# UPSTREAM OIL & GAS FUNDAMENTALS

Presented by Energy Management Institute

EMI

WWW.EMI.ORG

*Understand the upstream petroleum industry, from exploration through appraisal, reserves recognition, development and production to the sales transaction point.*

COURSE DATES & LOCATIONS

- April 27-28, 2017: Houston, TX

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DETAILS INSIDE

# Upstream Oil & Gas Fundamentals

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*Join EMI for an introduction to the upstream petroleum industry. This course will introduce you to the formation of oil and gas, then move on to how exploration and reservoir engineering activities bring the oil and gas to surface, and finally end up with at how the surface facilities operate just ahead of the sales transaction point. You will learn about risks, technologies, investment decisions and operations in one of the world's most important industries.*

## What You Will Learn

The course leads attendees through thirteen sessions of material covering exploration through appraisal, reserves recognition, development and production to the sales transaction point. Key terminologies and concepts are developed using numerous examples. Attendees will learn fundamental petroleum geology and exploration principles which provide the foundation for drilling, reservoir development and production concepts. At each step we will consider the differences between on and offshore activities and conventional and unconventional resources.

The course is taught in a format that reveals the economics and risk management decisions that are inherent in the industry. Actual examples from industry will be used to illustrate decision processes. We'll deliver a high-level view of the technologies employed by the industry, giving even the non-technical attendee a feel for the business. Ample time will be provided for Q&A and interaction with the instructor with 30-plus years of industry experience.

Special focus on:

- The four requirements for an oil and gas reservoir
- Land lease acquisition and obligations of the operator
- Exploration program planning and goals
- Geologic risk and how it is quantified
- Drilling and how a well is planned
- Vertical vs. directional vs. horizontal drilling choices
- The importance of appraisal work
- What are the key issues in determining how a field is developed
- Definitions of proven, probable and possible volumes
- Reservoir engineering to optimize the recovery
- Special techniques to recovery more oil, i.e., waterflooding, miscible gas injection, polymer-surfactant injection and thermal processes
- Where petroleum economics impacts the discovery-appraisal-development-production stages
- The theory of peak oil production … why prices are going upward

## CPE Credits

**This course earns 13 CPE credits.** Energy Management Institute is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors.

State boards of accountancy have final authority on the acceptance of individual courses for CPE credit. Complaints regarding registered sponsors may be addressed to the National Registry of CPE Sponsors, 150 Fourth Avenue North, Suite 700, Nashville, TN, 37219-2417.
Web site: www.learningmarket.org.

## COURSE DATES & LOCATIONS

**April 27-28, 2017 - Houston, TX**
Regus Business Center
Downtown Houston
8:30am - 4:30pm both days

***See last page for venue addresses.***

**REGISTER ONLINE**

## EMI CERTIFICATION CREDIT

This course earns 6 credits towards EMI Certification.

Not enrolled? Learn more about EMI's Certification Program and enroll today at **cert.emi.org**

## REGISTRATION FEES

1st delegate: $1,995
2nd delegate: $1,795
3rd delegate: $1,600

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## Who Should Attend

This course is an excellent introduction to new employees in the upstream industry, introducing them to concepts, terminology and relationships that can take years to learn on their own. People who work on the periphery of the upstream: service companies, suppliers, refiners and pipeliners will find that these sessions clear up many of the uncertainties and confusions that exist. Investors, analysts and regulators will gain insight into the risks and rewards of the business as well as how to interpret press releases and annual reports that detail significant events in an often-times arcane language.

## About Your Instructor - Jeffrey Nelson

Jeffrey Nelson has more than 25 years international and domestic experience in commercial, managerial, technical and consulting roles, primarily at Mobil Oil and at ExxonMobil. His areas of expertise include: new business and market development, asset management, strategic planning, sales and supply management, and global strategic sourcing management.

Jeff holds a Master of Science in Geology from Duke University and an MBA in Finance from Southern Methodist University. His international work and travel experience includes more than 50 countries in North and South America, Europe, Africa, and the Asia-Pacific.

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## *Course Syllabus: DAY ONE*

### Session 1: Petroleum Formation and Geology

This session addresses the making and trapping of crude oil and gas. Key insights are the four components of a commercial deposit: source, migration path, reservoir and trap.

### Session 2: Exploration Geoscience Techniques

Geoscience offers many techniques to detect potential oil and gas reservoirs prior to Drilling. We consider how geologists, geophysicists identify exploration targets and then work with landmen to acquire the mineral rights to drill and produce.

### Session 3: Geologic Risk and Exploration Economics

At this stage, the company is exposed to geologic risk, i.e., were the four keys in place at the right time to create a commercial accumulation. Probability distributions are constructed to indicate the potential for a dryhole, a discovery, a commercial discovery, or the next super-giant field.

### Session 4: Appraisal Drilling and Petrophysics

Now that the exploration team has found something with exploration, management must decide whether to spend more capital to appraise and develop. More drilling must occur to determine the volumetrics of the reservoir, its productivity and how oil and gas might flow from rock matrix to wellbore.

### Session 5: Reserves

The discovery is ready for prime-time and the announcement to shareholders and the world that the company has a new asset. The SEC has particular rules for discussing the asset in highly technical terms which will indicate the value of the opportunity. Key insights here are how to determine what is Proven versus what is Probable and Possible in terms of reserves and production.

### Session 6: Field Development Considerations

Every oil and gas reservoir is unique. From the reservoir rock distribution, through the saturation of oil and gas in the rock pores, to the type of hydrocarbon and its distribution in the reservoir, ultimately to the surface and the environment into which the oil and gas will flow on its way to market. Key insights in this session are optimal development plans that produce the “last dollar of profit in the reservoir, not the last molecule of oil and gas.”

### Session 7: Development Drilling

The industry, both on and offshore, has made remarkable advances in drilling in the last 40 years. Key insights in this session are well planning including vertical, directional and horizontal drilling and stimulation techniques to increase the surface area where the wellbore contacts the reservoir.

### Session 8: Oil Reservoir Engineering and Production Forecasting

This session addresses how engineers interrogate an oil reservoir, analyze its performance and make adjustmentsto how it is being depleted in order to maximize recoveries for the capital investments. Key insights are how early production performance is used to develop sophisticated models of flow in the reservoir.

### Session 9: Natural Gas Reservoir Engineering and Production Forecasting

Similar to the prior session on oil reservoirs, this session addresses how engineers, analyze a gas reservoir’s performance and make adjustments to how it is being depleted. Key insights are how production performance is used to increase natural gas liquids production and “blow down” the reservoir in a uniform manner.

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## *Course Syllabus: DAY TWO*

### Session 1: Waterflooding for the Probable Oil Reserves

Probable reserves are volumes that primary production cannot recover due to rock properties, low reservoir energy or economic constraints on the number of production wells affordable. Waterflooding is an old and very effective tool in the reservoir engineer's bag of tricks to push more oil out of the rock matrix and into the wellbore.

### Session2: Enhanced Recovery Techniques for Possible Oil Reserves

Possible reserves are mobile oil volumes that are not possible to move to the wellbore due to rock or oil properties without an extra effort. The industry has develop a number of injection methods, including miscible gas, polymer-surfactant and thermal flooding to encourage more oil production. The key insights in this session are the principles of each method and how one is chosen over another for implementation.

### Session 3: Surface Operations

Once the hydrocarbon has reached the surface there are several processes that prepare it for transportation. Oil requires a fairly simple process but natural gas can be quite complex and require midstream operations to maximize it value. After the hydrocarbon is prepared it enters the transportation system. Key insights from this session are the surface processes required to prepare for transportation and the manners in which oil and gas go to market.

### Session 4: Transportation

Oil must be refined before it can be used as a fuel or feedstock to chemical plants while natural gas goes directly to the burner tip. This session discusses the infrastructure required to get the hydrocarbon to market, including pipelines, oil tankers and LNG.

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## *Learn From the Experts that Experts Trust*

EMI experts are frequent editorial contributors to petroleum magazines & are trusted by today's leading news sources.

Our experts have been featured in:

Futures Magazine • The Wall Street Journal • USA Today • The New York Times • The Washington Post • Journal of Commerce • CNN • NBC • CBS • ABC • Bloomberg • Reuters

**EMI's leading industry experts** have an average of over 30 years of knowledge and experience in:

**Energy • Commodity trading • Risk management • Education • Consulting • Financial services**

Plus many years of managing marketing, international trading, manufacturing, consulting, start-up operations and project finance operations of well-known companies; integrated major oil companies as well as international trading companies.

EMI's industry experts have also provided risk and value management analysis, advice, information, and services to a variety of companies in the electric power industry. Clients have included power marketers, integrated utilities, retail power providers, hedge funds, and power plants.

**Highlights of our instructors' experience** include: • Developing a suite of models for a variety of power markets that quantify value and risk • Managing spark spread portfolios for hedge funds in the power markets • Operating in futures trading pits as a market observer in the power markets• Developing working papers for investigations and performing compliance audits in the power industry• Helping Texaco initiate its first use of futures exchanges as an integral part of hedging/trading strategy • Chief Operating Officer of Triwell Marketing and refining • Director of OPIS, Oil Price Information Service, a management-consulting and educational services group that solely focused on the downstream energy industry • Member of Board of Directors of Longview Refinery • Member of the New York Mercantile Exchange Petroleum Advisory Board • Expert witness for a hearing before the subcommittee on surface transportation for the Commerce, Science, and Transportation Committee of the US Senate • Supplied expert testimony to a US Senate sub-committee hearing on diesel petroleum product pricing • Supplied testimony to the Federal Highway Administration regarding fuel tax evasion • Expert witness in a MTBE litigation against the major oil companies • Publishers of The Daily Hedger, BTU's Daily Gas Wire and BTU's Daily Power Report, which advise thousands of petroleum professionals daily.

Our instructors are frequent expert speakers for numerous petroleum industry events and trade associations including: • DOE DESC World Energy Conference • OPIS Fleet Fueling • CME NYMEX • Fuel Management University • NATSO • ATA • AAA • Dairy Distribution • eyeforEnergy eCommerce • OPIS Supply Summit • CIOMA • American Society of Mechanical Engineers • American Society of Lubricating Engineers • Ambrust Aviation • NACHA.

Over the years EMI has developed a series of intensive courses covering all aspects of Energy from production all the way to managing the impact price and volatility on the margin of end-users, resellers, traders, marketers, shippers, retailers and refiners. Our instructors have had the privilege to instruct thousands of professionals representing all aspects of the energy industry, including every major oil company (i.e. Exxon Mobil, BP, Shell, Equilon, Motiva) major power utilities (i.e. Sempra, Edison Mission, Berkley, Toronto Hydro, Dominion, Conectiv) small marketers (i.e. Sprague, Getty, Southern Counties, Western Petroleum) trucking fleets from 50 to 10,000 (i.e. UPS, U.S. Postal Service, Yellow, Pepsi, Werner), gasoline-powered fleets hyper-markets (i.e. The Pantry, Wawa, BJs Wholesale) and many fortune 500 energy consumers.

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**REGISTER ONLINE**

**Registration Fees:**

1st Attendee: $1,995 for full program  2nd Attendee: $1,795  3rd Attendee: $1,600

## 1 CHOOSE YOUR COURSE DATE/LOCATION

☐ **April 27-28, 2017**
**Regus Conference Center**
Downtown Houston
Two Allen Center
1200 Smith Street, 16th Floor
Houston, TX 77002
PH: 713.353.4600

**Hotel recommendations for select course locations available online at www.energyinstitution.org/hotels**

## 2 ENTER ENROLLMENT DETAILS

First Name: _____ Last Name: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email Address: _____

## 3 MAKE PAYMENT CHOICE

☐ Please invoice my company (payment must be received prior to course date)

☐ Pay by credit card (circle one): Mastercard Visa American Express

Card Number: _____ Expiration Date: / /

Card Holder Name: _____

Card Holder Signature: _____

## 4 SUMBIT REGISTRATION FORM

EMAIL: Send form to register@pmaconference.com.

TEL: Call PMA Conference Management at 201.871.0474

FAX: 253.663.7224

POST: PMA Conference Management
POB 2303
Falls Church, VA 22042

### REFUND/CANCELLATION POLICY

Attendees may reschedule for a different date or course with no penalty. Attendees may substitute a colleague in place of themselves as long as prior notice is given to EMI.

Course fees are 100% refundable up to 14 days prior to course date, 80% refundable up to 5 days prior to course date and 50% refundable up to 2 days prior to course date. Cancellations are non-refundable thereafter.