



- Public Courses
- In-house Training
- Customer Tailored



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HOT TRAINING PROGRAM 2007

INTRODUCTION

HOT Engineering is a company headquartered in Leoben, Austria, offering **exploration and field development and E&P training services** to the petroleum industry worldwide. With 20 years of consulting experience, we are one of the leading providers of advanced and integrated geological, geophysical, petrophysical, reservoir and production engineering technology, and we are well positioned to offer state-of-the-art training.

Exploration & Field Development Services

We offer fully integrated services starting from geophysical interpretation and reservoir characterisation, all the way through to reservoir modelling, flow simulation and field development.

Our state-of-the-art technology and services include:

- Geological Services
- Geophysical Interpretation
- Seismic Inversion
- AVO / Attribute Analysis and Quantitative Interpretation
- Petrophysical and Sedimentological Analysis and Interpretation
- Reservoir Characterization and Reservoir Modelling
- Fluid Characterization and Reservoir Engineering
- Reservoir Simulation
- IOR/EOR
- Field Development Planning
- Reserves Management, Well Planning and Production Optimization

Training Services

We offer public, as well as customer-tailored training services which can include HR tasks such as competence assessment, -development and -progression tracking, thus forming an all-round competence management package.

Public Courses

Our 2007 public program includes courses in Geology&Geophysics, Petrophysics, Reservoir and Production Engineering and Drilling. Abu Dhabi, Dubai, Kuala Lumpur, Trondheim and Vienna are first class course venues. New courses have been added to accommodate requests received from the petroleum community.

You can register for all these courses

- online at www.hoteng.com
- by mail to HOT Engineering, Roseggerstrasse 17, A-8700 Leoben, Austria
- by faxing a completed registration form to +43 3842 430531 or
- by emailing your completed registration form to training@hoteng.com

Further details on our registration policies can be found on page 30.

Customer-Tailored Courses

Most of our public courses are also available for in-house presentation and can be customer-tailored. Alternative training programs can be designed to specific customer requirements.

More information can be found at the HOT website www.hoteng.com; or be obtained via email training@hoteng.com

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OVERVIEW OF COURSES

GEOLOGY & GEOPHYSICS

	Public	Tailored
GG01 – Geoscience for Non-Geoscientists	✓	✓
GG02 – Carbonate Geology for Oil & Gas Exploration & Development	✓	✓
GG04 – Seismic Inversion and AVO	✓	✓
GG06 – Reservoir Geology - Integrating Data for Reservoir Modelling	✓	✓
GG08 – Petroleum Geology of North Africa New	✓	✓
GG09 – Facies Analysis and Sequence Stratigraphy New	✓	✓
GG10 – Petroleum Systems Modelling for Exploration Risk Assessments New	✓	✓

PETROPHYSICS

PP01 – Foundations of Petrophysics	✓	✓
PP02 – Integrated Petrophysics for Reservoir Characterization	✓	✓
PP03 – Carbonate and Fracture Petrophysics	✓	✓
PP04 – Production Logging and Reservoir Monitoring	✓	✓
PP05 – Geological Log Analysis New	✓	✓
PP06 – Quick Look Petrophysics New	✓	✓
PP07 – Rock Physics – Rock Properties from Geoscience and Petroleum Engineering Data	✓	✓
PP08 – Characterisation of Oil and Gas Reservoirs with Neural Network Technology New	✓	✓
PP09 – Actual Well/Field Evaluation Workshop New	✓	✓

RESERVOIR ENGINEERING

RE01 – Reservoir Engineering for Non-Reservoir Engineers	✓	✓
RE02 – Reservoir Simulation – An Introduction	✓	✓
RE04 – Applied Reservoir Management New	✓	✓
RE05 – Advanced Gas Condensate Reservoir Management	✓	✓
RE06 – Advanced Reservoir Simulation	✓	✓
RE08 – Advanced PVT and EOS Fluid Characterization	✓	✓
RE10 – Streamline Simulation	✓	✓
RE11 – Pressure Transient Test Design and Interpretation New	✓	✓
RE14 – Special Core Analysis	✓	✓
RE15 – Natural Gas Engineering New	✓	✓
RE16 – Naturally Fractured Reservoir Engineering New	✓	✓

DRILLING

DR01 – Drilling for Non-Drillers	✓	✓
DR02 – Drilling Knowledge Management and Sharing	✓	✓
DR04 – Advanced Drilling Engineering	✓	✓

PRODUCTION ENGINEERING

PR01 – Production Engineering I – Inflow Performance, Nodal Analysis, Artificial Lift and Surface Facilities New	✓	✓
PR02 – Production Engineering II – Well Completions, Formation Damage and Stimulation New	✓	✓
PR07 – Advanced Hydraulic Fracturing	✓	✓
PR08 – Artificial Lift Design and Optimization	✓	✓
PR09 – Sucker Rod Pumping	✓	✓
PR10 – Multiphase Flow Metering	✓	✓

PUBLIC COURSE SCHEDULE

COURSE TITLE	2006	2007				
		Abu Dhabi (UAE)	Dubai (UAE)	Kuala Lumpur (Malaysia)	Trondheim (Norway)	Vienna (Austria)

GEOLOGY & GEOPHYSICS

GG01 – Geoscience for Non-Geoscientists		Oct 23 - 25				Apr 25 - 27
GG02 – Carbonate Geology for Oil and Gas Exploration & Development						Jun 18 - 22
GG06 – Reservoir Geology – Integrating Data for Reservoir Modelling						Apr 16 - 20
GG08 – Petroleum Geology of North Africa New						Jun 20 - 22
GG09 – Facies Analysis and Sequence Stratigraphy New		Nov 18 - 22				Jun 25 - 29
GG10 – Petroleum Systems Modelling for Exploration Risk Assessments New		Dec 2 - 6				Aug 27 - 31

PETROPHYSICS

PP02 – Integrated Petrophysics for Reservoir Characterization	Dubai Nov 18 - 22		Oct 28 - Nov 1	Aug 27 - 31		Jun 11 - 15
PP03 – Carbonate and Fracture Petrophysics	Dubai Nov 25 - 29		Nov 4 - 8	Sep 3 - 7		Jun 18 - 22
PP04 – Production Logging and Reservoir Monitoring		Mar 25 - 29				Jul 9 - 13
PP06 – Quick Look Petrophysics New			Nov 11 - 13			Jun 27 - 29
PP08 – Characterisation of Oil and Gas Reservoirs with Neural Network Technology New						Apr 25 - 27

RESERVOIR ENGINEERING

RE01 – Reservoir Engineering for Non-Reservoir Engineers						Apr 16 - 20
RE04 – Applied Reservoir Management New		Oct 21 - 25				Jul 9 - 13
RE05 – Advanced Gas Condensate Reservoir Management					Feb 19 - 23	
RE06 – Advanced Reservoir Simulation		Nov 25 - 29				Jul 2 - 6
RE08 – Advanced PVT and EOS Fluid Characterization	Vienna Nov 27 - Dec 1					Nov 26 - 30
RE10 – Streamline Simulation						Jul 18 - 20
RE11 – Pressure Transient Test Design and Interpretation New						Jul 23 - 27
RE14 – Special Core Analysis	Vienna Nov 20 - 24	Feb 25 - Mar 1				Nov 19 - 23
RE15 – Natural Gas Engineering New		Oct 28 - Nov 1				Feb 5 - 9
RE16 – Naturally Fractured Reservoir Engineering New		Nov 4 - 8				Feb 12 - 16

DRILLING

DR01 – Drilling for Non-Drillers		Apr 15 - 17				
DR04 – Advanced Drilling Engineering				Sep 3 - 7		Jul 16 - 20

PRODUCTION ENGINEERING

PR01 – Production Engineering I - Inflow Performance, Nodal Analysis, Artificial Lift and Surface Facilities New						Jul 2 - 6
PR02 – Production Engineering II – Well Completions, Formation Damage and Stimulation New						Jul 9 - 13
PR10 – Multiphase Flow Metering						Feb 12 - 16

MONTHLY COURSE SCHEDULE

2006

Date	Duration	Course Title	Location
November			
Nov 18-22	5 days	PP02 - Integrated Petrophysics for Reservoir Characterization	Dubai
Nov 20-24	5 days	RE14 - Special Core Analysis	Vienna
Nov 25-29	5 days	PP03 - Carbonate and Fracture Petrophysics	Dubai
Nov 27-31	5 days	RE08 - Advanced PVT and EOS Fluid Characterization	Vienna

2007

Date	Duration	Course Title	Location
February			
Feb 5-9	5 days	RE15 - Natural Gas Engineering	Vienna
Feb 12-16	5 days	PR10 - Multiphase Flow Metering	Vienna
Feb 12-16	5 days	RE16 - Naturally Fractured Reservoir Engineering	Vienna
Feb 19-23	5 days	RE05 - Advanced Gas Condensate Reservoir Management	Trondheim
Feb 25-Mar 1	5 days	RE14 - Special Core Analysis	Abu Dhabi
March			
Mar 25-29	5 days	PP04 - Production Logging and Reservoir Monitoring	Abu Dhabi
April			
Apr 15-17	3 days	DR01 - Drilling for Non-Drillers	Abu Dhabi
Apr 16-20	5 days	RE01 - Reservoir Engineering for Non-Reservoir Engineers	Vienna
Apr 16-20	5 days	GG06 - Reservoir Geology – Integrating Data for Reservoir Modelling	Vienna
Apr 25-27	3 days	GG01 - Geoscience for Non-Geoscientists	Vienna
Apr 25-27	3 days	PP08 - Characterisation of Oil and Gas Reservoirs with Neural Network Technology	Vienna
June			
Jun 11-15	5 days	PP02 - Integrated Petrophysics for Reservoir Characterization	Vienna
Jun 18-22	5 days	PP03 - Carbonate and Fracture Petrophysics	Vienna
Jun 18-22	5 days	GG02 - Carbonate Geology for Oil and Gas Exploration & Development	Vienna
Jun 20-22	3 days	GG08 - Petroleum Geology of North Africa	Vienna
Jun 25-29	5 days	GG09 - Facies Analysis and Sequence Stratigraphy	Vienna
Jun 27-29	3 days	PP06 - Quick Look Petrophysics	Vienna
July			
Jul 2-6	5 days	RE06 - Advanced Reservoir Simulation	Vienna
Jul 2-6	5 days	PR01 - Production Engineering I	Vienna
Jul 9-13	5 days	PR02 - Production Engineering II	Vienna
Jul 9-13	5 days	RE04 - Applied Reservoir Management	Vienna
Jul 9-13	5 days	PP04 - Production Logging and Reservoir Monitoring	Vienna
Jul 16-20	5 days	DR04 - Advanced Drilling Engineering	Vienna
Jul 18-20	3 days	RE10 - Streamline Simulation	Vienna
Jul 23-27	5 days	RE11 - Pressure Transient Test Design and Interpretation	Vienna

MONTHLY COURSE SCHEDULE

2007			
Date	Duration	Course Title	Location
August			
Aug 27-31	5 days	PP02 - Integrated Petrophysics for Reservoir Characterization	Kuala Lumpur
Aug 27-31	5 days	GG10 - Petroleum Systems Modelling for Exploration Risk Assessments	Vienna
September			
Sep 3-7	5 days	DR04 - Advanced Drilling Engineering	Kuala Lumpur
Sep 3-7	5 days	PP03 - Carbonate and Fracture Petrophysics	Kuala Lumpur
October			
Oct 21-25	5 days	RE04 - Applied Reservoir Management	Abu Dhabi
Oct 23-25	3 days	GG01 - Geoscience for Non-Geoscientists	Abu Dhabi
Oct 28-Nov 1	5 days	PP02 - Integrated Petrophysics for Reservoir Characterization	Dubai
Oct 28-Nov 1	5 days	RE15 - Natural Gas Engineering	Abu Dhabi
November			
Nov 4-8	5 days	PP03 - Carbonate and Fracture Petrophysics	Dubai
Nov 4-8	5 days	RE16 - Naturally Fractured Reservoir Engineering	Abu Dhabi
Nov 11-13	3 days	PP06 - Quick Look Petrophysics	Dubai
Nov 18-22	5 days	GG09 - Facies Analysis and Sequence Stratigraphy	Abu Dhabi
Nov 19-23	5 days	RE14 - Special Core Analysis	Vienna
Nov 25-29	5 days	RE06 - Advanced Reservoir Simulation	Abu Dhabi
Nov 26-30	5 days	RE08 - Advanced PVT and EOS Fluid Characterization	Vienna
December			
Dec 2-6	5 days	GG10 - Petroleum Systems Modelling for Exploration Risk Assessments	Abu Dhabi

Register early to avoid disappointment!

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– by faxing a completed registration form to +43 3842 430531

– by emailing your completed registration form to training@hoteng.com

Geology & Geophysics

- **GG01 – Geoscience for Non-Geoscientists**
- **GG02 – Carbonate Geology for Oil and Gas Exploration & Development**
- **GG04 – Seismic Inversion and AVO**
- **GG06 – Reservoir Geology – Integrating Data for Reservoir Modelling**
- **GG08 – Petroleum Geology of North Africa**
- **GG09 – Facies Analysis and Sequence Stratigraphy**
- **GG10 – Petroleum Systems Modelling for Exploration Risk Assessments**

GG01 – GEOSCIENCE FOR NON-GEOSCIENTISTS

Jürgen Schön

3 days

The course summarises the different disciplines in geoscience, the link to exploration techniques and field development, and the importance of their integrated application. Tools and techniques available for reservoir characterization as well as their integration to a reservoir model will be discussed. Case histories and practical examples will illustrate the concepts. Participants will get to understand the framework of geoscience and its link to engineering disciplines.

OUTLINE

- *The earth as a dynamic system*
 - Basic principles and processes
 - Rocks, rock types, geological classification
 - Sedimentary rocks, properties and importance as reservoir rocks
 - From the sediment to the sedimentary basin
- *Hydrocarbon reservoirs*
 - Petroleum geology: generation and properties of hydrocarbons, migration, accumulation, reservoir system components, types of reservoir drives
 - Reservoir rocks: clastic and carbonate rocks
 - Basic reservoir properties: porosity, saturation, permeability and capillary pressure
- *Exploration methods and tools*
 - Geophysical methods: seismic exploration, borehole seismic, other important methods and surveys.
 - Well logging and formation evaluation: principles, logging methods, principles of formation evaluation, MWD and LWD, production logging.
 - Integration of results from seismic, logging, core analysis, geology and other.

WHO SHOULD ATTEND

E&P staff without background in geoscience.

2007 Schedule & Fees

Vienna, Austria		
April 25 - 27	Course Fee	€ 1730 plus VAT
Abu Dhabi, UAE		
October 23 - 25	Course Fee	€ 1930

GG02 – CARBONATE GEOLOGY FOR OIL AND GAS EXPLORATION & DEVELOPMENT

Jeffrey Dravis

5 days

This five-day seminar introduces participants to establish principles of carbonate geology applied to hydrocarbon exploration and development geology.

Using a highly acclaimed, hands-on approach, each participant learns to describe typical carbonate rocks, delineate facies and sequences, evaluate reservoir quality, relate carbonates to log and seismic expression, better predict play relationships in the subsurface, and construct a time-stratigraphic facies framework, essential for both accurate regional correlation of carbonate sequences and zonation of carbonate reservoirs. Lectures are reinforced with exercises and problems keyed to 10 identical sample rock sets, each containing 56 representative samples from around the world. A 750+ page notebook accompanies the course, as well as a reference CD with pictures of samples used in the various exercises.

This seminar has been presented over 40 times!

GOAL

After this seminar, each delegate will be able to describe and classify typical carbonate rocks, interpret facies relationships, delineate stratigraphic sequences and correlate facies within them, evaluate reservoir quality in limestones and dolstones, and better understand subsurface carbonate plays and reservoirs. This seminar also is an excellent refresher course for those who have not worked carbonates for a while.

OUTLINE

- Distinctive aspects of carbonates; non-skeletal grains; skeletal grains
- Carbonate classifications and structures; limestone diagenesis and porosity evolution
- Dolomitization and porosity evolution; porosity classification; attributes of shallow and deep-marine facies; models - platform; facies models – ramp
- Carbonate depositional sequences & cyclicity; log and seismic expression of carbonates; carbonate source rocks; carbonates and evaporites; carbonate play types and review of case studies
- Carbonate play types and review of case studies (continued); use of depositional cyclicity to zone carbonate reservoirs (detailed review of two case studies); carbonate facies correlation exercise

WHO SHOULD ATTEND

Geologists, geophysicists, reservoir engineers, log analysts and managers.

GG04 – SEISMIC INVERSION AND AVO

Brian Russell

3 days

Historically, reflection seismic data was primarily seen as a tool for identifying structural anomalies. With the development of “bright-spot” techniques and post-stack inversion in the 1970’s, seismic data was increasingly used to identify stratigraphic anomalies. The limitation of these techniques was that they often produced misleading interpretations of fluid anomalies. The AVO technique, introduced in the 1980’s, allowed the geoscientist to better identify such fluid anomalies. The last few years have seen rapid advances in inversion and AVO, including their combination into such methods as elastic impedance and lambda-mu-rho. The participants in this course will be trained in the theory of seismic inversion and AVO, as well as the related techniques of multi-component and converted wave seismic analysis. Case studies from around the world and exercises that emphasize the application of the theory to realistic examples will also be included.

OUTLINE

- Introduction to rock physics and fluid replacement modelling
- P and S-waves, converted wave and multi-component seismic analysis
- AVO theory and modelling
- AVO analysis and cross-plotting
- Post-stack seismic inversion
- The elastic impedance, Rp/Rs inversion, and lambda-mu-rho techniques
- AVO and inversion case studies
- Acquisition and processing concerns

WHO SHOULD ATTEND

This course is designed for experienced petroleum geoscientists who wish a comprehensive overview of the subjects of seismic inversion and AVO. Attendees are expected to be familiar with the basics of seismic acquisition, processing and interpretation.

2007 Schedule & Fees

Vienna, Austria

June 18 - 22

Course Fee

€ 2350 plus VAT

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

GG06 – RESERVOIR GEOLOGY – INTEGRATING DATA FOR RESERVOIR MODELLING

István S. Bérczi

5 days

Reservoir (development) geology is a fundamental part of reservoir management studies: It integrates various disciplines and data at different scales. In today's world of 3D modelling and visualization, professionals have to acquire the skills to be able to understand, judge and validate complex computer-generated output. Participants will perform many hands-on exercises.

WHAT YOU WILL LEARN

- How to build a complex static model
- What are the basic data required
- How to select/acquire and validate input data sets
- How to integrate data sets of different sources, scales
- How to calculate original-in-place quantities
- How to validate your model
- How to constrain your model with dynamic data
- How to develop high resolution models

OUTLINE

- Introduction – Integrated Reservoir Management
 - Reservoir Geology - fundamental component
 - From operative plans to strategic planning
 - Consistency and coherency
 - Duties of geoscientists and engineers
- Analysis of Reservoir Rocks
 - Cores and core description
 - Lithology, facies and facies groups, lithostratigraphy
 - Petrophysics, conventional and special core analysis
 - Depositional and diagenetic history
- Determination of Reservoir Geometry
 - Stratigraphic correlation panels
 - Tectono-stratigraphic charts
 - Structural cross sections
 - Reservoir zonation
- Reservoir Heterogeneity and Subsurface Flows
 - Horizontal and vertical heterogeneity
 - Definition of fluid contact types
 - Practical determination of oil/water and gas/oil contacts
 - Contact charts and their construction
- Volumetrics
 - Sources and management of subsurface data
 - Mapping structure and properties
 - Assessment of uncertainties
 - Principles of mapping reservoir parameters

WHO SHOULD ATTEND

Engineers, geologists, petrophysicists and geophysicists.

2007 Schedule & Fees

Vienna, Austria

April 16 - 20

Course Fee

€ 2180 plus VAT

GG08 – PETROLEUM GEOLOGY OF NORTH AFRICA New

Sebastian Lüning

3 days

This course gives a comprehensive overview of North African geology, from the Pan-African Orogeny to the Pleistocene wet times. All major play elements are discussed and their specifics studied. The course combines power point presentations with video clips showing outcrops and graphic animations.

WHAT YOU WILL LEARN

Quality predictions of play elements depend on a robust knowledge of regional geological processes and their variability in time and space. The course offers a scheme that highlights the large scale-trends based on which concession-scale geology can be interpreted.

OUTLINE

- Pan-African Basement Consolidation
- Intracambrian rifting
- Cambrian-Ordovician reservoirs
- Ordovician glaciation
- Silurian source rocks
- Upper Palaeozoic reservoirs
- Frasnian source rocks
- Hercynian Orogeny
- Mesozoic burial and hydrocarbon generation
- Alpine uplift and volcanism
- Quaternary wet times

WHO SHOULD ATTEND

Geologists, Geophysicists, Reservoir Engineers, New Ventures Managers

2007 Schedule & Fees

Vienna, Austria

June 20 - 22

Course Fee

€ 1730 plus VAT

GG09 – FACIES ANALYSIS AND SEQUENCE STRATIGRAPHY New

Sebastian Lüning

5 days

The course offers an integrated introduction into sedimentary facies analysis and sequence stratigraphy with focus on siliciclastic systems. Reliable facies identification is the basis for any sequence stratigraphic interpretation. Depositional environments and respective facies are reconstructed by a combined analysis of lithology, sedimentary structures and fossil content. Modern facies analogues and outcrop/core photographs will be used extensively during the course to describe and identify the various palaeoenvironments.

Sequence stratigraphy is a tool that helps to analyse and predict regional shifts in the depositional patterns of shelfal sediments. Presence and quality of various play parameters, such as source rocks, reservoirs and seals, depend on the position within the sequence stratigraphic cycle. Correlation and dating of cycles is commonly achieved based on biostratigraphy and seismic stratal geometries. The course introduces the sequence stratigraphic 'toolbox', its definitions and concepts. Case studies and exercises show how the technique is best applied.

WHAT YOU WILL LEARN

Course Participants will be guided through a complete interpretation cycle, starting from basic sedimentological descriptions, through facies identification all the way to basin-wide sequence stratigraphic correlation. The workflow is introduced step-by-step, with an emphasis on effective practical day-to-day application. Classification schemes are used at all stages of the process, helping to simplify complex depositional stories for effective resource exploration. The course is also suitable for participants who may be familiar with the basic concepts of the analysis on an individual basis but are looking for an integrated interpretation approach.

OUTLINE

- Principles of sedimentation
- Sedimentary petrography
- Sedimentary structures
- Fossils for palaeoecology and biostratigraphy
- Facies analysis
- Aeolian facies
- Fluvial facies
- Shelfal siliciclastics
- Shelfal carbonates
- Deep water facies
- Variability of facies in time and space
- Accommodation and accumulation
- Facies concepts and sea-level reconstruction
- Stratal contacts
- History of sequence stratigraphy
- Seismic stratigraphy
- Sequence stratigraphy concepts
- Allostratigraphy concepts
- Sequence stratigraphic methodology
- Case studies

WHO SHOULD ATTEND

Geologists, Geophysicists, Petrophysicists, Reservoir Engineers

2007 Schedule & Fees

Vienna, Austria		
June 25 - 29	Course Fee	€ 2180 plus VAT
Abu Dhabi, UAE		
November 18 - 22	Course Fee	€ 2350

GG10 – PETROLEUM SYSTEMS MODELLING FOR EXPLORATION RISK ASSESSMENTS New

Björn Wygrala / Guido Port

5 days

Geologic risks in petroleum exploration are related to the traps (geometry, reservoir, seal), as well to the petroleum Charge Risk. While traps are always subjected to the most detailed possible assessments as a part of the exploration risk analysis, this is not always the case for Charge Risking, even though it can easily be shown that the geologic risking is often dangerously incomplete without these risk assessments.

The technology which is used to investigate Charge Risks is Petroleum Systems Modelling in which basin, play or prospect scale geologic models are created by interpreting and mapping key stratigraphic units and facies and subsequently processed by special simulators which can calculate the processes of hydrocarbon generation, expulsion, migration and loss through geologic time. In all leading exploration companies, charge risking using petroleum systems modelling is an essential component of the exploration risking workflow.

In this course, an introduction to the technology, the data and commonly performed tasks is given in order to illustrate the role of the technology in exploration risking as well as in hydrocarbon resource assessments. Applications cover the entire range of exploration phases from very early work in frontier areas to assessments in mature production areas, for example in order to explain why petroleum has specific properties or the distribution of oil vs. gas in an area of interest.

OUTLINE

Typical questions which are addressed include: Have hydrocarbons been generated in a basin? Where were the hydrocarbons generated? When were the hydrocarbons generated? Could the generated hydrocarbons have migrated to my prospect? What are the possible properties of the hydrocarbons which could have migrated to my prospect?

Examples will be shown which will illustrate the importance of asking each of these questions and key points and topics for exercises will then be:

- What is Petroleum Systems Modeling and which role does it play in exploration risking procedures
- When can 1D, 2D or 3D modeling be applied and what are the requirements and benefits
- What data is needed for 1D/2D/3D petroleum systems modeling
- What are the workflows from input through processing to output
- How are the models calibrated
- What are the results that are obtained for charge risk analyses, i.e. for hydrocarbon generation, migration, accumulation and loss
- What do I need to know about petroleum properties and pvt modeling
- How can the technology be used for pressure modeling
- How can sensitivity analyses be performed
- What are the limitations of the applications, for example if data is sparse or if the geology is complex
- Finally, a review of advanced applications will be given, such as using petroleum systems modeling in thrustbelts, advanced risking and sensitivity analysis.

WHO SHOULD ATTEND

Exploration geologists from recent graduates to experienced explorationists who need an introduction to the technology and its applications, as well as an update of the latest developments in the field of charge risking and petroleum systems modelling.

2007 Schedule & Fees

Vienna, Austria		
August 27 - 31	Course Fee	€ 2180 plus VAT
	Computer Fee	€ 300 plus VAT
Abu Dhabi, UAE		
December 2 - 6	Course Fee	€ 2350
	Computer Fee	€ 350

Petrophysics

- **PP01 – Foundations of Petrophysics**
- **PP02 – Integrated Petrophysics for Reservoir Characterization**
- **PP03 – Carbonate and Fracture Petrophysics**
- **PP04 – Production Logging and Reservoir Monitoring**
- **PP05 – Geological Log Analysis**
- **PP06 – Quick Look Petrophysics**
- **PP07 – Rock Physics – Rock Properties from Geoscience and Petroleum Engineering Data**
- **PP08 – Characterisation of Oil and Gas Reservoirs with Neural Network Technology**
- **PP09 – Actual Well/Field Evaluation Workshop**

PP01 – FOUNDATIONS OF PETROPHYSICS

Jürgen H. Schön

5 days

Petrophysics is a key discipline in petroleum exploration and production. The main objectives of this course are to understand:

- Petrophysical properties and corresponding logging methods,
- The fundamentals of log interpretation and formation evaluation,
- The link between petrophysics and seismic reservoir characterization tools,
- The implementation of petrophysical results in integrated reservoir studies.

OUTLINE

- Introduction
 - Reservoirs, reservoir analysis; reservoir models
 - Reservoir processes and properties
 - Petrophysics as a key-discipline in integrated reservoir analysis
- Petrophysical properties of reservoir rocks
 - Reservoir rocks and types
 - Porosity, permeability, relative permeability
 - Water saturation, capillary pressure, fluid contacts
 - Net/Gross ratio, cut-off criteria, net pay determination
- Fundamentals of well logging
 - The borehole and its environment
 - Open hole and cased hole logging
 - Electric and electromagnetic methods
 - Physical principle, tool concepts, electrical properties
 - Applications
 - Acoustic methods
 - Elastic properties, physical principle, tool concepts
 - Applications
 - Nuclear methods
 - Nuclear properties, physical principle, tool concepts
 - Gamma-Logs, Gamma-Gamma-Logs, Neutron-Logs
 - Applications
 - Nuclear magnetic methods
 - Physical principle, tool concepts
 - Properties determined by NMR measurements
 - Applications
 - Imaging methods
 - Physical principle, tool concepts, applications
 - Technical logs
 - LWD and MWD techniques
 - Coring and core investigations, core-log integration
 - Well logging and seismic reservoir characterization
- Log analysis – formation evaluation
 - Fundamental problems of formation evaluation
 - Profile description and reservoir detection
 - Reservoir characterization
 - Basic interpretation methods
 - Vshale, porosity, fluid saturation
 - Permeable zones
 - Advanced interpretation methods
 - Combined determination of porosity and rock composition
 - Shaly sand interpretation
 - Fractured reservoirs
 - Saturation determination, movable fluids, fluid contacts
 - Permeability
 - Thin bed evaluation and anisotropic reservoirs
 - Integrating the information; the reservoir model
 - Fluid flow units, Net/Gross, Net/Pay

WHO SHOULD ATTEND

E & P staff with limited background in petrophysics and formation evaluation.

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

PP02 – INTEGRATED PETROPHYSICS FOR RESERVOIR CHARACTERISATION

Mark Deakin

5 days

This course will teach you how to evaluate reservoirs and quickly identify flawed results. Robust, minimum error reserves are achieved by a logical, systematic integration of all relevant data. Interpretation is cost-effective compared with data acquisition or development mistakes and essential for the complex reservoirs and marginal fields being re-evaluated today. Systematic integration can often replace the need to run logs and explain apparent data conflicts. This course demonstrates how robust answers are achieved by the integration of diverse data. Basic economic questions are addressed head-on by a disciplined, logical process which optimizes the interpretation of Porosity, Permeability, Saturation, Netpay, and Fluid Contacts - the basis of Reserves. Low Contrast Low Resistivity Pay clastics and carbonates are evaluated by simple integration techniques which surpass stand-alone log analysis. LWD, wireline, NMR, image logs, routine core, special core and MDTs are brought innovatively together to interpret difficult exploration wells, improve reservoir simulation and typically increase reserves.

WHAT YOU WILL LEARN

- How to drill, core, log and test for clear formation evaluation results
- How to review petrophysical studies & quickly identify flawed results
- How to perform basic log analysis, core-log integration and seismic petrophysics integration
- How to reduce uncertainty and clarify field management decisions
- How to integrate hi-tech logs with core, LWD, logs and seismic data

OUTLINE

- Petrophysical objectives, measurement value, data hierarchy and calibration logic
- Basic log analysis, basic core-log integration
- Porosity: Total or effective? Gas zones and complex lithologies, calibrating porosity
- Sw100 zones and Rwa's: Their derivation and effective use
- Sw: Improving the inputs which really matter: Rt/Ro, Rw, m, n, Sw: OBM/WBM core, capillary pressure, magnetic resonance, facies and wettability, defined, explained AND put to good use! Calibrating Sw
- Shaly sands: Defined & explained, integrating resistivity with non resistivity data, FMI/NMR/Pc. Using WaxmanSmits
- Qv, m*, n* with or without core
- Fluid contacts and capillary pressure: Using MDT/RCI/RDTs effectively, distinguishing the mobile phase.
- The Reservoir Master Equation: What is it? How do I use it?
- Permeability: Rock-types, NMR, conventional logs, bound fluid volume, permeability, well tests, productivity, the Sw decision tree and how to use it. Useful simulation input
- Netpay: What is netpay? Definition, proper criteria and evaluation
- Seismic-petrophysical work flow, fluid substitutions
- Recommendations for drilling, coring and logging, evaluation templates
- 10 systematic errors which ruin your geological model.

WHO SHOULD ATTEND

Petrophysicists, exploration geologists, operations geologists, reservoir geologists, reservoir engineers, geophysicists, core analysts or anyone with a year or more of experience with creating or using formation evaluation results.

2006 Schedule & Fees

Dubai, UAE		
November 18 - 22	Course Fee	€ 2350

2007 Schedule & Fees

Vienna, Austria		
June 11 - 15	Course Fee	€ 2205 plus VAT
Kuala Lumpur		
August 27 - 31	Course Fee	€ 2355
Dubai, UAE		
October 28 - November 1	Course Fee	€ 2355

PP03 – CARBONATE AND FRACTURE PETROPHYSICS

Mark Deakin

5 days

This intermediate course details the primary causes and problems of carbonate and fracture evaluations and how to optimize data acquisition and data integration for useful output. Log analysis in carbonate, basement and tight clastics reservoirs is often completely misleading. Although the same fundamental petrophysical principles apply to all reservoirs, carbonate and fractured reservoirs are far more problematic. Different features dominate the petrophysical data including: extremely diverse pore geometries from intra-particle bio-porosity to vugs and fractures; little or no relationship between porosity and permeability; the absence of clay minerals and compaction as controls on reservoir quality, and extreme diagenesis. The physical differences between clastics, carbonates and fractures are explained in the context of attempting to achieve answers from a conventional data set. The failure entry points which result are highlighted and juxtaposed with a purpose designed core-log-test integrated process which has proven successful in these difficult reservoirs. First, the physical features which characterize carbonates and fractures are translated into petrophysical uncertainties. Then the core-log-test data acquisition program and a petrophysical integration specifically designed to address these uncertainties, is explained. The last day includes a key petrophysical theory/workshop which derives capillary pressure Sw's and then integrates these with routine core analysis and logged resistivities from an actual carbonate data set. This course includes numerous "real world" useful tips and will provide a new found familiarity, understanding and confidence for geoscientists faced with the daunting prospect of managing these confusing reservoirs.

WHAT YOU WILL LEARN

- Why low porosities, extreme pore geometries, fractures and oil wetness are more prevalent in carbonates and how to recognize and treat them
- The essential ingredients of successful evaluation
- Why well tests (DSTs) are often misleading in fractured reservoirs
- The importance of mudlogs, capillary pressure and other data
- Key features of a Carbonate & Fracture quicklook log evaluation-Common pit falls of Carbonate & Fracture petrophysical studies
- How to perform a comprehensive Carbonate Matrix & Fracture integrated petrophysical evaluation
- How to integrate carbonate capillary pressure data with core and logs
- How a Non-Petrophysicist can quickly assess if Carbonate or Fracture log data and results are 'Fit for Purpose'

OUTLINE

- Review of carbonate and fracture pore geometries and important other factors
- Why relationships between porosity, shaliness & reservoir quality are often absent and what do to overcome these added difficulties
- Carbonate or fracture designed coring, logging, wireline testing, routine and special core analysis
- Examples of good and bad carbonate and fracture data sets
- Applications of Lucia's "rock fabric" approach
- Improved carbonate and fracture quicklook log analysis
- The essential work flow of a carbonate or fracture full integrated petrophysical evaluation
- Checklists for logging and petrophysical results prior to their use in reserves or simulation
- Evaluation spreadsheet templates, Key Equations List, Checklists

WHO SHOULD ATTEND

Petrophysicists, Geologists, Core Analysts, Reservoir Engineers. Anyone involved with the formation evaluation of carbonates or fractured reservoirs or who use their petrophysical results for reserves or reservoir simulation.

2006 Schedule & Fees

Dubai, UAE		
November 25 - 29	Course Fee	€ 2350

2007 Schedule & Fees

Vienna, Austria		
June 18 - 22	Course Fee	€ 2205 plus VAT
Kuala Lumpur		
September 3 - 7	Course Fee	€ 2355
Dubai, UAE		
November 4 - 8	Course Fee	€ 2355

PP04 – PRODUCTION LOGGING AND RESERVOIR MONITORING

Roger Nutt

5 days

Based on the highly successful Reservoir Monitoring and Production Log Interpretation course which Roger Nutt taught for many years, this course has been modified to reduce the time spent on Cement Bond and Casing Corrosion Logs and their interpretation, to give additional time for interpreting production and reservoir monitoring logs, designing the logging program, engineering the surveys, and interpreting the results. However, for completeness, the manual sections on cement bond and corrosion surveys have been left intact. The more you already know about cased-hole logs, the more you can expect to learn about understanding what your logs are telling about the behaviour of the well and the surrounding reservoir. You will learn by solving for yourself a host of real, practical and down-to-earth problems from a wide variety of wells and situations.

WHAT YOU WILL LEARN

How to integrate all the broad and subtle indications which your production and reservoir monitoring logs give you, and understand what is happening inside your well and its environment. How to be sure where the different fluids which enter the casing are really coming from... and where your injection gas or water is going. How much of the apparent behaviour of your well is caused by the reservoir as a whole - and how much is a result of unseen local disruptions to the flow pattern caused by the well and its surroundings. Perhaps most important of all: How much oil and gas are you leaving behind in the reservoir?

OUTLINE

- What data is needed for production logging and reservoir monitoring, and how to set up and maintain the database
- Why fluid migration through the casing-formation annulus is so common
- Causes of casing damage and leaks
- Production logging tools and principles
- Flowmeters - how they work, what they measure
- How apparent flow can be affected by the kind of perforation gun you use
- How to recognize vertical flow
- Bubble counter techniques
- Temperature tools, and how to use them to identify flow behind the casing
- Gradiomanometer and fluid density tools and their application
- Water Hold-up meters
- Calipers
- What the presence of NORM means, and how to use gamma-ray and spectral gamma-ray to identify it
- How production logging tools are affected by deviation
- Mono and Multi-phase flow analysis
- Porosity and water saturation determination through casing
- TDT, Principle and uses, qualitative and quantitative
- C/O, Gamma Spectroscopy logging
- Time lapse monitoring of gas-oil and oil-water contacts and water saturation
- Identifying by-passed oil and gas
- Identifying the presence and speed of water flow behind the casing
- Problems with horizontal wells - and how to solve them
- How to select the right tools and engineer the cased-hole logging program

WHO SHOULD ATTEND

Petroleum engineering and drilling managers; petroleum, reservoir, drilling, production and wireline service company engineers; petrophysicists and log analysts; technicians; and anyone who needs to understand what production logs and cased-hole surveys can tell us about how the well and adjacent reservoir are behaving.

2007 Schedule & Fees

Abu Dhabi, UAE		
March 25 - 29	Course Fee	€ 2355
Vienna, Austria		
July 9 - 13	Course Fee	€ 2205 plus VAT

PP05 – GEOLOGICAL LOG ANALYSIS New

John Doveton

5 days

Modern logging tools record a wealth of geological information which have applications ranging in scale from flow unit lithofacies-typing to regional subsurface geology exploration mapping. This course supplements traditional log analysis which has a focus on pore characterization and pore fluid volumetrics, with a comprehensive treatment of rock framework properties revealed by logs. These properties include mineralogy, depositional environment indicators, and diagenetic patterns, all of which can be important keys to understanding and managing complex reservoirs. Bottom-up methods use pattern recognition of log associations to identify electrofacies that can be linked with lithofacies and petrofacies. Top-down methods transform log measurements to volumetric estimate profiles of rock composition. Both approaches and other procedures will be described in the course and demonstrated with simple spreadsheet software. Multivariate statistical methods and artificial intelligence procedures will also be described in their application as powerful tools for the extraction of geological information through varied case-study examples. A complete set of course materials, including manual and spreadsheet software, are included.

OUTLINE

- Logging tool fundamentals and the geological properties recorded on logs
- Theory and applications of electrofacies models.
- Analysis of gamma-ray and spectral gamma-ray logs for patterns of deposition and diagenesis.
- Explicit identification of minerals and lithologies from log overlays and crossplots of neutron, density, and photoelectric factor measurements.
- Theory and practice of a simple spreadsheet program for compositional analysis from logs.
- Reservoir petrofacies analysis combining log measurements of framework and pore properties.
- Geological characterization of flow units using log information.
- Computer mapping of geological log variables in two and three dimensions.
- Applications of multivariate statistical methods to the geological analysis of logs.
- Artificial intelligence applications to log analysis.

WHO SHOULD ATTEND

The course is intended both for geologists who wish to expand their knowledge of the geological information content of logs and for petroleum engineers to improve their understanding of the rock framework structure of complex reservoir units.

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

PP06 – QUICK LOOK PETROPHYSICS New

Mark Deakin

3 days

This 3-day Basic Petrophysics Course sets out the essential data sets used to identify and evaluate reservoirs, explains their operating principles and arrives at a set of 'quick look' results. All geoscientists require this basic level of understanding to communicate with team members and manage assets effectively. All commonly used formation data is briefly presented with explanation of how it is acquired and where it fits in the overall scheme. The formation evaluation essentials of determining reservoir rock, porosity, saturation, fluid type, contacts and permeability are explained. Data covered includes: mudlogs; cores; SP logs, Caliper, GR, Shallow, Medium & Deep Resistivity, Density, Neutron, Sonic, NMR, Wireline testers (e.g. MDTs) and Well tests (DSTs).

The basic theory behind quantitative quick look porosity, saturation and netpay is explained. Common geological features are highlighted on logs to enable them to be flagged by non-petrophysicists. Wireline formation pressures are covered and used to determine the free water level and demonstrate the mobile phase. Other more specialist topics such as Facies, SCAL, Capillary Pressure and Seismic Petrophysics are introduced in diagrammatic form only to show how they fit within the broader context and how they might be used to underpin the quick look approach explained in this course. A Quick Look Evaluation spreadsheet with embedded Key Equations is a valuable product of this course.

WHAT YOU WILL LEARN

- What the mnemonics formation evaluation actually mean
- How petrophysical data are acquired and what information they contain
- How the major components of petrophysical data are pieced together into a coherent picture of the formation
- How to perform a qualitative and quantitative quick look evaluation
- How to determine mobile fluid type and contact depth
- How to flag coals and bad data
- How to relax and feel quietly confident when colleagues and friends start talking logs and petrophysics!

OUTLINE

- Basic principles of mudlogs, cores, conventional logs and well tests
- Summary table of typical data: name, principle, function/role
- Qualitative assessment of shaliness and lithology from GR and density-neutron crossover
- Typical resistivity invasion profiles
- Typical resistivity-porosity trends in water and HC zones
- How shaliness obscures reservoirs and gas zones
- Using GR and density-neutron for shaliness
- Density-neutron and sonic porosity
- Determining R_w
- Graphical Pickett plots and Archie saturation
- Quick look permeability
- Identification of reservoir rock and netpay from typical logs
- Formation pressures, supercharging and fluid contacts
- Coals and bad data
- Reviewing results with common-sense logic
- Using the spreadsheet Quick Look Evaluation xls
- Micro-practicals, vendor movies, workshops, experience, open debate!

WHO SHOULD ATTEND

Geoscientists, engineers and asset team members who need to grasp the essential features of petrophysical data and how it can be quickly and effectively used to reveal the commercial significance of a well. No prior knowledge of logs or formation evaluation is required.

PP07 – ROCK PHYSICS – ROCK PROPERTIES FROM GEOSCIENCE AND PETROLEUM ENGINEERING DATA

Jürgen Schön

3 days

The growing interest in rock physics results from:

- The increasing importance of reservoir rock characterisation in terms of fundamental properties like porosity, permeability, rock composition
- The particular interest in reservoir fluids, their distribution and motion
- The "broadening" of the spectrum of rock types of interest
- The dramatic progress in the measurement of rock attributes particularly by seismic and well logging

The course covers a comprehensive and concise presentation of the physical properties of rocks, based on theory as well as experimental investigations, illustrated with case studies and examples of seismic and well log interpretation. The course will be following the textbook "Physical Properties of Rocks - Fundamentals and Principles of Petrophysics" (Handbook of Geophysical Exploration, Vol. 18, ed. by K. Helbig and S. Treitel, Pergamon Press).

OUTLINE

- Introduction and overview
- Reservoir rocks, types, properties
- Pore space properties (porosity, permeability, saturation, capillary pressure)
- Properties determined by NMR measurements
- Nuclear properties (natural radiation, interactions with gamma- and neutron radiation)
- Elastic properties (compressional and shear waves, experimental results, theoretical models, fluid replacement, anisotropy and shear wave splitting)
- Electrical properties (clean rocks, shaly sands, theories and models)
- Rock mechanics properties and their correlation with other properties
- Outlook

WHO SHOULD ATTEND

This course is recommended for geophysicists, log analysts, geologists and petroleum engineers.

2007 Schedule & Fees

Vienna, Austria June 27 - 29	Course Fee	€ 1795 plus VAT
Dubai, UAE November 11 - 13	Course Fee	€ 1950

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

PP08 – CHARACTERISATION OF OIL AND GAS RESERVOIRS WITH NEURAL NETWORK TECHNOLOGY

New

Rudolf Fruhwirth

3 days

Neural networks find their archetype in nature and are a simplified imitation of the human brain. They are widely used for analysis and prediction purposes, particularly for financial services, the security industry and automotive industry. Within the oil and gas industry their utilization is not common practice yet. Wherever statistics, best practice formulas and the meanwhile vast amount of data available provide results of limited to poor quality output, the neural network technology comes in handy. With its capability to learn and understand relationships within data, far beyond the human ability to handle complexity, neural networks represent an ideal tool to get more out of the data. They provide a more intuitive solution with good predictive accuracy to complicated problems. Neural networks used to be a technology to be applied by advanced users only. Due to the complicated setup, and the high potential for introducing errors before their application, only experts were able to produce results within reasonable amounts of time and cost. But today, software has advanced the technology to a state that every engineer or geoscientist can understand and utilize neural network technology within 3 days. And this is the goal of this short course.

WHAT YOU WILL LEARN

- You will understand the basic theory of artificial intelligence and their most used components and the concept of neural networks and its theory behind
- You will learn how to prepare and use your data for best results with neural networks
- You will learn how to train neural networks, test them and validate the resulting models
- You will learn how to avoid pitfalls, how to quality control your models, and how to apply tips and tricks with numerical and categorical data
- At the end of the day you will be able to start working on your own data

OUTLINE

The course starts with a theoretical overview of the different AI components and their practical applications and will then explain the methodology of neural networks in detail.

Overview of AI Components:

- Artificial intelligence/Computational intelligence
- Neural networks - Artificial Neurons
- Supervised and un-supervised learning and learning rules
- Perceptrons & Artificial Brains
- Algorithms and their technology behind

The second day will emphasize the importance of all parameters for a successful application of neural networks with all its pitfalls, tips, and tricks, based on real world examples

- Problem Formulation
- Feature Extraction
- Optimal Design of neural networks
- Training of Neural Networks
- Testing and Validation
- Prevention of Overtraining / Oversizing
- Quality control

The third day will allow all participants to work with neural networks on real data on selected examples.

- Creation of Synthetic Logs
- Core Data Modelling form logs
- Log-Interpretation
- Formation Characterisation
- Lithology
- Feature extraction

cVision™ Neural network software will be provided for all participants along with a 3 months trial license.

WHO SHOULD ATTEND

Geophysicists, geologists, engineers and petrophysicists who want to learn how to use neural networks within 3 days and get a general understanding how trustworthy neural network technology is when used properly. There is no background required with neural networks, Basic Excel™ skills and a general understanding for data usage are required.

2007 Schedule & Fees

Vienna, Austria

April 25 - 27

Course Fee

€ 1750 plus VAT

Computer Fee

€ 250 plus VAT

PP09 – ACTUAL WELL/FIELD EVALUATION WORKSHOP New

Mark Deakin

5 days

In this computer aided basic course an actual evaluation on a cored, purpose designed data set, or client supplied data set is performed. Data is loaded to client software. All major stages necessary for a full petrophysical integration are discussed and then actually performed by both instructor and participants. A twice daily open critique and proposal session of the ongoing evaluation keeps the class highly motivated, tightly focused. The evaluation sequence is continuously referenced to reinforce real-world constraints of Time vs. Fit-For-Purpose geomodeling results. All evaluation parameters are documented together with a short report and key figures just as in a real study. Stages include: Log, Core, SCAL, MDT, and DST data organisation, zonation, vclay, total and effective porosities, water zones, Rw, Pickett plots, Rwa, m, Ro prediction, n, Swrt, Fluid Zones, Bound fluid volumes, Coates permeability, Capillary pressure quick-look Sw's, Base case Sw, Swrt optimisation, Netpay, Zone averages, short Report and Figures.

These 5 days offer a powerful, dynamic training session in which participants actually experience the practical issues at stake and make the key choices which impact reserves themselves.

WHAT YOU WILL LEARN

- The importance of preparing and loading all data
- The big picture objectives of why and what we are doing in petrophysics
- To question alternatives and negotiate the best evaluation pathway through today's typical data sets
- How to use Core, SCAL, MDT's and DST's with logs
- All essential quick look methods
- The basic ideas and structure behind parallel methods in petrophysics e.g. capillary pressure, NMR
- How to overcome your confusion when confronted with the barrage of modern petrophysical data, to think clearly and advance your team towards a Fit-For-Purpose geomodel
- The essential ingredients and style of a succinct, informative petrophysical report
- How to get excited about petrophysics, reservoirs and geomodels!

OUTLINE

- Collating, preparing and loading petrophysically relevant data to log software
- Check core data. Calibrate log to core porosity
- Review common SCAL data sets. Use them to calibrate log resistivity equations
- Extract key answers from MDT data. Check log analysis. Determine free water levels. Set up a quick look capillary pressure look up table
- Extract and use the DST (well tests) key answers
- Produce a Petrophysical Results Table (sums and averages) for input to your geomodel
- Integrate all common petrophysical data with logs
- Check your results with common sense logic
- Participate in daily morning recaps and practical Do's and Don'ts for the working petrophysicist
- Observe and actually perform software (Geolog) key petrophysical procedures:
Vshale, ϕ_t , ϕ_e , Sw100, Rwa, Pickett, aRw, m, Ro, n, Swrt, Fluid zones, Bound fluid, Permeability, Capillary pressure Sw, Pay, Net, Averages, Report.
- Excitement and even mild stress as you actually make the decisions and DO petrophysics rather than just sit there and LISTEN!

WHO SHOULD ATTEND

New petrophysicists, all geomodel builders, exploration & reservoir geologists, geophysicists, keen operations geologists. Anyone who needs a rapid, hands-on overview of the petrophysical evaluation process and its potential errors. No previous petrophysical knowledge is required, however, attendance to PP02 – Integrated Petrophysics for Reservoir Characterisation or, if a client supplied carbonate data set is used, to PP03 – Carbonate and Fracture Petrophysics, is strongly recommended.

**For further information on this course
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HOT

Reservoir Engineering

- **RE01 – Reservoir Engineering for Non-Reservoir Engineers**
- **RE02 – Reservoir Simulation – An Introduction**
- **RE04 – Applied Reservoir Management**
- **RE05 – Advanced Gas Condensate Reservoir Management**
- **RE06 – Advanced Reservoir Simulation**
- **RE08 – Advanced PVT and EOS Fluid Characterisation**
- **RE10 – Streamline Simulation**
- **RE11 – Pressure Transient Test Design and Interpretation**
- **PE14 – Special Core Analysis**
- **RE15 – Natural Gas Engineering**
- **RE16 – Naturally Fractured Reservoir Engineering**

RE01 – RESERVOIR ENGINEERING FOR NON-RESERVOIR ENGINEERS

Leonhard J. Ganzer

5 days

The objective of reservoir engineering is to optimise hydrocarbon recovery. This course will introduce basic reservoir engineering concepts to help answering the following questions crucial to the reservoir engineer: How much is there (accumulation)? How much can be recovered (reserves)? How fast can it be recovered (rate)? The participants will also work practical problems to ensure a thorough understanding of the principles and procedures.

OUTLINE

- Introduction to the physics of petroleum reservoirs
- Concepts of fluid flow through porous media
- Fluid properties in reservoir engineering - fluid types, phase behaviour, correlations, equations of state
- Fundamental rock properties - porosity, wettability, capillary pressure, permeability, relative permeability and other concepts
- Evaluation and recovery of oil and gas reserves - classification of reserves, recovery factors, volumetrics of oil and gas reservoirs
- Material balance calculations - material balance concept, drive index, water influx models
- Reservoir simulation basics - introduction to gridding, black-oil and compositional formulation, treatment of wells in simulators, history matching
- Introduction to Enhanced Oil Recovery (EOR)
- Decline curve analysis

WHO SHOULD ATTEND

This course is aimed at geoscientists with little or no reservoir engineering background. It is intended to provide an introductory course in the field of basic reservoir engineering.

2007 Schedule & Fees

Vienna, Austria

April 16 - 20

Course Fee

Computer Fee

€ 2180 plus VAT

€ 300 plus VAT

RE02 – RESERVOIR SIMULATION – AN INTRODUCTION

Leonhard J. Ganzer

5 days

This course deals with the practical aspects of reservoir simulation without complicated mathematics or differential equations. It is intended for individuals who are interested in making intelligent use of this powerful tool for the management of petroleum reservoirs. Assumptions involved in different simulation models and their influence on results will be discussed. The course will include workshop sessions dealing with practical simulation problems. A simulator will be used to illustrate simulation concepts that are of fundamental importance to reservoir engineers.

OUTLINE

- Introduction and history on reservoir simulation
- Classification of simulators - uses of reservoir simulators, current state-of-the-art
- Basic conservation equations and mass balance
- Review of fluid properties for simulation - black-oil and compositional fluid models
- Rock properties and saturation functions - porosity, permeability, compressibility, relative permeability, capillary pressure, correlations
- Grid selection and construction - introduction to various grid types, aquifer modelling, fault modelling
- Upgridding and upscaling
- Treatment of wells in simulators
- Introduction to history matching
- Special simulation models - streamline simulation, fractured reservoirs, compositional modelling

WHO SHOULD ATTEND

This course is intended as an introductory course in the art of reservoir simulation. Geoscientists, petroleum and reservoir engineers should attend this course who wish to improve their understanding of the potential and limitations of this tool. Participants should have a good understanding of basic reservoir engineering.

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

RE04 – APPLIED RESERVOIR MANAGEMENT New

Mike Carlson

5 days

The reservoir life cycle and how requirements for successful operation of a reservoir throughout its entire life change will be discussed. Development of a field goes beyond technical expertise; it requires consideration of economics, the environment, the government (regulations) and the public. Reservoir management therefore requires sophisticated tools to make decisions and determine a course of action. Different formal approaches for optimum field development and field operating plans are analyzed. How different disciplines, or team members, contribute to reservoir management is outlined as well as how checks and balances are maintained.

WHAT YOU WILL LEARN

Attendees will learn how to better manage their assets by utilizing proven processes and practices. They will also share experiences with other professionals dealing with similar challenges and situations. Participation from various disciplines will aid in understanding the impacts of multidisciplinary analysis.

OUTLINE

- The need for reservoir management. The fundamentals of reservoir management: history, philosophy and recent developments.
- Integration of geoscience and engineering. Synergy and team building. Styles of organization and formalized processes, such as decision analysis and field development programs.
- Process:
 - goals
 - plans
 - implementation
 - monitoring and surveillance
 - feedback / adapting plans
 - best practices; reasons for failure and success in reservoir management
- The modern integrated reservoir model, including the contributions of geology, well logs, seismic, geostatistics, production, laboratory, geomechanics and engineering data. Obtaining and analyzing data. How to management data.
- Oil and gas reservoir performance analysis techniques including production analysis, analogies, correlations, volumetric, decline curves, classical material balance and numerical simulation.
- The responsibilities of different team members.
- How the current reserves definitions came about (proved, possible, and probable) and how this affects both field development and the operation of a company. The importance of securities regulations. Other reserves definitions used by governments (Established Reserves).
- Reservoir management economics and optimization, such as optimum well spacing. The effects of risk and how to manage this.
- Secondary and tertiary recovery. Fundamentals of waterflooding; immiscible displacement, heterogeneity, flood pattern, and recovery efficiency. Enhanced recovery processes – thermal, chemical, and miscible. How to select the best method. Development planning and surveillance techniques.
- Reservoir management case studies from the author's experience.
- Participants' reservoir management discussion.

WHO SHOULD ATTEND

Engineers, geoscientists, field operation staff, management, and others involved in the different aspects of petroleum reservoir management.

2007 Schedule & Fees

Vienna, Austria July 9 - 13	Course Fee	€ 2205 plus VAT
Abu Dhabi, UAE October 21 - 25	Course Fee	€ 2375

RE05 – ADVANCED GAS CONDENSATE RESERVOIR MANAGEMENT

Curtis H. Whitson

5 days

Thorough evaluation of gas condensate reservoirs requires an understanding of not only the fluid behaviour in the reservoir, but also the sampling and testing procedures together with the wellbore performance. This course addresses the key subjects concerning the performance of gas condensate systems from reserve evaluation to production optimisation planning.

OUTLINE

- Introduction and general review of gas condensate reservoir performance
- Sampling methods and laboratory PVT measurements
- Equation-of-state (EOS) fluid characterization
- Material balance methods including two-phase Z-factor, water influx, trapped gas/condensate and the effect of formation water compressibility
- Long-term well inflow performance, condensate blockage skin and well test interpretation
- Tubing lift performance, minimum lift and erosional velocity
- Special core analysis and relative permeabilities
- Gas cycling considerations, injection patterns, revaporization and miscibility
- Layered, no-crossflow reservoir and well performance

WHO SHOULD ATTEND

This course is for experienced reservoir engineers dealing with the behaviour of condensate systems and who wish to refine their expertise in phase behaviour.

2007 Schedule & Fees

Trondheim, Norway

February 19 - 23	Course Fee	€ 2380
	Computer Fee	€ 350

RE06 – ADVANCED RESERVOIR SIMULATION

Leonhard J. Ganzer

5 days

Dynamic reservoir models are the basic tools for investigating reservoir behaviour, optimising reservoir performance, designing complex wells, estimating uncertainties and providing the basis for risk management. New techniques, such as unstructured and time-dependent gridding, combined with local time stepping eliminate most of the drawbacks of conventional simulation methods and make predictions more reliable. The participants will be trained in the methods and possible use of reservoir simulators and will use simulation software for practical exercises throughout this course.

OUTLINE

- History and classification of reservoir simulators
- Review of fluid properties for simulation - black-oil properties, equation of state modelling
- Rock properties and saturation functions - porosity, permeability, compressibility, relative permeability, capillary pressure, compaction, correlations
- General purpose formulation and discretization methods used for black-oil and EOS compositional simulators
- Gridding - structured and unstructured gridding approaches, Cartesian grids, corner point grids, PEBI grids
- Modelling structural elements in simulation - vertical and sloping faults, channels, etc.)
- Representing wells in the reservoir model
- Compositional reservoir simulation
- Simulation of fractured reservoirs - numerical model, matrix-fracture exchange, recovery processes
- Upgridding and upscaling
- History matching

WHO SHOULD ATTEND

This course is designed for experienced reservoir engineers. Attendees should have a basic knowledge of reservoir simulation, stochastic modelling, upscaling and some experience in the use of commercial reservoir simulators.

2007 Schedule & Fees

Vienna, Austria

July 2 - 6	Course Fee	€ 2195 plus VAT
	Computer Fee	€ 300 plus VAT

Abu Dhabi, UAE

November 25 - 29	Course Fee	€ 2350
	Computer Fee	€ 350

RE08 – ADVANCED PVT AND EOS FLUID CHARACTERISATION

Curtis H. Whitson

5 days

Phase behaviour plays an important role in most oil recovery processes and is an essential part of all enhanced oil recovery processes. Thus, understanding of the underlying phase behaviour is an important first step towards description and modelling of Enhanced Oil Recovery (EOR) processes. The use of both laboratory experiments and correlation to obtain PVT data will be discussed and illustrated using practical examples. Participants are urged to bring their own PVT reports. Fluid characterization with an EOS using commercial PC-based programs will be performed. PC's and software will be provided.

OUTLINE

- Traditional and modified black-oil PVT properties
- Using correlations and laboratory data to obtain PVT properties
- Laboratory PVT experiments - how they are conducted, for what purpose and how they should be applied
- Fluid characterization with an equation of state (EOS)
- Heptanes - plus characterization
- Tuning an EOS by regression
- Pseudoizing to reduce the number of components
- Generating modified black-oil properties
- Slim tube simulations and MMP calculations

WHO SHOULD ATTEND

This course is aimed at practicing reservoir engineers and researchers dealing with phase behaviour, miscible displacement and reservoir simulation. Process and chemical engineers will also be able to follow the course.

2006 Schedule & Fees

Vienna, Austria		
November 27 - December 1	Course Fee	€ 2375 plus VAT
	Computer Fee	€ 300 plus VAT

2007 Schedule & Fees

Vienna, Austria		
November 26 - 30	Course Fee	€ 2380 plus VAT
	Computer Fee	€ 300 plus VAT

RE10 – STREAMLINE SIMULATION

Marco R. Thiele

Rod Batycky

Martin J. Blunt

3 days

Streamline simulation has become a powerful complementary tool to more traditional finite difference approaches for dynamic reservoir simulation. In some cases, streamline simulation can be considered an alternative, allowing to rapidly evaluating multiple geological and engineering scenarios for quick decision making. The objective of this course is to introduce practicing geoscientists to this novel technology, allowing them to understand where streamline simulation can be applied successfully.

OUTLINE

- The theory and history of streamline-based flow simulation
- How streamlines have become a complementary tool to more traditional simulation approaches
- Advantages and disadvantages of streamlines
- The use of streamlines in the traditional areas of reservoir engineering including:
 - Upscaling
 - Full-field simulations
 - History matching
 - Sensitivity on input data / uncertainty
 - Infill optimisation
 - Allocation balancing
- The implications of novel engineering data produced by streamlines
- The future of streamline-based flow simulations
- Examples

WHO SHOULD ATTEND

This course is designed for reservoir engineers and geoscientists who want a detailed background on streamline based flow simulation. The emphasis will be on recognizing opportunities where streamline simulation can be applied successfully for reservoir engineering purposes.

2007 Schedule & Fees

Vienna, Austria		
July 18 - 20	Course Fee	€ 1795 plus VAT
	Computer Fee	€ 250 plus VAT

RE11 – PRESSURE TRANSIENT TEST DESIGN AND INTERPRETATION New

Christine Ehlig-Economides

5 days

This course will provide a comprehensive view of pressure transient test design and interpretation.

WHAT YOU WILL LEARN

1. How well test models are derived and computed
2. Experience how to simulate pressure transient test behavior and how to design well tests
3. Experience how to process, quality check, diagnose, and analyze pressure transient data
4. Understand the behavior of well and reservoir response patterns observed in well tests, what well and reservoir parameters can be quantified, and how to quantify them from pressure transient data

OUTLINE

- Modeling – Derivation and Solution of the Diffusivity Equation
- Interpretation Basics – Wellbore Storage and Skin, Flow Regime Analysis
- Test Design
- Gas and Multiphase Well Testing
- Fractured Reservoirs
 - Advanced Interpretation – Limited Entry and Reservoir Limits
 - Advanced Interpretation – Testing in Horizontal and Hydraulically Fractured Wells
 - Multiwell and Interference Testing
- Examples

WHO SHOULD ATTEND

Engineers and geoscientists interested in well and reservoir evaluation from well tests and production data.

2007 Schedule & Fees

Vienna, Austria		
July 23 - 27	Course Fee	€ 2380 plus VAT
	Computer Fee	€ 350 plus VAT

RE14 – SPECIAL CORE ANALYSIS

Jess Stiles

5 days

The extensive use of reservoir simulation in the evaluation, development and management of oil fields is placing increased importance on the correct use of results from special core analysis. Correct use of these data requires knowledge of the history of the core. The course covers such topics as coring operations and core preservation techniques. Laboratory measurement methods are addressed, since results are affected by the techniques used and the test conditions. Results that are considered valid require adjustment and refinement, and an understanding of laboratory techniques is needed to do this, since each method has its own strengths and weakness. The reasons why steady state and unsteady state waterflood results are often different are explained in this way. There is emphasis throughout the course on identifying invalid or questionable data and making the necessary refinements to the data which are considered to be valid.

WHAT YOU WILL LEARN

- Carry out a systematic review of a laboratory report and differentiate results that are clearly invalid from those that may be reliable.
- Define the strengths and weakness of the various laboratory measurement techniques and identify which portions of reported relative permeability curves are likely to require refinement.
- Analyse and evaluate reported relative permeability curves and make necessary adjustments and refinements.
- Relate relative permeability results to rock types.
- The course will also prepare participants to formulate a special core analysis program for a new well or field.

OUTLINE

- Introduction
 - Uses and importance of accurate special core analysis results in reservoir engineering calculations; Key challenges in using results
- Validating SCAL Data
 - What to look for during review of SCAL reports
 - A systematic approach to data validation; review checklists
- Wettability
 - Wettability concepts, measurement techniques, types of wettability
 - Factors which effect reservoir wettability and how wettability can inadvertently be altered during core handling; Wettability restoration
- Using of Capillary Pressure to Define Connate Water Saturation
 - Measurements techniques. Systematic analysis of results
 - Adjusting laboratory data to reservoir conditions
 - Relating capillary pressure data to height above original OWC
- Water-Oil Relative Permeability
 - Measurement methods and techniques. Wettability considerations
 - Importance of test procedures and test conditions
 - Special problems with intermediate wettability reservoirs
 - Refining laboratory results. Integrating, grouping and averaging
 - Hysteresis in water-oil relative permeability
- Gas-Oil Relative Permeability
 - Measurements techniques
 - Difference between gas-oil and water-oil data. Critical gas saturation
 - Gravity drainage mechanism and extending relative permeability curves
- Reservoir Characterization
 - Examples of relationships between relative permeability and other rock characteristics
 - Characterisation techniques for differentiating rock types
- Residual Oil Saturation
 - Ambiguity and alternative definitions. Difficulties in determining
 - Estimating from relative permeability data. Effect of wettability

WHO SHOULD ATTEND

Reservoir engineers; supervisors and managers who review simulation results; laboratory personnel involved with SCAL measurements; production geologists and petrophysicists working in integrated teams.

2007 Schedule & Fees

Abu Dhabi, UAE		
February 25 - March 1	Course Fee	€ 2355
	Computer Fee	€ 350
Vienna, Austria		
November 19 - 23	Course Fee	€ 2220 plus VAT
	Computer Fee	€ 300 plus VAT

RE15 – NATURAL GAS ENGINEERING New

Mark Miller

5 days

This course covers modern engineering concepts and methods used for the analysis and design of recovery projects for natural gas reservoirs, using an approach that integrates various methodologies for optimizing reservoir performance. The course begins with a discussion of basic gas properties, demonstrating how properties may be obtained from both correlations and laboratory measurements. The three primary elements of the gas production system are next discussed – production equipment, wells, and the reservoir as a whole. In each section, fundamental principles are presented, emphasizing those relating pressure and flowrate. The final section of the course integrates equipment, well, and reservoir performance relationships to develop methods for analyzing and forecasting production rate vs. time.

OUTLINE

- Determination of Gas Properties
 - Gas deviation factor, density, compressibility, FVF, viscosity
 - Water vapor content and hydrate formation
 - Retrograde condensation, phase behavior
- Gas Production Systems
 - Gas flow in pipelines and wells
 - Metering, compression separation and surface processing
- Gas Well Performance
 - Transient, steady, and pseudosteady flow
 - Pressure transient and deliverability testing
- Gas Reservoir Analysis
 - Volumetric and compressive reservoirs
 - Water influx
 - Retrograde condensate reservoirs
- Production Forecasting
 - Integration of material balance, well, and equipment performance
 - Aquifer performance
- Unconventional Gas

WHO SHOULD ATTEND

The course is primarily designed for engineers currently or potentially involved in natural gas production or storage operations. Others seeking an overview of production issues in natural gas reservoirs may also find the course beneficial.

2007 Schedule & Fees

Vienna, Austria		
February 5 - 9	Course Fee	€ 2205 plus VAT
Abu Dhabi, UAE		
October 28 - November 1	Course Fee	€ 2355

RE16 – NATURALLY FRACTURED RESERVOIR ENGINEERING New

Mark Miller

5 days

The presence of extensive networks of natural fractures creates a number of challenges for evaluating and optimizing recovery from naturally fractured reservoirs. The use of dual porosity or dual permeability approaches is often necessary, providing the basis for both analytical models (such as used for pressure transient analysis) as well as for reservoir simulation. Appropriate application of dual porosity and dual permeability models, however, rely on: a) accurate representation of the fracture system as an equivalent porous and permeable medium, and b) accurate determination of the rates of fluid transport between matrix blocks and the fracture system. This course covers modern reservoir engineering methods applicable to naturally fractured reservoirs, focusing on the application of dual porosity and dual permeability models. Although information will be presented on analytical models and methodologies, a primary focus of the course will be on the use of dual porosity/dual permeability numerical reservoir simulation.

OUTLINE

- Characteristics of Natural Fracture Systems
 - Fracture genesis, morphology, orientation, spacing, aperture
 - Fracture identification and characterization
- Effective Petrophysical Properties of Natural Fracture Systems
 - Porosity, pore volume compressibility, permeability
 - Relative permeability, capillary pressure
- Matrix-Fracture Transfer
 - Fluid expansion and gravity drainage
 - Countercurrent imbibition, re-imbibition, and block-to-block processes
- Dual Porosity/Dual Permeability Modeling
 - Shape factors
 - Gravity drainage and imbibition models, pseudo-functions
- Numerical Simulation of Naturally Fractured Reservoirs
 - Developing basic data
 - Evaluating and testing transfer functions
 - History matching and sensitivity studies
- Applications of Improved Oil Recovery in Naturally Fractured Reservoirs

WHO SHOULD ATTEND

This course is designed for reservoir engineers and geoscientists involved in the development and management of naturally fractured reservoirs. No experience in reservoir simulation is required.

2007 Schedule & Fees

Vienna, Austria		
February 12 - 16	Course Fee	€ 2205 plus VAT
Abu Dhabi, UAE		
November 4 - 8	Course Fee	€ 2355

Drilling

- **DR01 – Drilling for Non-Drillers**
- **DR02 – Drilling Knowledge Management and Sharing**
- **DR04 – Advanced Drilling Engineering**

DR01 – DRILLING FOR NON-DRILLERS

Gerhard Thonhauser

3 days

The course covers an introduction to drilling engineering including rig components, tubulars, bits, directional drilling and bottom hole assemblies, hydraulics etc. The different topics are presented along the typical well planning and actual drilling work flow. Special attention is given to drilling process monitoring to enable the participant to maximise the use of information provided during drillig operations.

OUTLINE

- Drilling Terminology (rig components, drilling equipment etc.)
- The Well Planning Process (covering all steps from defining the location to the definition of time versus depth and cost estimates)
- Trajectory Design (fundamentals of trajectory design)
- Drill String and BHA Design (torque and drag consideration and directional drilling BHA's)
- Casing Program, Casing Design (definition of casing setting depths, kick scenarios, casing selection with load criteria and minimum cost design)
- Bit Selection (bit types and characteristics, nozzle selection)
- Hydraulics (fundamentals of wellbore fluid hydraulics, hydraulics optimization)
- Mud Design (mud systems, mud selection criteria, trouble shooting)
- Aspects of drilling monitoring with an overview of morning reporting and rig sensor measurements, as well as the use and useability of this information

WHO SHOULD ATTEND

This course is designed for petroleum engineers and geoscientists as a basic introduction to drilling engineering.

2007 Schedule & Fees

Abu Dhabi, UAE

April 15 - 17

Course Fee

€ 1950

Computer Fee

€ 300

DR02 – DRILLING KNOWLEDGE MANAGEMENT AND SHARING

Gerhard Thonhauser

2 days

Current drilling reporting practice does not always acknowledge the need for knowledge exchange throughout a drilling organisation from management via engineering to operations. This course discusses novel approaches to knowledge exchange and sharing; it outlines the importance of data quality control and data collection following a strategy based on analysis requirements.

OUTLINE

This course will cover the following aspects of drilling knowledge management and analysis:

- The value of drilling knowledge
- Drilling knowledge exchange versus conventional daily reporting
- Removing barriers to knowledge exchange
- The use of industry standards (POSC, WIME, WITSML)
- Concepts of alternative reporting processes (automated reporting) using feedback, generating lessons learned
- Drilling analysis based on new concepts of knowledge exchange

WHO SHOULD ATTEND

This course is designed for drilling engineers and drilling managers.

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

DR04 – ADVANCED DRILLING ENGINEERING

Gerhard Thonhauser

5 days

This course will cover selected areas of drilling engineering such as horizontal and extended reach drilling, advanced hydraulics and hole cleaning. It includes data analysis procedures and real time data analysis. The course comprises theoretical as well as practical sections.

OUTLINE

- Decision making - why horizontal, why extended reach
- Complex trajectory design
- Drill string and BHA design
- Casing program, casing design considerations
- Bit optimisation
- Hydraulics optimisation
- Mud design
- Hydraulics – advanced cuttings transport analysis

WHO SHOULD ATTEND

This course is designed for engineers with a good understanding of the principles of drilling engineering. Participants should have a fair understanding of computers and standard software tools such as MS Excel.

2007 Schedule & Fees

Vienna, Austria

July 16 - 20	Course Fee	€ 2205 plus VAT
	Computer Fee	€ 300 plus VAT

Kuala Lumpur, Malaysia

September 3 - 7	Course Fee	€ 2355
	Computer Fee	€ 350

Production Engineering

- **PR01 – Production Engineering I – Inflow Performance, Nodal Analysis, Artificial Lift and Surface Facilities**
- **PR01 – Production Engineering II – Well Completions, Formation Damage and Stimulation**
- **PR07 – Advanced Hydraulic Fracturing**
- **PR08 – Artificial Lift Design and Optimization**
- **PR09 – Sucker Rod Pumping**
- **PR10 – Multiphase Flow Metering**

PR01 – PRODUCTION ENGINEERING I –

New

INFLOW PERFORMANCE, NODAL ANALYSIS, ARTIFICIAL LIFT AND SURFACE FACILITIES

Mukul M. Sharma

5 days

This course is a part of a set of two courses that cover topics in production engineering. The two courses can be taken together or each can be taken independently. Participants registering for either course will be expected to have a basic working knowledge of engineering concepts. Experience in the field is very desirable since the courses deal with field application of advanced production engineering principles and practice.

Production engineering encompasses diverse topics that relate to methods and tools used to efficiently produce oil and gas from wells. This first course is focused on reservoir inflow performance, multi-phase flow in the wellbore and surface production systems. Nodal analysis is used to estimate the production rate a well can deliver. The design of gas-lift and pump-assisted lift systems is discussed. Surface production systems used to separate and treat the produced fluids at the well site are discussed. Production logging and well testing diagnostic techniques for optimizing well production are covered together with techniques to forecast production.

The primary objective of the courses is to educate reservoir, production and surface facilities engineers in all key aspects of production engineering in oil and gas fields.

The course will be taught using a set of course notes specifically designed for the course. The course covers the fundamental theory, and the latest technological developments. It particularly emphasizes field application through lots of practical field examples, exercises and case studies.

OUTLINE

- Introduction and Definitions
- Inflow performance for oil wells
- Inflow performance for gas wells
- Single phase and multi-phase flow in wellbores
- Nodal Analysis
- Oil and gas well testing
- Gas lift
- Pump assisted artificial lift
- Production logging
- Surface gathering, separation and fluid handling systems
- Scale, bacteria and corrosion problems
- Production forecasting for oil and gas wells

WHO SHOULD ATTEND

The course targets reservoir, production and surface facilities engineers (and geoscientists), responsible for managing the reservoir and maximizing the production performance of oil and gas wells

2007 Schedule & Fees

Vienna, Austria
July 2 - 6

Course Fee

€ 2350 plus VAT

PR02 – PRODUCTION ENGINEERING II – WELL COMPLETIONS, FORMATION DAMAGE AND STIMULATION

New

Mukul M. Sharma

5 days

This course is the second in a set of two courses that cover topics in production engineering. The two courses can be taken together or each can be taken independently. Participants registering for either course will be expected to have a basic working knowledge of engineering concepts. Experience in the field is very desirable since the courses deal with field application of advanced production engineering principles and practice.

This second course is focused on well completions, well productivity, formation damage and well stimulation. It covers operational practices and the use of tools and methods that help maximize the production from existing fields. The impact of drilling, perforating and well completion operations on well productivity is discussed. Formation damage due to fines migration, clay swelling, paraffins, asphaltenes, inorganic scale, water blocking and condensate dropout are covered in detail. The last half of the course focuses on the principles of acidizing and fracturing methods and the design and evaluation of acid treatments and hydraulic fracturing jobs in the field.

The primary objective of the courses is to educate reservoir, production and surface facilities engineers in key aspects of production engineering in oil and gas fields.

The course will be taught using a set of course notes specifically designed for the course. The course covers the fundamental theory, and the latest technological developments. It particularly emphasizes field application through lots of practical field examples, exercises and case studies.

OUTLINE

- Introduction
- Impact of drilling practices on well productivity
- Cementing and perforating operations
- Fines migration and clay swelling
- Sand control: Gravel packing and frac packing
- Paraffin and asphaltene deposits
- Water blocking, condensate banking and wettability alteration
- Water injection wells
- Sandstone acidizing
- Carbonate acidizing
- Fundamentals of fracture mechanics
- Fracturing fluids and proppant transport
- Hydraulic fracture design
- Production performance of hydraulically fractured wells

WHO SHOULD ATTEND

The course targets reservoir, production and surface facilities engineers (and geoscientists), responsible for managing the reservoir and maximizing the production performance of oil and gas wells.

2007 Schedule & Fees

Vienna, Austria
July 9 - 13

Course Fee

€ 2350 plus VAT

PR07 – ADVANCED HYDRAULIC FRACTURING

Michael Economides

5 days

This course has the ambition to close the gap between theory and practice in what is arguably the most common stimulation/well completion technique in petroleum production. The course takes a new and ascendant position on the most critical link in the sequence of events in this type of well stimulation – the sizing and the design of hydraulic fracture treatments. The course includes extensive case studies and comes with a new professional hardbound textbook, "Unified Fracture Design," and associated design software.

OUTLINE

- Fracturing applications (from production enhancement to sand control to hydraulic fracturing)
- Fracture production mechanism
- Optimisation of fracture geometry
- Classic fracturing theory and fracture mechanics
- Stress and stress distribution
- Rock and fracture mechanics
- Rheology and fracturing fluid flow
- Material balance, fracture geometry and leakoff
- Fracture design procedure
- High-permeability fracturing, HPF
- Fracturing materials, fluids, proppants
- Injection test interpretation, mini-fracs
- Fracture propagation, tip retardation, CDM
- Execution of fractures in high-permeability reservoirs
- Fracturing equipment and field practices
- On-site quality control
- Treatment evaluation
- Deviations from ideality, advanced concepts

WHO SHOULD ATTEND

Relatively experienced petroleum engineers who wish to gain a more in-depth insight in the subject by one of the world's foremost authorities on the subject.

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

PR08 – ARTIFICIAL LIFT DESIGN AND OPTIMIZATION

Gabor Takacs

5 days

More than 80% of the world's oil wells are placed on some kind of artificial lift, the most significant of which are sucker-rod pumping, gas lifting, and electric submersible pumping. In order to reach maximum profits from such installations, production engineers are required to design and operate them at their peak efficiencies. To achieve this goal, a thorough understanding of the basic design of the different lift methods, as well as proper skills to achieve optimum conditions are required. The course covers the basic design principles of the most common artificial lift methods, illustrated with many classroom examples. In addition to this, available optimization procedures for each type of artificial lift are detailed in order to develop the necessary skills in trainees. Throughout the course, trainees will solve examples and class problems on the computer.

WHAT YOU WILL LEARN

- Recognize the relative advantages and limitations of the different artificial lift methods
- Understand the sucker-rod string design options and select the right design process for their fields
- Determine the pumping parameters of an existing installation by using the API RP 11L procedure
- Understand the grave importance of optimizing the complete pumping system; and find the most energy-efficient conditions
- Describe the operation of a well placed on continuous flow gas lift with the use of NODAL analysis techniques
- Optimize the operation of a single continuous flow gas lift installation
- Properly allocate the available lift gas among several wells
- Understand the operation of ESP components under different well conditions
- Design an ESP installation for normal and gassy well service
- Understand the advantages of using VSD units
- Analyse and troubleshoot ESP installations

OUTLINE

- Introduction to Artificial Lift Methods
- Basic Features of Artificial Lift Methods
- Comparison and Selection of Lift Methods
- The Sucker-Rod Pumping System
- Sucker-Rod String Design
- Use of the Wave Equation
- Torsional and Power Requirements of Pumping
- Optimum Design of the Pumping System
- Features and Application of Gas Lifting
- Pressure Operated Gas Lift Valves
- Continuous Flow Gas Lift Design
- Optimization of Continuous Flow Gas Lift Installations
- Allocation of Lift Gas to a Group of Wells
- Unloading of Continuous Flow Installations
- Gas Lift System Design
- ESP Components and their Operation
- Pumping Viscous Fluids with ESPs
- Application of ESPs in Gassy Wells
- Use of Variable Speed Drives
- Design of ESP Installations
- Analysis and Troubleshooting of ESP Installations

WHO SHOULD ATTEND

Production engineers, field supervisors who select, design, install, evaluate, or operate artificial lift systems and have a basic knowledge of the design and analysis of such installations. Basic computer skills are required.

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

PR09 – SUCKER ROD PUMPING

Gabor Takacs

5 days

About two-thirds of oil wells worldwide are being produced by sucker rod pumping installations. Ensuring that these systems operate at their optimum efficiencies is of paramount importance. Proper design, continuous operating analysis and troubleshooting are the keys for successful long-term operations. This course focuses on the optimisation of complete pumping systems, how to find the most energy-efficient conditions for any installation and how to analyse and troubleshoot existing installations. After completion of the course, participants will:

- Have a better understanding of sucker rod string design options and be able to select the right design process for their fields
- Have a working knowledge of RP 11 L calculations and be aware of its limitations and possible improvements
- Be able to properly counterbalance a pumping unit
- Understand the basics of polished rod dynamometry and the role of downhole cards in analysing rod pumping installations

OUTLINE

- The sucker rod string
- The sucker rod pumping unit
- Pumping system design with API RP 11L procedure
- Calculation of gearbox torques
- Optimisation of the sucker rod pumping system
- Analysis and troubleshooting of sucker rod pumped installations

WHO SHOULD ATTEND

Production engineers working with sucker rod pumping who have a basic knowledge in the design and analysis of this type of artificial lifting.

**For further information on this course
please contact training@hoteng.com
or +43 3842 430530**

PR10 – MULTIPHASE FLOW METERING

Gerard Segeral

5 days

The objective of this course is for participants to acquire up-to-date expertise on state-of-the-art multiphase metering techniques and become aware of their advantages as well as their limitations. The meter multiphase selection, the installation, the operation, the interpretation, and the maintenance will be treated during the course.

OUTLINE

- Introduction to surface well testing and flow monitoring
- Single phase flow metering
 - Separation techniques
 - Differential pressure Flow meters
 - Volume Flow meters
 - Mass Flow meters
- Two phase flow metering
 - Water cut meters
 - Wet gas meters
 - Tracers (die and radioactive)
 - Gamma-ray densitometry (single and multi energy)
- Three phase flow metering
 - Multiphase meters basic principles
 - Multiphase meters manufacturers
 - Periodic testing
 - Sub sea flow meters
- MPFM
 - Benefits
 - Flow regimes
 - Operating envelopes
 - Uncertainties in multiphase metering
 - Flow loop evaluation tests
 - MPFM performance predictors
- PVT and fluid properties for MPFM's
 - Multiphase surface sampling
 - From standard to line conditions
 - From line to standard conditions
 - Densities, viscosities, volume factors, gas solubilities, interfacial tension, dielectric constants, conductivities and atomic attenuations.
 - PVT Correlations, calculators, simulators
- Multiphase flow meter selection
 - When, where and how, surface or downhole
- MPFM maintenance

NOTE: a test is proposed at the end of the course to (self) evaluate the acquired knowledge.

WHO SHOULD ATTEND

This course is designed for those who have to select, install, operate, interpret and maintain bottom hole, subsea, topside or land multiphase flow meters. Participants should have some basic knowledge and understanding of conventional fluid metering and fluid properties.

2007 Schedule & Fees

Vienna, Austria

February 12 - 16

Course Fee

€ 2205 plus VAT

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Integrated Reservoir Management
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training course.**

INSTRUCTORS

Rod Batycky is co-founder of Streamsim Technologies, Inc. a company that develops commercial streamline-based reservoir simulators for the petroleum industry. Prior to forming Streamsim, he received his M.Sc. and Ph.D. degrees in petroleum engineering from Stanford University where he was also awarded the Cedrick K. Ferguson Medal for outstanding SPE publication by an author under the age of 33. Previously he worked as a reservoir engineer with Shell Canada, and obtained a B.Sc. in chemical engineering from the University of Calgary. He is currently involved in R&D and commercialization of new technologies for streamline-based flow simulation, including large-scale reservoir modeling, assessing uncertainty, and assisted history matching.

István (Steve) Bérczi is Adviser-in-chief E&P to the Group CEO of MOL, the Hungarian Oil and Gas Company and Professor Adjunct of Petroleum Geology & Reservoir Management. Previous assignments included various executive and non/executive managerial positions within MOL and Senior Consultant with HOT Engineering. He was visiting professor at the Mining University of Leoben, Austria and at Ain Shams University, Cairo, Egypt and has been instructor of numerous short courses and on-the-job trainings programs. He holds a Ph.D. in petroleum geology from the University of Miskolc and a M.Sc. in geology from Eötvös Loránd University of Science in Budapest. He has been member of many professional/scientific organizations (AAPG; European Federation of Geologists; SPE; London Institute of Petroleum; Hungarian Society of Mining and Metallurgy; Hungarian Academy of Sciences, Croatian Academy of Science and Art; Hungarian National Committee of the World Petroleum Congresses).

Mike Carlson founded Applied Reservoir Engineering & Evaluation, Ltd., a petroleum engineering consulting firm specializing in reservoir engineering, numerical simulation, and economic evaluations. He has more than 25 years experience in the petroleum industry, working for such corporations as AMOCO Canada Petroleum Company Ltd. and Canadian Hunter. He has taught various short courses in the use of production and exploitation simulation software for such companies as Scientific Software-Intercomp and McDaniel & Associates Consultants Ltd. He has authored more than 15 different technical papers and is a member of SPE, APEGGA, the Canadian Well Logging Society, and the Canadian Society of Petroleum Geologists. He has served as Technical Program Committee Chairman for the Canadian Institute of Mining, Metallurgy & Petroleum (CIM), Director of the National Board of the Petroleum Society of CIM, and was on the Industry Advisory Committee for the University of Regina Petroleum Engineering. His most recent publication is a reference work titled "Practical Reservoir Simulation" (2004, PennWell Corp). Currently, he is Vice President of Engineering for a Calgary based Junior oil and gas company.

Mark Deakin is an experienced and innovative mainstream petrophysical consultant, author and enthusiastic tutor in petrophysics. He holds a Ph.D. in 'Integrated Petrophysics' from London's Imperial College, is an ex Amoco petrophysicist, and has 25 years experience, including 12 as a lecturer, independent consultant and Director of his own consulting company. He has performed over 40 detailed reservoir studies, primarily in Southeast Asia's difficult carbonates and stacked 'low-contrast-pay' reservoirs and chooses to work frequently in operations to keep abreast of new LWD, coring and wireline technology. Deakin's holistic approach brings each field's development uncertainties into sharp focus and then systematically reduces them by a cost-benefit ranked plan of action. Innovative integration and clear, practical recommendations typically result in improved simulation input and increased reserves, at low cost. Soon after his petrophysics PhD Deakin authored the first public petrophysical data integration course. He has continually evolved and chaired this and other courses, publicly and in-house, for eight years through OGCI, HOT and independently. Mark is a long standing member of the SPWLA.

John H. Doveton received his Ph.D. in Geology from the University of Edinburgh and worked as an exploration geologist for Mobil. He is currently a Senior Scientist, as well as Adjunct Professor in Geology and Petroleum Engineering at the University of Kansas. He has taught log analysis at universities and in the industry in the United States, Canada, Trinidad, the Middle East and Europe since 1975. He has written over 80 scientific articles and reviews and received the 1981 Best Paper Award from 'The Log Analyst'. He has been an Associate Editor for the AAPG Bulletin, Geophysics, and the SPWLA. In 1998, he received the IAMG Griffiths Award for Excellence in Teaching. He is the author of the textbooks 'Log Analysis of Subsurface Geology', 'Geologic Log Analysis Using Computer Methods', and 'Geologic Log Interpretation', as well as co-author of 'Probability Methods in Oil Exploration'.

Jeffrey J. Dravis is a carbonate geologist and owner of Dravis Geological Services, which conducts exploration and reservoir development projects in the U.S., Canada and overseas. He specializes in unraveling the controls on diagenesis and porosity evolution in carbonate sequences that aid in exploiting carbonate reservoirs. Jeff applies innovative petrographic techniques to relate rock-based observations to well and seismic data, helping clients better define their subsurface plays and prospects. More recently, he was involved with the new and surprising oil discovery in the Cretaceous Glen Rose of southwest Texas, the Cretaceous James Limestone around the northern U.S. Gulf of Mexico, and Devonian limestone and dolostone plays in western Canada. He also has worked carbonate sequences in Africa, the Middle East, Southeast Asia and South America, as well as the Jurassic and Cretaceous of the Gulf of Mexico. Jeff also is president of Dravis Interests, Inc., through which he conducts applied carbonate training seminars for industry. Since 1987, he has presented over 115 in-house and field carbonate seminars for industry clients, including dozens of field seminars on Caicos Platform in the southern Bahamas. Jeff received his B.S. (Geology) from St. Mary's University in San Antonio, his M.S. (Marine Geology) from the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences, and Ph D (Geology) from Rice University, Houston. He worked for Exxon Production Research Company in Houston for

eight years, before becoming a full-time consultant over 17 years ago. Since 1987, Jeff has been an adjunct professor at Rice, where he teaches part-time and mentors students.

Christine Ehlig-Economides was born in Pasadena, Texas, in 1949. She received a B.A. degree from Rice University (1971, Math-Science), an M.S. degree from the University of Kansas (1977, Chemical Engineering), and a Ph.D. degree from Stanford University (1979, Petroleum Engineering). From 1980-1983 Dr. Ehlig-Economides was an Assistant Professor at the University of Alaska, Fairbanks where she became Petroleum Engineering Department Head and introduced the B.S. and M.S. degree programs in Petroleum Engineering. In 1983 she joined Flopetrol Johnston Schlumberger in Melun, France. After 20 years with Schlumberger in various positions she is returning to academia as a full professor of Chemical Engineering at the University of Houston, where she has served as Director of the Petroleum Engineering Program as an Adjunct Professor since January 2000. Dr. Ehlig-Economides has received numerous awards from the Society of Petroleum Engineers and was elected to the National Academy of Engineering in 2003. She has published more than 50 papers, has authored 2 patents, and has lectured or consulted in more than 30 countries. Dr. Ehlig-Economides is internationally recognized for expertise in reservoir engineering, pressure transient analysis, integrated reservoir characterization, complex well design, and production enhancement. She is currently working to introduce degree programs in Energy Engineering at the University of Houston. Her professional service includes: Executive Editor of the Society of Petroleum Engineers Formation Evaluation journal 1995-96; SPE Distinguished Lecture 1997-98; and numerous posts as chairman or member of SPE committees and task forces.

Michael Economides is one of the most instantly recognizable names in the petroleum and chemical engineering professions and the energy industry. He is Professor at the Cullen College of Engineering, University of Houston, teaching and conducting research. Previously, he was the Samuel R. Noble Professor of Petroleum Engineering at Texas A&M University and served as Chief Scientist of the Global Petroleum Research Institute (GPRI). Prior to joining the faculty at Texas A&M University, Professor Economides was the Director of the Institute of Drilling and Production at the Leoben Mining University in Austria. Before that, Dr. Economides worked in a variety of senior technical and managerial positions with a major petroleum services company. Publications include authoring or co-authoring of 10 professional textbooks and books, including "The Color Of Oil" and almost 200 journal papers and articles. He does a wide range of industrial consulting, including major retainers by national oil companies at the country level and by Fortune 500 companies, including recent work in information technologies. He has had professional activities in over 70 countries. In addition to his technical interests he has written extensively in wide circulation media in a broad range of issues associated with energy and geopolitical issues.

Rudolf K. Fruhwirth is the founder of NGS – Neuro Genetic Solutions Ltd., providing AI solutions to the oil and gas industry. He holds a PhD and MSc in Petroleum Engineering from Mining University Leoben, Austria. He has more than 20 years experience as leading geoscientist and field engineer in a major Austrian research company. He is author of numerous publications, and assistant professor for computational intelligence and computer tomography at the University of Leoben. He has developed cVision, the first fully automatic neural network tool and heads the research and development department with NGS.

Leonhard J. Ganzer is currently holding the position of Technical Director of SST Simulation Software Technology GmbH. He previously worked for HOT Engineering in several technical and software development related positions and served in the Leoben, Houston and Denver offices. He holds a Ph.D. in Reservoir Engineering and a M.Sc. in Petroleum Engineering from the Mining University Leoben and the Colorado School of Mines, USA. He has ten years of experience in the petroleum industry and academia, with key qualifications in reservoir engineering, reservoir simulation and software development. His primary interests are compositional and fractured reservoir simulation, hydrocarbon fluid phase behavior and multiphase flow in porous media. He is also an experienced lecturer in reservoir engineering and simulation topics and author of several SPE papers.

Sebastian Lüning received his Diploma in Geology/Palaeontology from the University of Goettingen in 1994 and his PhD from the University of Bremen (Germany) in 1997. Subsequently he gained postdoctoral experience at the University of Wales and the Royal Holloway College (London). As a consultant he worked for Lasmo plc (London) on Palaeozoic petroleum systems of North Africa and hydrocarbon prospectivity of the Kufra Basin (SE Libya). In 2000 he moved to the University of Bremen as a researcher to work with the Manchester-based North Africa Research Group on 'Silurian, Devonian and Cretaceous source rocks of North Africa and Arabia' and other projects related to the regional petroleum geology of North Africa. In 2004 he was awarded the Habilitation and in 2005-2006 he was Visiting Professor for Sedimentology at the University of Vienna (Austria). Since 2006 he is an independent geological consultant and trainer. Sebastian is the producer and author of the training video series 'Petroleum Geology of Southern Libya'. He carried out consulting projects for various companies including Oxy, RWE-Dea and Shell and has presented several short courses to the petroleum industry.

Mark A. Miller, PhD, PE served on the faculty of the University of Texas at Austin Department of Petroleum and Geosystems Engineering for over 18 years. While teaching at UT Austin, Dr. Miller conducted research and taught graduate and undergraduate courses in reservoir engineering, natural gas engineering, reservoir simulation, naturally fractured reservoirs, petrophysics, petroleum fluid properties, and thermal oil recovery.

INSTRUCTORS

He received several awards for teaching excellence. Dr. Miller's consulting work has included a variety of projects and continuing education courses for a many industrial firms, including Schlumberger, IBM, Tenneco Oil, Amerada Hess, ARCO, Chevron, Sonat, MCN Corp., CALTEX, Texaco, Shell, Japan Vietnam Petroleum Co., Vietnam Petroleum Institute, Tecpetrol, EOG Resources, Rosneft, and PEMEX. From 2002 to 2006, Dr. Miller served as Senior Reservoir Engineer for Object Reservoir, a reservoir modeling technology company. Dr. Miller is a co-author of the upcoming Society of Petroleum Engineers Handbook chapter on Natural Gas Engineering.

Roger L. Nutt is a petrophysical consultant. He has nearly 40 years experience in the oil and gas industry; eight years with Schlumberger as a wireline engineer and manager; and much of the remainder with major oil companies as a senior petrophysicist and manager of formation evaluation. For the last ten years he has been an active petrophysical consultant and an instructor for OGCI. His extensive knowledge of open and cased hole log interpretation, reservoir monitoring and oilfield practice has been gained in North Africa, the US Gulf Coast, MidWest and Rocky Mountains, the Western Canada Basin, the North Sea, the Middle East and CIS. He is the author of several papers on cement bond logging, time lapse reservoir monitoring, and casing corrosion, and has made presentations to several technical conferences. Mr. Nutt is a member of the Institute of Physics and a Chartered Physicist. He holds a B.Sc. in Physics (with Geology and Electrical Engineering) from the Royal Victoria University of Manchester.

Guido Port holds a M.Sc. and Ph.D. in Geology from the University of Cologne (Germany). He has worked as Research Assistant at the University of Basel (Switzerland) and gained experience as lecturer for Structural Geology, Field Mapping and Palaeomagnetism at the University of Cologne. Since 2001 he worked as an IT consultant until he was engaged as Geologist at IES (Integrated Exploration Systems, Germany), where his assignment includes expertise for petroleum systems analysis with PetroMod and training of specialists in this field, PetroMod training and consulting, and product management. He is also responsible for technical support or consulting for major projects with partners such as ADCO, Devon, GNPOC, HRT, Kerr McGee, Onhym, Origin, Pemex, Petrobras, RWE DEA, Stratageo, and USGS. Guido has professional experience in petroleum geology with main focus on applied petroleum systems modelling for consulting and training, in software product management, in software testing including test design, test automation, training of software testers as well as a strong background in palaeomagnetism, rock magnetism, and paleoclimatology.

Brian Russell is currently Vice President of Hampson-Russell, a geoscience software company that was co-founded in 1987 by Brian Russell and Dan Hampson. In 2002, Hampson-Russell was acquired by Veritas DGC Inc. Exploration Services (VES), and offers software and on-site training in the areas of seismic inversion, AVO, multi-component seismic analysis, and time-lapse seismic analysis from their offices in Calgary, Houston, London, Perth, and Dubai. Brian holds a B.Sc. in geophysics from the University of Saskatchewan, Canada, a M.Sc. in geophysics from Durham University, U.K., and is currently completing a Ph.D. in geophysics at the University of Calgary, Canada. He has over twenty-seven years of experience in the areas of seismic interpretation, research and training with petroleum companies and geophysical contractors, and has given courses throughout the world on advanced geophysical technology. Brian was President of the Society of Exploration Geophysicists (SEG) during 1999-2000.

Jürgen H. Schön is consultant and Honorary Professor at the Mining University, Leoben. In his career, he has held the chair for Well Logging and Petrophysics at the Bergakademie Freiberg (Germany, 1980-1991). In 1991 he moved to the Institute of Applied Geophysics, Joanneum Research, in Leoben, Austria; from 2000 to 2004 he was science manager of the institute, and retired in 2004. He was Visiting Professor at the Colorado School of Mines in 1993. He is a member of the SPWLA and got in 2005 the "Distinguished Medal for Technical Achievement". He is author of the textbook "Physical Properties of Rocks - Fundamentals and Principles of Petrophysics" (Handbook of Geophysical Exploration, vol. 18, ed. by K. Helbig and S. Treitel, Pergamon Press).

Gérad Ségéral is presently an independent Oil and Gas consultant in fluid metering and fluid properties. He received his degrees in France at École Nationale Supérieure des Arts et Métiers. In 1971, He joined Schlumberger Company in the research and development department, spent more than twenty years in the development and the implementation of innovative solutions for bottom hole and surface measurements of exploration and production wells. He is author and coauthor of several SPE, ASME and North Sea Flow Measurement Workshop papers and inventor and co-inventor of key patents on multiphase flow measurements. He was granted, with his team, the "Special Meritorious Award for Engineering Innovation" by Hart's E & P during the Offshore Technology Conference in Houston in May 2001. Since 2003, in addition to his consultancies, he gives international courses in Multiphase Flow Metering, Fluid Properties and Production Logging.

Mukul M. Sharma is Professor and Chairman of Petroleum and Geosystems Engineering at the University of Texas at Austin. His current research interests include natural gas engineering, injection water management, formation damage and petrophysics. He has published more than 200 journal articles and conference proceedings and has 4 patents. Sharma has a bachelor of technology in chemical engineering from the Indian Institute of Technology and an MS and PhD in chemical and petroleum engineering from the University of Southern California. Among his many awards, Dr. Sharma is the recipient of the 1998 SPE Formation Evaluation Award, the 2002 Lester C. Uren Award, and the 2004 SPE Faculty Distinguished Achievement Award. He served as an SPE Distinguished Lecturer in 2002 and has served on the Editorial Boards of several journals including the SPE Journal.

Jess H. Stiles is an independent consultant involved with reservoir engineering and management problems in major fields in the UK and the Norwegian sectors of the North Sea. He graduated from Texas A&M with High Honors in Petroleum Engineering before joining Humble Oil Company's East Texas Division. He transferred to Exxon's overseas organization in 1970, and held reservoir engineering positions in Libya and Malaysia. He moved to London in 1977 with Esso where he was involved with the evaluation, development and management of major North Sea fields, gaining a keen interest in all aspects of fluid displacement processes and reservoir characterization, particularly in permeability distribution and relative permeabilities. When he left the company in 1992 he had reached the position of Senior Technical Advisor, an executive position on Exxon's Professional Ladder.

Gabor Takacs is Professor and Head of the Petroleum Engineering Department at the University of Miskolc, Hungary and holds MS and PhD degrees in Petroleum Engineering from the same institution. He has more than 30 years of teaching and consulting experience in the production engineering field. He taught as Visiting Professor at Texas Tech University, USA in 1988/89 and at the Mining University of Leoben, Austria in 1995. In 1995/96 he was selected SPE Distinguished Lecturer, was Outstanding Technical Editor for the SPE journal "Production and Facilities" 1992-2003 and chaired the Artificial Lift TIG (Technical Interest Group) of SPE in 1997-2003. He is the author of several books on artificial lift technology; "Sucker-Rod Pumping Manual" was published in 2002, "Gas Lift Manual" in 2005, both by PennWell Books, USA. Dr. Takacs has more than 80 technical papers to his credit. He has taught various short courses for many oil companies in Libya, Mexico, Argentina, and Austria; and is a well-known consultant and instructor on production engineering and artificial lift topics.

Marco Thiele is president of StreamSim Technologies, Inc., a software company he co-founded with Dr. Rod Batycky and Prof. Martin Blunt specializing in reservoir simulation technology based on streamlines. Previously, he was an Acting Assistant Professor at Stanford University teaching graduate-level courses on Reservoir Simulation, Thermodynamics of Phase Behavior, and Applied Mathematics in Reservoir Engineering. His research at Stanford focused on streamline-based flow simulation, uncertainty in reservoir forecasting, and integrated reservoir management. He received his PhD in Petroleum Engineering from Stanford University in 1994 and his Masters and Bachelors from the University of Texas at Austin in 1989 and 1986 respectively. He was a keynote speaker at the 6th International Forum on Reservoir Simulation in 2002, he is the recipient of the 1996 SPE Cedric K. Ferguson Medal, winner of 1994 International SPE Student Paper Contest, and a 1991 distinguished SPE speaker invited by the SPE Adriatic Section. He is a technical editor for the SPE Reservoir Evaluation and Engineering Journal.

Gerhard Thonhauser services the petroleum industry with drilling data management and engineering services through Thonhauser Data Engineering (TDE). He holds a degree from Mining University Leoben and Colorado School of Mines and received his Ph.D. in Petroleum Engineering from the Mining University in Leoben, Austria. Prior to the foundation of TDE he worked with the Commonwealth Scientific and Industrial Research Organisation, the CSIRO, Australia in the development of drilling software solutions. He was involved in extended reach drilling projects in Northern Germany. Currently he is involved in several research projects to improve learning and knowledge management in drilling organisations and he recently became Professor for Drilling Engineering at the Mining University Leoben. He has published several papers in the area of fluid dynamics and cuttings transport.

Curtis H. Whitson is Professor of Petroleum Engineering and Applied Geophysics at the University of Science and Technology, NTNU, Trondheim. He teaches courses on petroleum phase behaviour, well performance, enhanced oil recovery, and gas reservoir engineering. His areas of research include equations of state, heptanes-plus characterization, gas condensate reservoirs, gas injection EOR and well performance behaviour of layered systems. He has co-authored the book 'Well Performance' (2nd Ed. Prentice-Hall, 1991), as well being primary author of the 'Phase Behaviour' monograph for the Society of Petroleum Engineers. He heads the company PERA a/s which provides specialist consulting in compositionally-sensitive reservoir processes. He is also the author of PVTx, a comprehensive EOS-based PVT program used by numerous oil companies worldwide, recently acquired by Roxar ASA.

Björn Wygrala holds a M.Sc. and Ph.D. in Geology from the University of Cologne (Germany). He has more than 20 years of experience in basin analysis and the application of simulation technologies for exploration risk and resource assessments in cooperation with petroleum E&P companies in more than 40 countries. Starting in 1983 as Senior Geologist at IES (Integrated Exploration Systems, Germany) he became Vice President and finally Managing Director for Technology Transfer. In this position he is responsible for managing all customer relationship matters including consulting, training, marketing, sales and technical support, extensive international travelling activities to work with customers in more than 40 countries, direct personal involvement with nearly all software and services sales due to longstanding personal relationships and establishment of sales and technical support agencies in China, India, Latin America and other regions.

More information can be found at the HOT website
www.hoteng.com; or be obtained via email
training@hoteng.com

REGISTRATION POLICIES

REGISTRATION

Registration for any HOT Engineering (HOT) course or training program can be done

- online at www.hoteng.com
- by mail to HOT Engineering, Roseggerstrasse 17, A-8700 Leoben, Austria
- by faxing a completed registration form to +43 3842 430531
- by emailing your completed registration form to training@hoteng.com

Registrations will be treated on a "first come - first served" basis.

Confirmation of enrolment will be sent by fax or email upon receipt of registration. Final confirmation of the course will be sent about three weeks prior to course commencement and will include complete details of course location and course commencement.

We strongly recommend early enrolment to avoid disappointment.

REGISTRATION DEADLINE

As an internationally operating training organisation, HOT would appreciate to receive registrations at least one month prior to course commencement.

COURSE FEES

Course fees are due and payable in Euro (EUR) upon receipt of invoice. Applicable taxes such as VAT will be added as required. The course fee includes tuition, course material, daily refreshments and a Euro (EUR) 100 non-refundable registration fee.

COMPUTER FEES

Several courses utilize computers. Computer fees are in addition to regular course fees, and applicable taxes such as VAT will be added.

5 day course - Euro 300 - 350

3 day course - Euro 250 - 300

CLASS HOURS/POLICIES

Normal class hours are from 08:30 a.m. to 5 p.m. including coffee and lunch breaks. Recording of course sessions cannot be permitted. HOT reserves the right to publish photographs taken during the course.

PAYMENT, REFUND, CANCELLATION AND SUBSTITUTIONS

All payments must be received prior to course commencement. Payment will be accepted in the form of bank cheque, bank transfer or credit card (AMEX, Mastercard, VISA).

If cancellation by participant is necessary, a full refund less the non-refundable fee of Euro (EUR) 100 will be given, provided that the cancellation is received at HOT's Leoben office no later than 30 days prior to the start of the course. Cancellations must be made in writing. No refunds will be made for cancellations received less than 30 days before the start of the course. Enrolments are not automatically cancelled if participant do not show up or if payment is not received by course commencement.

If the course fee has not been received at the time of cancellation, the non-refundable registration fee of Euro (EUR) 100 is due and payable, provided that cancellation notice was received in writing 30 days prior to course commencement.

A substitute participant may be nominated at any time.

HOT reserves the right to withdraw a course if the number of participants is not sufficient. We will make this decision latest three weeks prior to the course starting date. If a course is cancelled by HOT, you will receive notice by email or fax. A full refund of paid registration fees will be given or a paid enrolment can be transferred one time to another HOT public course within 18 months (date of registration) of equal cost.

Please keep our registration and cancellation policies in mind when arranging your travel as HOT cannot accept liability for any costs incurred for cancellation or change of travel or hotel reservations. HOT also reserves the right to substitute a course instructor as necessary.

ACCOMMODATION AND COURSE VENUE

At each location, the courses are held at top quality hotels with excellent meeting facilities. Participants should make their own hotel reservations directly with the hotel at least three weeks prior to course commencement and should mention HOT and the course title to receive a special room rate. Detailed hotel information will be provided upon confirmation of enrolment and final confirmation. Final confirmation should be checked again for hotel information and course venue.

CONTACT PERSON

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MAIL

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REGISTRATION FORM

Registration should be made to: HOT Engineering GmbH
Roseggerstrasse 17, A-8700 Leoben, Austria
Tel: +43 3842 43053-0
Fax: +43 3842 43053-1
e-mail: training@hoteng.com

PLEASE REGISTER ME IN THE COURSE LISTED BELOW:

Course Title:
Course Date:
Location:

DELEGATE (Please type or use capital letters and please type or print delegate's name as it should appear on all printed material)	
<input type="checkbox"/> Ms.	<input type="checkbox"/> Mr.
First Name:	Last Name:
Title:	Jobtitle:
Company:	
Company Address:	
City:	State:
Zip-Code:	Country:
Telephone:	Telefax:
E-Mail:	
Professional Experience (Years):	
Mailing Address (if different from above)	

PAYMENT INSTRUCTIONS	
<input type="checkbox"/> Bank Cheque (Please make cheques payable to HOT Engineering GmbH)	
<input type="checkbox"/> Bank Transfer (Bank details will be indicated on the invoice)	
<input type="checkbox"/> Charge my Credit Card <input type="checkbox"/> VISA <input type="checkbox"/> Mastercard <input type="checkbox"/> American Express	
Card No:	Exp. Date:
Cardholder Name:	
Signature:	

I understand that payment of the course fee is due upon receipt of invoice. The course title and participant's name must be specified with all payments. In case of cancellation less than 30 days prior to commencement of the course, no refunds will be given. **Enrolments are not automatically cancelled if participant does not show up or if payment is not received by course commencement.** A substitute participant may be nominated at any time. I have read and accept the conditions as specified in the Registration Policies.

Signature: Date:





