Course Outline
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Production & Multiphase Metering Technology
Course Length: 5 Days
Venue – Houston, Texas, USA

Training Dates: February 6 - 10, 2017
Amount: US$5000

Field Development Planning (FDP)
Course Length: 5 Days
Venue – Houston, Texas, USA

Training Dates: February 20 - 24, 2017
Amount: US$5000

Risk Management in Petroleum Exploration & Production Projects
Course Length: 5 Days
Venue – Houston, Texas, USA

Training Dates: March 6 - 10, 2017
Amount: US$5000
**Well Inflow Performance – Design & Analysis**

**Course Description**
The purpose of this 5-day course is to instruct reservoir, production and completion engineers in well performance design and analysis techniques. This course represents a change from traditional Well Flow Analysis or Nodal Analysis courses, concentrating on the well inflow portion of the well/reservoir system. The course will be taught at an advanced level. Participants will therefore be assumed to have a basic understanding of well flow analysis concepts and techniques.

A systematic review of inflow performance concepts and techniques will be used to enable participants to develop inflow predictions for both simple and complex problems. Detailed review of Darcy and Non-Darcy skin effects for alternative well completion designs will be conducted. Class problems will be used to show participants how to determine optimal work-over candidates as well as the most effective completion alternatives for a given well. Class problems will be worked using MS Excel spreadsheet to analyze well performance issues. Class examples will include: open and cased hole completions, vertical, inclined and horizontal wells; perforated, acidized, gravel-packed and frac-packed completions.

Methods for post-auditing well completion performance to achieve continuous improvement objectives will be reviewed as techniques for evaluating the costs and benefits of alternative completion designs. The final day of the course will be devoted to a review of Laboratory Studies used to assess formation damage, drill-in fluid contamination and sand control design.

**Who may attend?**
This course is designed for senior managers, asset managers, reservoir engineers, and production engineers.

**Course Outline**
- Introduction to Well Inflow Performance Analysis
- Methods for Predicting Inflow Performance
- Primary Components of the Skin Effect and Skin Related Pressure Loss
- Integration of Inflow Performance Analysis into Completion Design
- Continuous Improvement from Performance Analysis/Completion Post-Auditing
- Hydraulically Fractured Wells, Horizontal and Multi-layers Wells
- Cost/Benefit Analysis
- Laboratory Damage Testing/Laboratory Fluid Testing/Problem Solving

**Well Test—Design and Analysis**

**Course Description**
This course will address how transient flow of reservoir fluids (natural gas or oil) enables characterization of the well damage or stimulation and of the well drainage area. The course will show how parameters quantified from rate and pressure transient analysis enable well performance enhancement through improved new well and workover designs. Applications and case studies of well testing technologies will be presented and discussed.

**Who Should Attend?**
This course is designed for professional reservoir engineers, production engineers, asset managers and senior managers.

**Course Outline**
- Introduction to gas well testing, flow and buildup tests
- Diffusivity Equation derivation; natural gas pseudo potential, non-Darcy flow
- Gas well flow testing including back pressure tests, isochronal and modified isochronal tests
- Pressure buildup analysis for diagnosis and characterization of damage and stimulation
- Non-Darcy flow characterization; relationship between flow test and transient test analyses
- Pressure buildup analysis for horizontal well characterization
- Pressure buildup analysis hydraulically fractured well characterization
- Pressure buildup analysis of reservoir limits to characterize well drainage size and shape
- Empirical rate transient analysis; Arps and other decline curve models
- Rate and pressure analysis for quantifying well and well drainage characterization

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**Petroleum Reservoir Simulation Technologies**

**Course Description**
This course addresses development of the equations for single phase and multiphase, multidimensional flow in porous media and the mathematical procedures required for their solution using finite-difference method. In particular, continuity equations for flow of several phases will be derived. Finite-difference methods based on implicit and explicit discretization will be introduced. Stability, consistency and convergence concepts will be explained in detail. Newton’s method for solving the nonlinear algebraic system of equations arising from discretization of governing equations will be covered. Well models will be discussed and various ways of treating wells in simulation models will be introduced. IMPES method will be introduced and its advantages and limitations compared to fully implicit discretization will be described. Finally, compositional simulation will be introduced. Formulation, discretization and phase behavior computations will be covered. The course is designed for engineers who use reservoir simulation software as a black box on a regular basis, with limited knowledge of the underlying equations and solution methods.

**Who Should Attend?**
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists, asset managers and senior managers.

**Course Outline**
- Introduction to petroleum modeling and simulation workflows
- Reservoir simulation and model design concepts
- Introduction: Basic Concepts and Derivations
- Numerical solution of single-phase and multi-phase flow equations
- Well models in reservoir simulation
- Implicit pressure explicit saturation (IMPES) formulation
- Black oil and compositional reservoir simulation
- Reduced order reservoir modeling
- Use of Streamline Simulation for integrated reservoir modeling
- Aquifer modeling and Uncertainty quantification
- Applications (pressure transient test simulation, horizontal well modeling, water conning and cusping, gas field simulation, oil field simulation, volatile oil reservoir simulation, stimulated well modeling, pattern waterflood, etc) and case studies

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**Petrophysics**

**Course Description**
Petrophysics which can be described as the study of rock properties and the fluids within the rock is essential to all aspects of the petroleum industry. The aim of this course is to introduce the participants the basic logging tools and how to use the acquired data to compute the rock and fluid properties in a clean non-complex reservoir. Other more advanced services are discussed briefly to create an awareness for the audience.

**Who Should Attend?**
The course is intended for Geologists, Reservoir Engineers, Drilling Engineers, Completion Engineers and Petrophysicists.

**Course Outline**
- Petrophysics Overview
- Geology and Petrophysical rock parameters
- Mud logs
- Basic Tool Theory – GR, Neutron, Density, Acoustic, Resistivity, Formation Tester
- Quantitative and Probabilistic Petrophysical Analysis
- Computation of rock and fluid properties in clean reservoirs
- Calibration of results – Core data and other available data
- Advanced tools – NMR, Image logs, Di-electric
- Cased hole tools and production logging tools
- MWD and LWD Advanced interpretation

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**OGAB ENGINEERING 2017 Course Schedule**
Advanced Data Assimilation Methods In History Matching And Uncertainty Quantification: Theory And Practice

Course Description
This course covers the fundamental principles of deterministic and stochastic inverse modeling and their application to calibration of hydrocarbon reservoirs and uncertainty quantification. It covers a variety of topics related to the integration of production and performance data into reservoir models and account for their respective errors and uncertainties. The topics include history matching problem formulation, deterministic non-linear least-squares methods, probabilistic Bayesian methods, iterative and recursive history matching techniques, gradient-based techniques and adjoint method, as well as common techniques for regularization and parameterization of reservoir models for history matching. Applications and case studies from both deterministic and probabilistic history matching will be presented and discussed.

Who Should Attend?
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, asset managers and senior managers.

Course Outline
- History Matching Problem Formulation
- Linear Inverse Problems
- Regularized Least Squares Inverse Problems
- Nonlinear History Matching Inverse Problems
- Preliminary Material on Stochastic Approaches
- Bayesian History Matching and Stochastic History Matching with the Ensemble Kalman Filter
- Reservoir Parameterization for History Matching
- Case Studies
  - Case Study 1: Gradient-Based History Matching
  - Case Study 2: Ensemble Kalman Filter for History Matching
  - Case Study 3: History Matching with Parameterization

Venue
- Calgary, Alberta, Canada
- Amount: US$3500

Optimal Parameter Updating In Seismic History Matching

Course Description
This course highlights history matching problem formulation, deterministic and probabilistic history matching techniques, as well as common techniques for regularization and parameterization. The course also presents a 4D seismic history matching workflow based on streamline simulation, parameterization via pilot points and Kriging and geo-body updating, a petro-elastic model and the neighborhood algorithm, all in an automatic framework. The automatic framework is used for updating parameters such as permeability, barrier transmissibilities and NTG (Net to Gross) by matching 4D seismic predictions from the simulations to observed data. Applications and case studies of the 4D seismic history matching methods in reservoir management decisions and planning of future production strategies will be presented and discussed.

Who Should Attend?
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists and asset managers.

Course Outline
- Reservoir modeling for field development planning
- Fundamentals of manual and automatic history matching
- Various elements for automatic history matching workflow
  - Generation of multiple models
  - Simulation flow
  - Petro-elastic model
  - Comparison of simulated data with historical data
  - Optimization algorithms
- Pilot points and Kriging
- 4D seismic data and observed production data
- Objective function
- 4D seismic history matching workflow and case studies

Applied Reservoir Engineering

Course Description
This 5-days 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. The participants 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, and determine the parameters that impact well/reservoir performance over time. The training will also expose the participants to how to 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, and forecast production decline.

Who may attend?
This course is designed for senior managers, project managers, reservoir engineers, geologists, and geophysicists.

Course Outline
- Petroleum geology and formation evaluation
- Volumetric reserves estimates
- Rock and fluid properties
- Geostatistics
- Well performance, deliverability, and testing
- Pressure transient testing of oil and gas wells
- Productivity of horizontal wells
- Gas and water coning in vertical and horizontal wells
- Decline curve analysis
- Reservoir drive mechanisms and producing characteristics
- Material balance calculations
- History matching and uncertainty assessment
### Integrated Core and Well Log Data Interpretation for Reservoir Characterization

**Course Description**
Analyzing data derived from well logging and core-plug to understand the heterogeneity of reservoir properties in geologic formations is paramount in petrophysical rock classification and characterization. This course aims to present various concepts of core and well log data acquisition, analysis, interpretation, integration, and their use in petroleum exploration and production. On completion of the course, the participants will be able to:

1. Interpret well logs and core data to estimate petrophysical and compositional properties of different formations.
2. Understand the physics of nuclear, electric, electromagnetic, nuclear-magnetic, acoustic, imaging, technical, LWD and MWD logs.
3. Interpret core and plug data acquisition and analysis.
4. Understand the principle of petroleum geostatistics for reservoir characterization.
5. Perform geostatistical integration of core-plug and well log data to build accurate models describing porosity, permeability and saturation distributions in reservoir modeling and simulation.

The course includes extensive hands-on training and problem solving using public domain software.

**Who Should Attend?**
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists.

**Course Outline**
- Introduction to reservoir rock petrophysical properties
- Well logging and logging analysis
- Standard and special core analysis
- Core-well log integration synchronization and workflow
- Integrated formation evaluation and reservoir characterization
- Assessment of net sand/pay, resources, and reserves

**Venue**
- Calgary, Alberta, Canada

**Cost**
- Amount: US$5000

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### Dynamic Waterflooding Optimization

**Course Description**
Natural reservoir energy such as fluid and rock expansion, gravity drainage, solution gas drive and water influx, are the driving mechanism during primary production. Primary production, depending on the quality of the reservoir and the reservoir drive mechanism results in about 5% - 30% of the original oil in place. Secondary recovery method, such as waterflooding is required to increase hydrocarbon production. Waterflooding is the most widely used secondary displacement. This course will focus on the procedure for the design of a waterflood. We will cover the frontal advance theory and methods to predict waterflood performance. Pertinent reservoir geology as it relates to waterflood performance will be discussed.

**Who Should Attend?**
This course is designed for professional reservoir engineers, production engineer, asset managers and senior managers.

**Course Outline**
- Why is Waterflooding needed?
- A typical waterflood project & waterflooding economic consideration & optimization
- Waterflood Mechanisms & Performance Forecasting
- Waterflooding Design
- Waterflooding production performance optimization
- Uncertainties and Risks
- Efficient workflow for waterflooding production prediction and optimization

**Venue**
- Calgary, Alberta, Canada

**Cost**
- Amount: US$5000

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### Enhanced Oil Recovery Processes

**Course Description**
Enhanced oil recovery processes target the incremental oil that can be economically recovered from a hydrocarbon reservoir and beyond what can be economically produced by primary and secondary methods. Enhanced oil recovery (EOR) encompasses all processes of improving oil recovery by injecting fluids/materials that is originally not present in the reservoir. This broad definition embraces all EOR processes but exclude pressure maintenance processes such as waterflooding. EOR processes may be implemented during any phase (primary, secondary and tertiary) of the producing life of the reservoir. Primary recovery relies on natural drive mechanisms, while secondary recovery, such as gas and water injection focuses on pressure maintenance. This course will discuss the broad classification of EOR processes and their applications. This course will also introduce the basics concept of flow as it relates to EOR processes and mobilization of residual oil. Finally, we will discuss the theory and practice of EOR processes such as gas injection, chemical processes and thermal methods.

**Who Should Attend?**
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists, asset managers and senior managers interested in EOR projects.

**Course Outline**
- Introduction to EOR methods
- Screening criteria and technical constraints
- Displacement fundamentals
- Miscible flooding: Fundamentals and applications, and miscible simulator
- Polymer flooding: Applications, rheology of polymer solutions, and polymer adsorption and retention
- Micellar-polymer or microemulsion flooding
- Thermal processes
- Simulation models as reservoir management tools
- EOR performance evaluation: Field cases and exercises

**Venue**
- Calgary, Alberta, Canada

**Cost**
- Amount: US$5000

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### Cost Estimation & Economic Analysis for Concept Selection and Optimization

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

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

**Course Outline**
- Use of price indexes, Cost estimation & economic analysis
- Total cost of ownership & its Models
- RFQ/tendering as a price analysis tool
- Cost estimating relationships
- Purchasing savings impact on the bottom line
- Developing the spend profile
- Sources of spend data & How to perform the ABC analysis
- Continuous improvement skill sets
- Selection tool, Methods of price analysis, & Historical analysis
- Developing company purchase price
- Index methods of cost analysis & Major elements of cost
- Requesting supplier cost info & Sources of cost information
- What and how important are supplier overheads
- How much profit should the supplier make economic

**Venue**
- Houston, Texas, USA

**Cost**
- Amount: US$5000
Asset Integrity Management
Course Length: 5 Days   Training Dates: April 17 - 21, 2017
Venue – Toronto, Ontario, Canada  Amount: US$5000

Course Description
The understanding of Asset Management (AM) is vital in managing corporate assets effectively to gain maximum value, profitability and returns while safeguarding personnel, the community, and the environment. In this context, an Asset Integrity Management (AIM) program provides a backbone and incorporates design, maintenance, inspection, process, operations, and management concepts, since all these disciplines impact the integrity of infrastructure and equipment. This course begins with concepts of integrity management plans for facility and data collection. It then focuses on the concepts of AIM (i.e. design, technical and operation integrity) in safeguarding of operational systems moving along with the approaches to Reliability Centered Maintenance (RCM), Failure Mode Effect and Criticality Analysis (FMECA), Risk Based Maintenance (RBM) and Risk Based Inspection of static process equipment, maintenance planning of rotating equipment, mitigating the challenges caused by human factors, effective project management strategies and etc.

Who Should Attend?
This course is designed for asset integrity managers, technical safety personnel, engineers involved in maintenance and modification projects, inspection and maintenance analysis and planning personnel, and project engineers.

Course Outline
- Integrity Management Plans for Facilities
- Data Collection and Management
- Causes of Failures, Risk Assessment and Development of Management Plans
- Pipeline In-Line Inspection, Un-inspectable Pipelines and Direct Assessment, and Defect Assessment
- Prevention and Mitigation Measures, Reporting and Performance Measurement, and Case Studies

Tank Farm Design, Operation & Maintenance
Course Length: 5 Days   Training Dates: April 24 - 28, 2017
Venue – Toronto, Ontario, Canada

Course Description
This course provides an overview of all significant aspects and considerations of tank in accordance with the international standards for those who are involved in the inspection, repair, alteration and reconstruction of tank and tank farms. The participants will be able to:
- Distinguish function of structural parts of and fittings to conventional storage tanks,
- Design and operational aspects of storage tanks,
- set up inspection and maintenance programs/schedules
- Differentiate maintenance methods (condition/repair)
- Define the maintenance scope

Case studies and exercises are used to reinforce key points.

Who Should Attend?
This course is designed for tank farm managers, engineers, superintendents, supervisors, and operators maintenance engineers/planners, superintendents, supervisors, NDT technicians inspectors and engineers involved with storage tank design, maintenance and inspection.

Course Outline
- Tank farm layout and types of tanks
- Tank design considerations and fabrication
- Tank in-Service inspection / maintenance
- Tank repair and alteration requirements
- Determination of need for cathodic protection, methods of cathodic protection for corrosion control, and design of cathodic protection systems
- Tank farm safety, statutory and safety requirements, HSE recommendations for tank farm, and welding safety
- Materials selection principle for storage tanks and certification requirements

Fundamentals of Oil and Gas Property Acquisition and Finance
Course Length: 5 Days   Training Dates: June 19 - 23, 2017
Venue – Calgary, Alberta, Canada  Amount: US$5000

Course Description
This course is designed for industry professionals requiring an understanding of the unique aspects of oil and gas property transactions. The course will focus on the skills required in evaluation (both buy-side and sell-side), financing, acquisition, and exploitation planning for an oil and gas entity. The course will include a real-world acquisition case which will examine undeveloped reserves, pipeline facilities, and competitive bidding. Divided into teams, participants will analyze the transaction, competitively bid to acquire the property, arrange financing, and plan to exploit the property post-closing. The case considers both an asset and corporate shares acquisition with pre- and after-tax cash flow analysis. Spreadsheet modeling and risk simulation of the transaction are included. Participants will gain an appreciation for those unique and specialized aspects of energy transactions as well as the nuances for forecasting product price, cost, and capital availability in successful business development. Participants are required to bring a laptop, loaded with Microsoft Excel, to the course.

Who Should Attend?
This course is designed for asset integrity managers, technical safety personnel, engineers involved in maintenance and modification projects, inspection and maintenance analysis and planning personnel, and project engineers.

Course Outline
- Introduction to Oil and Gas Transactions
- Review of Cash Flow Analysis
- Unique Aspects of Oil/Gas Acquisitions
- Reserves and Cost Forecasting
- Pipeline Operation
- Environmental Considerations in Acquisition
- Structured Finance and Hedge Strategies
- Competitive Bid Theory
- Project Capital Scheduling
- Expected Value and Simulation of Forecasts
- Management Presentation Preparation

Plant Operations, Maintenance, Management & Control
Course Length: 5 Days   Training Dates: November 20 - 24, 2017
Venue – Houston, Texas, USA

Course Description
This course reviews the design of a typical operation management program to promote safety and environmental protection during oil and gas production/plant operations. It includes description of the typical operations in oil and gas production facilities and infrastructure and also defines the key interfaces that exist in plant operation management. Codes and standards applicable to piping systems are described.

Who Should Attend?
This course is designed for operations managers, maintenance engineers/planners, superintendents, supervisors.

Course Outline
- Personal Safety and Process Safety
- Hazards analysis & Management of change (MoC)
- Assurance of quality and mechanical integrity of critical equipment
- Audit of safety and environmental management program elements
- Integrated Workflows for Risk, Reliability and Failure Analysis
- Plant Management for Onshore Production Facilities, Offshore Production Facilities, Gas Plants, and Pipelines
- Roles of Maintenance Planning & Scheduling in Maintenance Management & Control
- Assurance of Quality and Mechanical Integrity of Critical Equipment
**Course Outline**
- Overview of the Petroleum Industry. Energy Sources; Nature of Oil and Gas
- Contracts and Regulations for Petroleum Exploration and Production
- Petroleum Leasing and Agreements (Joint Ventures, Production Sharing Agreements, etc)
- The Earth's Crust and Geological Time. Sedimentary Rocks Distributions, Ocean Environment and Maps. Source Rocks Definition; Petroleum Generation, Migration, Traps and Accumulation
- Petroleum Geology and Reservoir Types. Field Development Planning Processes
- Well Testing and Formation Damage Identification
- Production Performance Monitoring and Well Management
- Field Case Studies

**Who Should Attend?**
This course is designed for project engineers, geoscientists, reservoir engineers, production engineers, petroleum engineers, planning and development analysts, business planner, senior/ executive managers

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**Horizontal & Directional Drilling: Design and Analysis**
Course Length: 5 Days Training Dates: March 13 - 17, 2017
Venue – Houston, Texas, USA Amount: US$5000

**Course Description**
This course builds a firm foundation in the principles and practices of horizontal and 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 deviated and horizontal wells and learn how to perform simple calculations associated to well survey. The basic applications and techniques for multi-lateral wells are covered in the course. Additionally, participants 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.

**Who Should Attend?**
This course is designed for professional drilling engineers, production engineers, petrophysicists, geophysicists, geologists and asset managers.

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**Reservoir Characterization Using Time-Lapse Seismic and Production Data**
Course Length: 5 Days Training Dates: July 10 - 14, 2017
Venue – Toronto, Ontario, Canada Amount: US$5000

**Course Description**
Reservoir modeling is the practice of generating numerical representations of reservoir conditions and properties on the basis of geological, geophysical and engineering data measured at a limited number of borehole locations. Building an accurate reservoir model is a fundamental step of reservoir characterization. Fluid flow performance forecasting and has direct impact on reservoir management strategies, risk/uncertainties analyses and key business decisions. Seismic data (due to its high spatial resolution), plays a key role not only in defining the reservoir structure and geometry, but also in constraining the reservoir property variations. This course presents innovative solutions and methods to incorporate seismic and production data in reservoir characterization and model building processes to improve consistency of reservoir models with geological and geophysical measurements. The course also address issues related to (mis) match of the initial reservoir model with well logs and 3D seismic data. These issues include the incorporation of various seismic constraints in reservoir property modeling, the sensitivity of the results to realistic noise in seismic data, geostatistical modeling parameters and the uncertainties associated with quantitative integration of seismic data in reservoir property modeling. Case studies will be discussed to illustrate the field application of the concepts in the course.

**Who Should Attend?**
This course is designed for reservoir engineers, petrophysicists, geoscientists and asset managers.

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**Petroleum Economic Evaluation & Project Investment Decision Making**
Course Length: 5 Days Training Dates: July 3 - 7, 2017
Venue – Calgary, Alberta, Canada Amount: US$5000

**Course Description**
This course covers the fundamental principles of petroleum exploration, drilling and production design and operations. Field case studies will be provided to illustrate the field application of the concepts, methods, processes and practices.

**Who Should Attend?**
This course is designed for project engineers, geoscientists, reservoir engineers, production engineers, petroleum engineers, planning and development analysts, business planner, senior/ executive managers

**Course Outline**
- Formation pressures and formation strength
- Introduction to horizontal and directional wells. Directional drilling design workflow
- Long, Medium, Short and Extreme Directional Wells
- Directional Drilling Tools
- Drill bit selection, downhole drilling equipment and drilling hydraulics
- Drilling fluid and cementing program
- Measurement while Drilling (MWD), Logging while Drilling (LWD), and Geo-steering
- Horizontal and directional borehole problems
- Optimization of horizontal and directional process parameters
- horizontal and directional drilling optimization Workshop

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**Course Outline**
- Overview of petroleum reserves definition and classifications.
- Reservoir performance forecasting methods - decline curve analysis and material balance approach - deterministic and probabilistic methods
- Basics of decision analysis. Different classes of decision problems. Investment proposal ranking methods. Investment decisions
- Decision under uncertainty. Decision under risk. Multiple-objective problems
- Field Case Studies
Integrated Production and Well Operations Modeling - Rapid Performance Assessment of Marginal and Mature Fields

Course Length: 5 Days  
Training Dates: February 20 - 24, 2017  
Venue – Houston, Texas, USA  
Amount: US$5000

Course Description
The five days course provides detailed discussions and hands-on training for building integrated production and well operations performance models using commercial software applications. The training course will provide fundamental and advanced knowledge of integrated production and well operations modeling components, beginning with the static reservoir pressure, inflow performance, flow across the completion, up the tubing string, surface choke, horizontal flow lines, and into the separator. Novel workflows for thoroughly evaluating, analyzing and optimizing performance of oil and gas field/well production system components to achieve an objective rate at the different states of the well/field life (early-, mid- and later-life) will also be presented. Framework to generate production optimization opportunities at different levels, from reservoir and near wellbore remediation to lift performance improvement via the additional and optimization of artificial lift will be illustrated as well. Applications and case studies of multiple petroleum production technologies will be presented and discussed.

Who Should Attend?
This course is designed for reservoir engineers, production engineers, facility engineers and asset managers.

Course Outline
- Introduction to integrated production modeling (IPM) suite. Data validation and reconciliation.
- Facility modeling (compressor, pumps, pipelines, valves, etc)
- Workflows for modeling well operation problems and remedial options. Artificial lift systems
- Optimization of well productivity. Well Stimulation. Intelligent and complex well architectures
- Class exercises and field case studies
- Field Case Studies

Integrated Asset Modeling & Optimization

Course Length: 5 Days  
Training Dates: March 27 - 31, 2017  
Venue – Houston, Texas, USA  
Amount: US$5000

Course Description
This course provides an overview of integrated asset modeling (IAM), its concept and significance to enhance and optimize complex oil and gas field systems. The course also equips participants with knowledge and skills necessary to create and maintain an integrated asset modeling tools using multiple software applications to build models for thermodynamic, reservoirs, completion-wellbores, surface pipeline networks, surface process equipment and economic, respectively. The main focus is to learn how to build these models from the scratch and understand the theory and concept behind them. Participants will learn how to integrate these different models and run them all as a piece. It will also highlight methodology to detect, resolve and optimize bottlenecks, and perform forecasting to get a better insight for future deterministic and probabilistic performance of the model. It also reviews different hydrocarbon production optimization methods for single and multi-reservoir fields. Different scenarios will be reviewed and discussed to understand the potentials and limitations of the IAM as a key tool for field optimization, re-development, and budget planning. Case studies will be discussed to illustrate the field application of the concepts in the course.

Who Should Attend?
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists and asset managers.

Course Outline
- Introduction to petroleum geo-statistics in reservoir characterization and modeling
- Review of probability and distributions
- Covariance and correlation, analysis of spatial continuity, variogram definition, calculations and physical meaning
- Modeling & interpreting the variogram
- Cokriging/Collocated Cokriging
- Boolean/Object-based models
- Multidisciplinary data integration
- Field case studies and hands-on practice

Integrated Geo-Statistics for Reservoir Modeling and Characterization

Course Length: 5 Days  
Training Dates: March 20 - 24, 2017  
Venue – Houston, Texas, USA  
Amount: US$5000

Course Description
This course addresses the application of geo-statistical techniques to build reservoir models through the integration of geological, core/well log, seismic and production data to generate a consistent reservoir description. It will introduce reservoir modeling workflow from construction of the 3D static reservoir model through up-scaling and dynamic reservoir simulation. The course provides background and insights to geo-statistical modeling techniques and the situations where the application of geo-statistics could add value. It will also provide guidance in the assembly and analysis of the required data for geo-statistical techniques and the resulting numerical models. The course includes extensive hands-on training and problem solving using public domain software.

Who Should Attend?
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists and asset managers.

Course Outline
- Introduction to integrated asset modeling (IAM) & optimization
- Initial data review and integrated reservoir development workflow
- Preparation of IAM components – thermodynamic model, reservoir simulation model, completion-wellbore models, surface network models, surface process model, economic model
- Model integration and software application (automated workflow construction and configuration)
- Hydrocarbon production optimization methods in single and multi-reservoir fields
- Multi-reservoir production performance simulation-optimization workflow under uncertainties
- Analyzing scenarios with the IAM. Technical and economic evaluation of alternatives
- Field development and/or re-development planning issues

OGAB ENGINEERING 2017 Course Schedule
OGAB ENGINEERING 2017 Course Schedule

**Subsea Completions & Deepwater Technology**

**Course Length:** 5 Days  
**Training Dates:** March 6 - 10, 2017  
**Venue – Houston, Texas, USA**  
**Amount:** US$5000

**Course Description**

The course is designed to provide an overview of subsea completions & deepwater equipment in the oil and gas industry. The participants will learn about the subsea completions deepwater design options to meet deliverability, safety and integrity requirements in completions and workover operations. The main components of a subsea well completions are described and analyzed by their function and design criteria. Participating will also learn to calculate tension, compression, burst, collapse, yield and threshold strength. This course covers all the relevant subjects needed to describe structural mechanics of downhole tubular. The course will give participants the Case studies will be provided to help the participants understand the hands-on aspects of subsea completions and deepwater technologies.

**Who Should Attend?**

This course is designed for professional drilling engineers, production engineers and asset managers.

**Course Outline**

- Introduction to subsea well completions. Workflows for subsea well completions design
- Designing Well Completion for the Life of the Field
- Subsea well completions equipment selection. System approach to casing and tubing design
- Subsea well perforations technologies. Production Packers. Subsurface Safety Valves
- Subsea well completion performance analysis of well with and without downhole flow control technologies
- Physics of sand producing reservoirs. Sand stabilization and exclusion. Sand production management completion design
- Subsea well completion performance analysis of well with and without sand control technologies
- Subsea Wellheads, Xmas Trees and Connectors. Subsea Manifolds, Pipelines and Flowlines
- Offshore Structures and Operations. Principles of Mooring Analysis and Riser Design
- Class exercises and Field case studies

**Petroleum Rock Mechanics & Applied Reservoir Characterization**

**Course Length:** 5 Days  
**Training Dates:** September 25 - 29, 2017  
**Venue – Calgary, Alberta, Canada**  
**Amount:** US$5000

**Course Description**

This training course presents workflow that makes use available geo-mechanical and geophysical data for reservoir characterization. The methodology incorporates soft computing tools as well as geo-statistical simulation techniques to improve the property estimates as well as overall characterization efficacy. The course also includes extensive hands-on training and problem solving using public domain software.

**Who Should Attend?**

This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists and asset managers.

**Course Outline**

- Introduction to petroleum geo-mechanics. Rock mechanical properties
- Concept of stress and strain. Stress-strain relationships. General Hooke’s law.
- Transversally –isotropic medium. Thomsen parameters. Young modules and Poisson’s ratios
- Waves-Based Forward and Inverse Problem. Waves in Isotropic and Anisotropic Unbounded Media. Reflection – Refraction. Isotropy-anisotropy
- Forward and inverse modeling of reservoir structure. Manual and automatic history matching
- Various elements for automatic history matching workflow: Generation of multiple models, Simulation flow, Petro-elastic model, Optimization algorithms
- 4D seismic history matching workflow and case studies

**Integrated Reservoir Studies**

**Course Length:** 5 Days  
**Training Dates:** February 6 - 10, 2017  
**Venue – Houston, Texas, USA**  
**Amount:** US$5000

**Course Description**

This course covers the processes and workflows for performing integrated reservoir studies using geological, geophysical, petrophysical and engineering data. The course highlights concepts pertaining to reservoir description, reservoir modeling and simulation, reservoir production optimization, and economic and uncertainty analysis. The course also includes extensive hands-on training and problem solving using public domain software.

**Who Should Attend?**

This course is designed for professional reservoir engineers, geoscientists, reservoir engineers, production engineers, petroleum engineers, planning and development analysts, business planner, senior/ executive managers.

**Course Outline**

- Overview and objectives of integrated reservoir studies. Workflow for integrated reservoir studies. Geological description (facies, mapping, etc). Geophysical description
- Spatial and structural modeling. Facies/rock type modeling
- Introduction to reservoir rock petrophysical properties. Estimation of properties at well locations.
- Well logging and logging analysis. Standard and special core analysis
- Core-well log integration synchronization and workflow
- Integrated formation evaluation and reservoir characterization
- Reservoir model construction and calibration. Ranking of realizations
- Economic and risk analysis
- Project management applications to integrated reservoir studies
- Field Case Studies

**Well Planning And Drilling Optimization**

**Course Length:** 5 Days  
**Training Dates:** October 2 - 6, 2017  
**Venue – Toronto, Ontario, Canada**  
**Amount:** US$5000

**Course Description**

This course will equip participants with knowledge and skills necessary to ensure that well plans lead to the lowest well costs while still achieving production or exploration goals. This course uses a balanced combination of lecture, discussion and case studies where participants will learn how to apply technical limit principles to guide well planning, develop a risk-weighted well cost estimate, create well plans that explicitly identify and manage risk, audit and select rigs, create contingency plans (oil spill contingency plans, safety cases and joint operation manuals) using well’s specific objectives, plans and previous fillings, and conduct post analysis that documents the root of unscheduled events and lessons learned.

**Who Should Attend?**

This course is designed for professional drilling engineers, production engineers, petrophysicists, geophysicists, geologists and asset managers.

**Course Outline**

- Designing an Oil and Gas Wells
- Formation Pressures and Formation Strength
- Drilling Fluid and Cementing Program
- Drill bit Selection, Downhole Drilling Equipment and Drilling Hydraulics
- Well Perforation
- Borehole Problems
- Introduction to Drilling Process Optimization
- Key Performance Indicators
- Optimization of Drilling Process Parameters
- Drilling Optimization Workshop
**Course Outline**
- Introduction to Cost Estimation and Management Concepts
- Accounting Basics and Financial Statements
- Ratio Analysis
- Investment Decisions and Profitability
- Economic Factors
- Cost Accounting
- Cash Flow Concept
- Time Value of Money
- Investment Proposal Ranking Methods
- Capital Management
- Inflation
- Risk and Uncertainties in Economic Evaluation
- Field Case Studies

**Course Description**
This course covers the fundamental principles of cost estimation and uncertainty management techniques. Field case studies will be provided to illustrate the field application of the cost estimation and management fundamentals, methods, processes and practices.

**Who Should Attend?**
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists, asset managers and senior managers.

**Risk And Uncertainty Management In Field Development Planning (FDP)**

**Course Outline**
- Overview of hydrocarbon processing and conditioning
- Overview of process simulation procedures
- Key steps in carrying out process simulation
- Simulation concepts and tools
- Coping with uncertainties in process and equipment simulation
- Process synthesis in hydrocarbon processing and conditioning
- Simulation tools for hydrocarbon processing and conditioning
- Closed-loop process management
- Class exercises

**Course Description**
This course presents new methods and applications to create competitive designs for both current and future hydrocarbon process or equipment needs that is capable of operating in challenging situations. The course will further provide practical deterministic and probabilistic simulation modeling and optimization workflow for key management decisions during hydrocarbon processing and conditioning operations. Case studies on the applications of deterministic and probabilistic based simulation techniques to process and equipment designs in midstream petroleum industry are also illustrated.

**Who Should Attend?**
This course is designed for professional process engineers, facility engineers, operation engineers, and asset managers.

**Exam Prep**

**Course Outline**
- Professional development and ethics
- Leadership and change management
- Project economics and finance
- Project management concepts
- Project management process groups
- Project management fundamentals 101 (project integration, scope, time and cost management)
- Project management fundamentals 102 (project quality, risk and procurement management)
- Project management fundamentals 103 (project stakeholder, communication and human resources management)
- Project management concepts
- Professional development and ethics
- Case Studies and online PMP® certification tests
Health, Safety And Environment (HSE) Management For Field Development Projects
Course Length: 5 Days  Training Dates: October 9 - 13, 2017  
Venue – Toronto, Ontario, Canada  Amount: US$5000

Course Description
This course deals with the fundamental HSE concepts and ways of putting in place effective HSE management systems. Practical examples will be presented to assist participants in developing pertinent skill sets.

Who Should Attend?
This course is designed for professional reservoir engineers, production engineers, facility engineers, asset managers

Course Outline
- Overview of the oil and gas exploration and production process
- Overview of HSE programs and management systems
- Overview of HSE regulations and issues
- Safety life cycle models
- Risk assessment and management processes
- Hazard identification and risk management techniques
- Application software for risk and safety management
- Fundamentals of alarm management and their implementation
- Properties and effects of wastes
- Waste treatment and disposal methods
- HSE management systems and their implementation
- Fundamentals of reliability analysis
- Best practices

Hydrocarbon Metering Technology And Production Accounting
Course Length: 5 Days  Training Dates: October 16 - 20, 2017  
Venue – Toronto, Ontario, Canada  Amount: US$5000

Course Description
This training course provides an in-depth consideration of all aspects of hydrocarbon metering technologies and production accounting. The course describes in general terms the evolution and need for well metering techniques. The course defines basic principles and requirements for deploying modern well metering tools in support of design and operations of integrated production systems. The course will also explain how to apply modern well metering system in production accounting, production allocation, reserves estimation, history matching, production optimization and reservoir management.

Who Should Attend?
This course is designed for metering engineers, production engineers, facility engineers, design engineers, station operators, service staff and inspectors of custody transfer stations

Course Outline
- Needs and drivers for hydrocarbon metering in petroleum industry
- Hydrocarbon flow metering applications
  ◆ Custody transfer, fiscal allocation and reservoir production allocation
  ◆ Production testing (well and pipeline surveillance)
  ◆ Well testing and reserves tracking
  ◆ Production optimization
  ◆ Reservoir management
- Fundamentals of hydrocarbon flow metering systems
- Design, installation and operations of hydrocarbon flow metering systems
- Uncertainty management in hydrocarbon flow estimation
- Overview of hydrocarbon flow metering technologies currently used in the oil and gas industry
- Theory and applications of production accounting systems
- Case histories

Intelligent Oilfield Technologies In Drilling And Production Operations
Course Length: 5 Days  Training Dates: October 23 - 27, 2017  
Venue – Toronto, Ontario, Canada  Amount: US$5000

Course Description
This course provides a comprehensive overview of intelligent oilfield solutions in closed-loop drilling and production operations. The benefits and various applications of the intelligent oilfield solutions in closed-loop drilling and production operations will be discussed. The course will also cover multiple hands-on field examples.

Who Should Attend?
This course is designed for professional petroleum engineers, reservoir engineers, production engineers, operation engineers, drilling engineers and asset managers

Course Outline
- Overview of intelligent oilfield technologies
- Overview of well drilling process
- Automated well drilling system
- Well drilling modeling framework
- Theory of closed-loop control
- Application of closed-loop control in well drilling process
- Reservoir modeling for large-scale production performance monitoring
- Short-term parametric modeling for large-scale production performance monitoring
- History matching formulations and techniques
- Uncertainties quantification in reservoir performance simulation
- Production forecasting
- Production optimization
- Production allocation & Real-time production optimization workflow
- Class exercises

Well Log Interpretation
Course Length: 5 Days  Training Dates: August 7 - 11, 2017  
Venue – Calgary, Alberta, Canada  Amount: US$5000

Course Description
This is an applied training course that is designed to equip participants with professional skill sets they need to evaluate drilling wells, estimate reserves, and evaluate assets for performance status monitoring, acquisition and/or disposal. The training course covers current challenges in well-log interpretation and modern techniques for well-log interpretation and formation evaluation. The training accommodates a wide range of background, educational and experience levels. Experience levels have ranged from little Geoscience, or Petroleum Engineering exposure to petroleum industry veterans, with several years of practical experience. The goal of this training course is to keep the class level basic enough to accommodate the skill sets of those participants with little Petroleum E&P background, while still keeping the class interesting for industry veterans.

Who Should Attend?
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists.

Course Outline
- Introduction to well logging techniques and review on petrophysical concepts
- Quick-look and reconnaissance well log interpretation methods
- How to use gamma rays logs, spontaneous potential logs, density logs, PEF logs, neutron logs, acoustic logs, NMR logs, caliper, tension and temperature logs
- Cross-plots techniques and some useful short cuts
- Modern techniques for well-log interpretation and formation evaluation
- Assessment of static and dynamic petrophysical properties based on combined interpretation of well logs and core data
- Well log-based and core calibrated petrophysical rock classification techniques and their use reservoir characterization
- Inversion-based petrophysical interpretation of advanced well logging measurements
Course Outline
This course addresses mathematical methodologies for seismic reservoir characterization in order to provide 3-dimensional models of the main properties in the reservoir for fluid flow simulations and enable 4D reservoir modeling characterization by time-lapse seismic data integration. These properties generally include rock properties such as porosity, lithology, water and hydrocarbon saturations. Pressure and permeability are estimated from well log and seismic data. This course includes multiple innovative and state of the art inverse modeling methodologies for seismic reservoir characterization: Case studies will be discussed to illustrate the field application of the concepts in the course.

Who Should Attend?
This course is designed for professional reservoir engineers, petrophysicists, geophysicists, geologists and asset managers

Course Outline
- Introduction to Reservoir Modeling and Inverse Theory
- Rock Physics and seismic methods for characterizing petroleum reservoirs
- Mathematical modeling of elastic properties of minerals and rocks
- Seismic waves in real media and fluid effects on wave propagation
- Seismic based reservoir characterization
- Seismic data processing and conditioning
- Forward modeling and inverse problem. Travel –time inversion
- Dynamic data integration and history matching with 4D Seismic Data
- Micro-seismic events. Analysis raw data
- Estimation of permeability base on MS event locations
- Permeability upscaling: from lab to field
- Field case studies and hands-on practice

Venue
Course Length: 5 Days
Training Dates: August 21 - 25, 2017