area as well. His technical expertise includes reservoir characterization, reservoir engineering, and production management. He has a BS in Petroleum Engineering and a MS in Petroleum Engineering, working in particular with E&P asset management and optimization tools. He has also been the leader of numerous projects in the field of reservoir engineering and production management, and has been a consultant for major oil companies.

MR. ALAIN LOUISE is a Senior Geoscientist and Petroleum engineer with 20 years of experience in the oil and gas industry. He has worked extensively in the Middle East and North Africa, and has been involved in numerous projects in the fields of reservoir and well performance, formation evaluation, production technology, artificial lift operations, and gas lift. He has extensive experience in the fields of reservoir engineering, production management, and field management. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area.

MR. KEN LUNSFORD is the Project Management Discipline Manager for PetroSkills. He has more than 30 years of experience in engineering and management of oil, gas, chemicals, and plastics disciplines. He has been a project manager for major projects in this field, and has extensive experience in the fields of reservoir engineering, production management, and field management. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area.

MR. JOHN MARTINEZ is a Consultant and Geophysical Data Analyst with over 25 years of experience in the oil and gas industry. He has worked extensively in the fields of reservoir engineering, production management, and field management. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area.

Mr. John holds a BS in Petroleum Engineering and an MS in Geophysical Engineering. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area.

MR. JUAN C. MALAVE is an accomplished multilingual executive with a proven track record in project management, contracts management, and business development for major E&P companies. He has extensive experience in the fields of reservoir engineering, production management, and field management. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area. He has been a consultant for major oil companies, including Shell and BP, and has contributed to numerous publications in this area.

Dr. Gary has over 35 years of industry experience as a geologist with a broad background that includes research, exploration, and production of uranium, gold, conventional oil and gas, and unconventional resources, both oil sands and unconventional resources. He has worked for Marathon Oil, Western Oil Sands, Cambridge Mineral Resources, Newmont Mining, Santa Fe Pacific Gold, Blazer Oil and Gas, Exxon, US Steel and New Mexico Bureau of Mines and Mineral Resources. For the past 15 years, his focus has been applied exploration, but his primary disciplines have been previously considered at times as a sedimentologist, structural geologist or researcher. He has served as the Director, Chief Geologist and President of companies. His entrepreneurial spirit is still active and he is currently involved in several ventures primarily focused on the development of oil sands resources. He has a BS and MS from West Texas State University and a PhD from the University of Texas at El Paso.

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MR. DAVE MCGEE has worked in many of the world’s shelf and deepwater plays for 32 years on projects including exploration through development. He is experienced in all phases of clastic play cycles resulting in a rounded perspective that can come to bear on any project. A majority of his experience is in deep water depositional systems, exploration and development. He has worked on most of the major deepwater basins around the globe. He has recently been working on conventional and unconventional plays in the Nequén, Arkoma, Permain, North Sea, and West African basins as a seismic stratigrapher and regional geologist. Mr. McGee is experienced in the application of technology to problems for maximum benefit including: 1) seismic stratigraphy and facies analysis; 2) an expert in Basin Modeling; 3) Geologic Petrel; Teri, and Shell seismic attribution, attribute analysis and image processing for exploration and development projects; 3) acoustic impedance inversion for reservoir-scale architecture and pay prediction; 4) structural reconstruction software for fault geometries and trap analysis; 5) gravity modeling; 6) EarthVision, Roxar, Petrel, and Shell reservoir modeling software to integrate data and build static and dynamic reservoir models; 7) seismic data interpretation and integration; 8) 3D seismic data integration; and 9) decision analysis techniques to determine optimal minisinus scale 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 with varied geology, reservoir engineering and modeling skills, working with many of the industry’s leading software programs. He has received numerous presentation awards from the New Orleans Geological Society, run-up for 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. McGee has an MS in Geology with Honors from the University of Oklahoma and a BS in Geology with Honors from the University of Montana.

MR. STEVE MCKEEVER is a drilling practitioner 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 salesman, a completion tool hand, a civil engineer, a drilling engineer, and a drilling superintendent. His engineering assignments have included planning and operational support for extended reach multi-lateral wells, high rate horizontal gas wells and deepwater offshore exploration wells. Currently he is working for Woodside Energy in Perth, Australia, most of his career has been in Alaska. He received a Bachelor of Science degree in Civil Engineering from the University of Alaska Anchorage and a Bachelor of Arts degree in Anthropology and Film Studies from Dartmouth College.

DR. HOWARD L. MCKINZIE is a petroleum consultant from Sugar Land, Texas. His prior industry experience includes 21 years with Texaco, Inc. and Getty Oil Company in numerous areas of production and completions engineering. Specific specialties include sand control, downhole oil/water separation, compact surface oil/water separation, artificial lift with progressive cavity pumps, formation damage, water injection development, well cleaning, and stimulation and acidizing and fracturing. He also worked in the area of surface well logging, and was one of the co-developers of GGM (Quantitative Gas Measurement) and OFT (Qualitative Fluorescence Technique). Prior to joining Getty, he was employed by GTE Labs in Waltham, Massachusetts, where he worked primarily in the areas of catalyst development research and developing photo-catalytic techniques. He was the Chairman of the Completion Engineering Association in 1991-1992, after being Vice Chairman in 1989-1990. He was a member of the research team that received the Special Meritorious Award for Engineering Innovation from Petroleum Engineer International (1999). He was also a member of the team that won the Hearst Newspapers Energy Award for Technology in 1998. He has twice received Texaco’s Corporate Technology Innovation Award and holds numerous patents in several of the above areas. He served as a member of the reservoir management committee in Malaysia (offshore), and as a member of the Oil Tracers committee. He has been a member of SPE (Society of Petroleum Engineers) for over 30 years, and is the past chair of the Education Committee for the Gulf Coast Section. He has also been a member of the Gulf Coast Regional GMU (Geological Maturity Unit) for over 10 years. He also serves as the Texas Oil and Gas Association’s Director of Education, and co-chaired the Texas Oil and Gas Association’s Educational Committee.

MR. JAMES D. MORS is an applied structural geologist and President of Computational Geology, Inc. (CG). After studying structural geology and rock mechanics at Texas A&M University, Mr. Mors worked for Amoco, gaining valuable experience mapping the complex structural architecture of the Idaho-Wyoming-Utah Thrust Belt. Seismic quality in thrust belts is often fair or poor, making the use of dip data and modern methods of structural geology essential in mapping. He participated in Amoco’s surface geology field programs, which documented the dip-domain character of folds in the Thrust Belt, providing valuable geometric constraints on subsurface maps. By taking part in teaching Amoco’s first University of Texas at Austin, Texas. Mr. Mors is an expert in structural geology and has extensive experience in basin-scale models for deepwater fields/discoveries; 7) ArcGIS tools for mapping and structural interpretation of dip data. In 1991, the partners founded CG to provide subsurface mapping and GEODES dip analysis services. Mr. Mors and CG have consulted for clients worldwide in exploration, development and producing property evaluation, including geological and geophysical field and well-site supervision. He also has experience with coal, oil shale and hydrology projects. He has experience with all aspects of managing operated and non-operated oil and gas properties with emphasis in accounting, Joint Operating Agreements, oil and gas sales contracts/marketing, AFE’s, revenue audits, gas balancing audits, permitting and complex regulatory reports. He has successfully sold prospects to both industry and non-industry partners to fund drilling and producing property acquisitions. He received a BA in accounting from Western State College, and a MS in Geology from University of Colorado.

DR. DAVID R. MUERDTER is a geophysical consultant specializing in seismic modeling, illumination studies, and the conversion of seismic time to depth. He is president of Luminerra 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 1988 he joined Sierra Geophysics in Seattle as geophysical specialist focusing on consulting, demonstrating, and training in the use of geophysical and geological software. He became Regional Training Advisor in the Sierra Singapore Office in 1991. In 1994, he launched his own consulting business, which later led to employment as a Research Geophysicist with Diamond (later Emerald) Geoscience Research, and then on to Oilfield Geostrata, where he worked on reservoir characterization through 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 authored or co-authored numerous professional publications and co-taught a Seismic Exploration class at University of Washington. He is currently a consultant with CGI, a geophysical consulting firm based in Seattle, Washington, where he specializes in seismic imaging, reservoir characterization, and seismic interpretation.
a member of SEG and AAPG and early in his career he spent three years in Malaysia as a teacher and geologist in the U.S. Peace Corps. He received a PhD in Geologic Oceanography from the University of Rhode Island.

MR. DAVID PATRICK MURPHY retired from Shell Exploration and Production after almost 35 years of engineering and other roles including reservoir engineering and petrophysics with a strong emphasis on technical leadership. For over 16 years he was a formation evaluation surfacist in the University of Houston Petroleum Engineering Graduate Program. He received the Outstanding Lecturer award from the University of Houston Cullen College of Engineering twice. He is widely published including multiple articles in World Oil and contributions to Carbonate Reservoir Characterization: A Geologic-Engineering Analysis, Part II (Eds: Roundy, H. and S funger, H. D.) in 1989. He is a recipient of Shell Engineering Awards and an industry advisor for Oillfield Review. He is a member of the Society of Petrophysicists and Well Log Analysts (SPWLA) and the Society of Petroleum Engineers (SPE). He has taught numerous SPWLA short courses. SPE committee memberships have included Education and Professionalism Committee and Measurement While Drilling Reprint Editorial Committee. Murphy is a Licensed Professional Engineer in Petroleum Engineering. He received a BS degree in Petroleum Engineering from the University of Oklahoma.

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 Modelling and Optimisation, he has specialized in artificial lift technologies, well and system designs, analysis, trouble-shooting, and recompletion of wells. 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 many international oil companies and handled various responsibilities in production engineering operations and artificial lift systems, onshore and offshore. In the service industry, he has handled many challenging well and network modeling and optimization projects that helped clients achieve substantial increase in production, operation efficiency and cost savings. Recently he has helped companies to implement real-time surveillance and optimization systems that allows operators use collaborative work environments for achieving their KPIs. A university topper and gold medalist, Mr. Nadar holds a BSc degree in Chemistry from Madurai University, India and a degree in Chemical Engineering from Institution of Engineers (India). With several SPE papers and text books publications to his credit, he has conducted many workshops, training seminars and short courses for SPE and other organizations.

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 projects of various sizes and scopes involving the application of decision and risk analysis methodologies in the energy and environmental sectors, and 10 years as a practicing petroleum geophysicist. His background includes work in decision analysis, risk analysis, business modeling, financial forecasting, strategic planning, R&D portfolio management, software development, geology, and geophysics. 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 and portfolio analyst. He has held degrees in geological and geophysics from Technical University of Michigan State University, and an MBA from Rice University.

MR. 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 results oriented and focused on delivering full life cycle projects 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, externally, regionally and internationally. Over the past 10 years, Mr. Smith 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 assessment center, recruited and trained 707 staff members before 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 Sr. Consultant and had frequent appointments as Director of Continuing Excellence with the Saudi Aramco E&P Continuing Excellence (Eds: Notz, M., H. Master and J. Eber). He is an active member of the American Chemical Society, 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 management consulting to a large spectrum of U.S. and foreign industries, managed the training functions of two major corporations, and served as a college administrator and instructor. Ronnie has served on the Board of Directors of three international organizations including the American Society for Training and Development and PetroSkills. He has also served on the continuing education faculty of the University of Texas at Dallas and on the adjunct faculty of Amber University’s MBA program. Ronnie has authored numerous publications, designed and conducted a variety of programs targeted at enhancing management and employee productivity. He is the author of two text books and the Technical Editor for the American Society for Training and Development Guide to Performance Appraisal. His peers have recognized him on numerous occasions. The American Society for Training and Development recognized Ronnie in 1997 for his contributions to the profession by awarding him with one of their highest honors, the “Torch” award. The Dallas Chapter of ASTD recognized him as the “Professional of the Year” in 1989 and his alma mater, Texas A&M University at Commerce, selected him as a “Distinguished Alumnus” in 1996.

MR. DR. PHIL NOTZ is an offshore industry consultant for flow assurance issues. He worked as a chemical engineer for DuPont from 1968 to 1971, a research scientist and reservoir engineer for Getty Oil Company/Texaco/Chevron from 1978 to 2002. He worked for offshore engineering and construction firms, Doris Inc. (2002-2004) and Technip USA (2004-2008) as flow assurance manager. While at Getty/Texaco, Dr. Notz taught courses in surfactant polymer flooding, reservoir engineering, carbon dioxide flooding, reservoir fluid properties and flow assurance to hundreds of engineering students in the US, UK, ECUADOR and Saudi Arabia. He was a marathon 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 engineering consulting and petroleum industry training firm established in 1996. Before consulting and teaching, he was division engineer for XTO Energy Inc. and a reservoir engineer for Halliburton’s Far East region based in Singapore and a research field coordinator for Halliburton in Oklahoma. He works regularly with and on wells requiring various well completions techniques, principally in East Asia. He has conducted technical petroleum industry courses worldwide and written numerous technical papers relating to well completion and workover operations. He is a registered professional engineer in Texas, and holds a BS in Petroleum Engineering from the University of Texas and a B.S. in Chemical Engineering from the University of Missouri.

MR. CARLOS PALACIOS is a National Association of Engineers (NAECE) Certified Chemical Treatment Corrosion Specialist and is a member of numerous technical publications on the subject of corrosion. He has a BS, an MSc, and a PhD in Mechanical Engineering, and Post-Doctoral studies in Erosion/Corrosion from the University of Tulsa. His 30 years of experience in the oil and gas industry has resulted in his becoming a subject matter expert on internal corrosion, erosion, chemical treatment, material selection, and corrosion management. He has designed and presented seminars and workshops on internal corrosion, erosion, chemical treatment, material selection, and corrosion management in the United States, Central America, and the Gulf Coast. He received a BS in Geology, a BA in Zoology (cum laude) and an MA in Geology from The University of Tulsa and various universities in South America. Dr. Palacios holds a US. Patent # 7,942,200 for a Downhole Chemical Dispersion Device. He leads technical committees in NACE International to develop Standard Practices. He is a recipient of the NACE Distinguished Service Award in March 2013. He was International Director for the NACE Foundation from 2005 to 2013.

MR. DAVID PELTON has been a professional communicator for over 35 years and has performed for and spoken to audiences in the United States, 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 PEPPER is Director of This is Petroleum Systems LLC – “tTs” - 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 Permian Basins. He has held functional roles including responsibility for internal training at BP, Hess and BHP Billiton since 2003. Prior to forming tTs, 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 Analysis team, which built a reservoir engineering excellence capability, 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 1985-1989, where Andy performed technical studies and conducted research in the (then developing) fields of organic geochemistry and basin modelling. He has presented many oral papers beginning 1989, and is a member of the SPE, the American Association of Petroleum Geologists, and the Americas Society for Training and Development. He is a SPE Distinguished Lecturer and is a SPE Honorary Member. He has been a member of the US and Canadian NACE Technical Committees and was on the US. Patent # 7,942,200 for a Downhole Chemical Dispersion Device. He is a member of the SPE Div of Production Operations and the SPE Div of Production Engineering. He holds a BS in Geology, a BA in Zoology (cum laude) and an MA in Geology from The University of Tulsa, and a PhD in Geology from the University of Texas.

MR. ROBERTO PEVERARO is a petroleum geoscience and engineering consultant with over 38 years’ experience in the oil industry, including senior technical management positions in formation evaluation, rock physics and borehole geophysics. Before founding Peveraro Consulting, he was Technical Director of PPD, a Hess subsidiary, 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 American 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.

MR. 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 Consultation for Oil Companies Worldwide, and a University Professor. He has worked in many different areas including concession design, corporate management evaluation and reorganization, regulator advisement and technical advisement. He has integrated geological and geophysical data into predictive, comprehensive basin models for hydrocarbon exploration on 5 continents. He designed and implemented geologically targeted 2D-3D seismic acquisition, processing, and interpretation for field development in South East Asia, North Sea, Central America, and the Gulf Coast. He received a BS in Geology, a BA in Zoology (cum laude) and an MA in Geology from The University of Texas and 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, he has held positions in Schlumberger and has attended seminars on a variety of technical subjects. Bill currently serves as Vice President Marketing for S.A. Holditch & Associates Inc., a well-known petroleum consultancy where he played a key role in building the brand equity that was the basis of their successful acquisition and integration into Schlumberger. His most recent assignment with Schlumberger was as North America Business Development Manager for Data & Consulting Services where he maintained close relationships with numerous major and independent oil and gas companies. Bill currently performs the role of Petroleum Systems Integrator consultant for Unconventional Resources.

**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 UK. With a down turn in the 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 Area Geophysicist with responsibility 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 development of software testing and data delivery to the customer. This work lead to the implementation of 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 geofield 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 Petrofac to fulfil a similar role within their Geophysics Software operation. He manages to remain with Petrofac until Q1 2017 before joining Geomatic Solutions as their CEO.

**DR. CLIFF REDUS**

Is an independent petroleum engineering consultant who specializes in production system optimization and subsea flow assurance. Prior to starting his consulting business, he was an Associate Professor of Petroleum Engineering at the University of Tulsa. He has 35 years of petroleum industry experience, both in production research and field operations in the area of multiphase flow. His primary areas of interest are multiphase flow in well bores, flow lines and production equipment, multiphase meters and pumps, computational fluid mechanics, 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 flows loop in Humble, Texas. At Tulsa University, he was actively engaged in teaching, research in multiphase flow, and in the development of several multiphase 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 Andarkos in California, Saudi Arabia and Texas. He has held various high-level technical and management positions. His work has been very diversified with experience in reservoir description, field development and operational planning, secondary and tertiary operations, and reservoir exploration and development projects. His responsibilities have been in reservoir engineering and reservoir simulation, but he has also done production engineering and exploratory well testing. He has significant experience in preparing and conducting schools and workshops and has been an SPE engineering and exploratory well testing. He has significant experience in engineering and reservoir simulation, but he has also done production covering oil and gas reservoirs, onshore and offshore properties, primary, California, Saudi Arabia and Texas. He has held various high-level consultant in Houston, Texas. He has worked in the oil and gas industry the design and testing of applications related to marine seismic surveying. He commenced with Halliburton Geophysical Services where he worked as a Geophysicist in the UK. With a down turn in the exploration business, he has moved to the US and held a number of positions in the oil industry. Devlyn specializes in the use of spatial statistics 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 appointment as a full-time and part-time professor in his specialized field of engineering and reservoir simulation. 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 been involved in many consulting 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 106th Edition 1999, of the Who's Who in the World. He has a BSc and a MSc in Petroleum Engineering with a PhD from Penn State in Petroleum & Natural Gas engineering as well as a post Doctorate Fellowship from West Virginia.

**MR. JOHN SCHUYLER**

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

**MR. JOHN C. SCRUTON-WILSON**

Is a founding faculty member of the BP Financial University responsible for developing and delivering finance and economic evaluation training throughout the BP organisation. His leadership in innovation, He has been a member of the “Save a Catheter” development team with a consensus position with ExxonMobil and ConocoPhillips in agreements for the Alaska Gas Pipeline as well as shaping $20 billion of Federal Loan guarantees and tax benefits for the pipeline. He is experienced in project finance having completed agreements with the International Finance Corporation to finance a chemical plant expansion in Brazil and with Citibank to provide loans for gas pipeline projects in the Middle East. He has established himself in the area of both the oil and gas industry by holding various management/ leadership positions during his career. He has an MA in Theology from University.
 Fuller Theological Seminary, an MS in Agricultural Economics (major in Marketing) from Cornell University and an MBA in Finance and International Studies from the University of Chicago.

**DR. 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 gas reservoirs, primarily coalbed methane. His coalbed methane experience includes exploitation, development, production optimization, and field management. Dr. Seidle received his BS and M.S. from Colorado State University and his Ph.D. in Petroleum Engineering from the University of Oklahoma, working under the guidance of Dr. John (Jack) Thomas. His research interests include methods to improve the performance of heavy oil thermal recovery processes, carbon dioxide injection in carbonate reservoirs, and the economics of geothermal and solar energy development.

**MS. SHARON SMITH** is a GIS professional with over 30 years’ experience in GIS and Exploration Mapping. With vast experience in GIS design, development and implementation, Sharon currently acts as an Associate Trainer for Exprodat, bringing her expertise into the classroom to help delegates understand how to maximize the potential of GIS as a tool for the reservoir engineer.

**DR. SUBHAS N. SHAH** is the Stephenson Chair Professor and Director of the Well Construction Technology Center at the Mewbourne School of Petroleum and Geothermal Engineering at the University of Oklahoma in Norman. He has a distinguished career in the oil and gas industry for over 30 years, and his expertise lies in exploration, development, production optimization, and reservoir engineering. He has presented seminars in more than 26 nations on aspects of these topics. His research interests include geomechanical characterization and thermo-poroelasticity, and he has conducted several geomechanical characterization and thermo-poroelasticity studies as an independent consultant for various companies worldwide to deliver lectures and to provide consulting services to the oil and gas industry. Dr. Shah has authored over 250 technical papers in more than 20 international journals. His areas of expertise include onshore/offshore drilling, stimulation, well completions, and the emerging technologies of horizontal wells and coiled tubing. He is a Chairman of ISO 13503 Procedure for Friction Pressure Measurements, and serves on the Editorial Boards of SPE since 1984, Petroleum Science since 2006 and International Journal of Oil, Gas and Coal Technology since 2006. He has been well-recognized by his peers and is a recipient of numerous industry and academic awards. He has a BS from the University of Michigan, a MS from the University of New Mexico, and a Ph.D. in Chemical Engineering. He is a registered professional engineer in the state of Oklahoma.

**MR. ROD SIDLE** 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 (Exxon) and smaller (Sheridan Production) independent producers. His position as Reserves Manager/Consortium Director in each of these companies developed the knowledge he draws from to instruct on Reserves Estimation and Reporting. He has delivered in-house Reserves instruction courses for Shell and Oxy as well as consulting and teaching experiences have been in the areas of petrology, petrophysics, and reservoir characterization.

**DR. ROBERT A. SKOPEK** is an independent consultant for Petrophysical Applications International, Inc., specializing in formation evaluation, core analysis, rock mechanics, formation damage assessment, reservoir modeling, and laboratory instrument design. He has spent over 35 years in the industry, principally in core and log analysis in various technical and managerial positions for Diamond Shamrock, Sohio, Geoart Industries, Oryx Energy (Sun E & P), and Texaco. He has served as President of the Society of Core Analysts (SCA) and on the Board of Directors of the Society of Professional Well Log Analysts (SPWLA) and Logging Characterization Consortium (LCC). He has served as Associate Editor of the Log Analyst (petrophysics) and has chaired numerous technical committees for SCA, SPEA, APMI, and API and has served as a member of the SPWLA and SCA technical committees. He has been an SPE, SPWLA, and SPE/AAPG Distinguished Lecturer, served as Executive Editor of SPE Formation Evaluation and SPE Reservoir Evaluation and Engineering Journals, and as an Associate Editor of the AAPG Bulletin. He is an Honorary Senior Lecturer in Petrophysics in the Department of Geology and Petroleum Geology at the University of Aberdeen, Scotland. He received a BS in geology and an MS in geosciences from Kent State University and a Ph.D. in petrophysics, rock mechanics and petroleum geology from the U of Aberdeen, Scotland.

**DR. JOHN S. SNIEDER** is President of Snieder Exploration, Inc., an exploration/exploitation consulting service that conducts studies around the world, but with a focus in Latin America, Asia, North Africa and the United States. He is also involved with industry training with more than 18 years’ experience in Venezuela, Chile, Colombia, Peru, Argentina, Mexico, the North Sea, Sweden, Korea, China, the Gulf Coast, Alaska, and the Perimian Basin. From 1994 to the present, he has been a partner in PetroTech Associates, providing exploration/exploitation with analysis and evaluation of reservoir, seal and flow barrier rock types. From 1989 to 1990 he was a consultant for Green Hill Petroleum, Inc., in East Texas, and previously was a geologist with Shell Oil Company in Texas. While working on his PhD in Geology and Geophysics at Rice University, he spent 18 months in the Elf Aquitaine Paris office working on various sequence stratigraphy projects focusing in the North Sea. He received a BS and an MS in Geology from Texas A&M and a PhD in Geology and Geophysics from Rice University.

**DR. HAMIDREZA (MEHRDAD) SOLTANZADEH** is a Geomechanics Specialist at Canadian Discovery Ltd providing consulting services for geomechanical characterization, well planning, production monitoring, and reservoir containment. Prior to joining CDL, he worked with Alberta Innovates-Technology Futures where he conducted several geomechanical characterization and thermo-poroelastic mechanical studies for caprock integrity assessment for different SAGD, CO2-EOR, and CCS projects. Hamidreza has an extensive experience in characterization of geomechanical behavior of reservoirs and caprocks in response to pressure and temperature change as this was the main focus of his PhD dissertation. His current position at Canadian Discovery Ltd is at the University of Saskatchewan, Canada. Prior to that, he practiced application of rock and soil mechanics in different areas of geotechnical engineering for about 7 years in various consulting and operational companies and research institutes. Hamidreza has taught several geomechanics-related and reservoir engineering courses at different universities including University of Saskatchewan. He is a registered professional geomechanics engineer, has co-authored several technical papers and holds multiple patents.

**DR. CARL H. SONDERGELD** is Professor and Curtis Mewbourne Chair, Mewbourne School of Petroleum and Geothermal 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 over 40 patents. He received a B.S. in geophysics from Cornell University and both an M.A. and B.A. 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 Dwrights EnergyData) developing petroleum economics and pressure transient analysis software (PVTACE and SPWLA). He also helped develop SAREE (Simplified Analysis of Reservoir Evaluation Exercises) (SAH), which was purchased by Schlumberger (SLB) in 1997. While at SAH/SLB 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 developing of SAREE, SAH numerical reservoir simulator, and in research in techniques for production data analysis for gas wells. He also 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 currently consults part-time and provides technical training in shaly sand reservoirs for various companies worldwide. He is currently an Adjunct Professor at Texas A&M and has presented many keynote addresses for the SPE and SPWLA. In 2004 E.C. was presented SPWLA’s highest award, the Gold Medal for Technical Achievement. He received a Ph.D. in Physical Chemistry from Stanford University, performed Post Doctorate studies in Physical Chemistry at Princeton University, and received a B.S. in Chemistry from Louisiana State University.

**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 silliclastic and carbonate reservoirs. He has presented seminars in more than 26 nations on aspects of these topics. Currently he is PetroSkills Petrophysics 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 petrophysics, petrophysics, and environmental geology. While the Aapg Geoscience director, he led
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 and oil and gas companies from infancy to significance. His experience includes managing oil and gas companies from all aspects of drilling, completions, production, and well control. In addition, he has taught advanced topics including drilling and completions, cementing, fracturing, stimulations and workover in 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 rolls with Louisiana Land and Exploration (LL&E), Burlington Resources and Lessor Exploration before starting his consulting career with his own firm Lamin Engineering LLC. David has extensive experience in all types of drilling, completion, and workover operations, particularly HPHT sour service drilling and floating drilling. He oversaw the drilling of Burlington’s Deep Boessier field development in East Texas and implemented a “slim-hole” drilling program utilizing expandable tubulars which saved over $1MM per well. Prior to this role he was the Burlington project manager for the construction of the Enoco 7500. He oversaw the procurement and factory acceptance testing of most of the Burlington project management for the construction of the Ensco 7500. 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 oilfield operations. He has worked in most major basins of the United States, Central and Northern North 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 rolls with Louisiana Land and Exploration (LL&E), Burlington Resources and Lessor Exploration before starting his consulting career with his own firm Lamin Engineering LLC. David has extensive experience in all types of drilling, completion, and workover operations, particularly HPHT sour service drilling and floating drilling. He oversaw the drilling of Burlington’s Deep Boessier field development in East Texas and implemented a “slim-hole” drilling program utilizing expandable tubulars which saved over $1MM per well. Prior to this role he was the Burlington project manager for the construction of the Enoco 7500. He oversaw the procurement and factory acceptance testing of most of the Burlington project management for the construction of the Ensco 7500. He has a BS degree in Petroleum Engineering from the University of Oklahoma.

MR. LARRY WOLFSON has 34 years’ experience in planning and supervising well construction, including EOR, 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 he 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 and maintaining, 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’Connor 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.

MR. ROBERT (BOB) V. WESTERMARK is a seasoned engineer with international and domestic experience. He has worked both on and offshore including underbalanced, horizontal, multilateral, coaled methane, and geothermal drilling wells operations. As a team leader, he has run successful drilling and completion alliances and 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.
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It is recommended participants register early due to limited seating. However, registrations can be submitted up to the last business day before class provided there are seats available. Registrations are confirmed when payment is received. Payment is due upon receipt of invoice and no later than 30 days before class. For registrations submitted less than 30 days before class, payment is due immediately otherwise a seat in the course cannot be guaranteed. Tuition fees are due and payable in US dollars. Please contact the Customer Service Department customerservice@petroskills.com if you cannot meet the payment requirements as registrations are not automatically cancelled when payment is not received.

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Tuition fees include tuition, course material, daily refreshments and a non-refundable registration fee of $100.00 (USD) per five days of training or less. As a reminder a seat in the course is not confirmed until payment is received. Please note tuition fees do not include living costs. Participants are responsible for booking and paying for their own hotel accommodations. When possible, PetroSkills will reserve a block of sleeping rooms at suggested hotel(s). Participants should contact the suggested hotel directly at least three weeks before the course begins. Remember to mention PetroSkills and/or the course title to receive a discounted rate, if applicable.

Note: Where applicable due to government regulations, Goods and Services Tax (GST) or Value Added Tax (VAT) will be added to the total tuition fees. For events in the UK, the merchant of record contracting with cardholder is PetroSkills UK Limited, a UK entity. For events in Canada, the merchant of record contracting with cardholder is PetroSkills Canada Inc., a Canada entity. For events in Australia and the UAE, the merchant of record contracting with cardholder is PetroSkills LLC, a United States entity.

CANCELLATIONS, TRANSFERS, SUBSTITUTIONS, AND REFUNDS
A minimum of 30-day notice is required to cancel or transfer otherwise the tuition fee is forfeited or remains due if not already paid. Cancellation requests received 30-days or greater before class will be honored and tuition refunded, less the non-refundable registration fee mentioned above, provided there were no previous late requests to transfer. Transfer requests received 30-days or greater before class will be honored and tuition is transferrable provided there were no previous late request to transfer. Note: should there be a difference in tuition, the difference will be due. Only one transfer per initial registration is permitted.

Late requests to transfer into a future session of the same course will be considered provided the tuition is paid and the requested session is open for enrollment. Substitutions of participants are permitted at any time without penalty.

Please contact the Customer Service Department customerservice@petroskills.com if you need to cancel, transfer, or make a substitution.

Transfers and cancellations will not be honored, and tuition is forfeited for courses that have reached maximum participation regardless of the amount of notice given. PetroSkills reserves the right to cancel any course session at any time. The decision to cancel is generally made approximately two weeks before class. When a course cancels registered participants will be given the opportunity to transfer to another course or receive a full refund, provided the enrollment was not transferred into the cancelled course late. Keep this in mind when making travel arrangements (airline tickets, hotel reservations, etc.), as PetroSkills cannot be responsible for any fees incurred for cancelling or changing your travel arrangements.

We reserve the right to substitute course instructors as necessary.

DISCLAIMER
PetroSkills reserves the right without payment of consideration to videotape, film, photograph and/or record course sessions and course participants in any media type and to alter or edit these images for use in its publications, including website entries.

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