e-Learning and Knowledge Solutions

Powerful, On-Demand e-Learning Resources for the International Oil and Gas Industry

1,200 courses used by more than 90,000 people around the world
A skilled, well-trained workforce is a requirement for the oil and gas industry. Whether your training resources are focused on technical staff, frontline plant operators and maintenance technicians, or the entire workforce, IHRDC offers a range of e-Learning and Knowledge Solutions to successfully develop industry workers across the complete oil and gas value chain.

E-Learning is an ideal method to provide cost-effective, valuable, and wide-ranging training. IHRDC’s courses can be integrated into an existing Learning Management System (LMS), or you can use IHRDC’s LMS to create curricula, develop training plans, assign courses, monitor course completion, and analyze the results. The content can also serve as the foundation of your Knowledge Management System with more than 7,500 searchable pages.

IHRDC’s e-Learning and Knowledge Solutions offers comprehensive, award-winning courses in four topic areas: Oil & Gas Business, Upstream Technology, Operations & Maintenance, and Business Essentials.

**Comprehensive:** covers the entire oil and gas value chain, and a range of business needs, from technical skills to general business knowledge

**High Quality:** developed by oil and gas industry experts to provide the most useful learning, training, and skill development

**Engaging:** composed of award-winning, wide-ranging content, extensive interaction, vivid graphics, appealing videos, and helpful assessments

**Effective:** achieve training goals at a modest cost

**Flexible:** available on-demand, in any configuration, via many different types of LMS, to satisfy the unique needs of an organization

**SCORM Compliant:** meets or exceeds the requirements as SABA and SumTotal Content Partners; IHRDC’s courses can be integrated into most Learning Management Systems

**Compatible:** with most major browsers and devices with no special programs required

**Accessible on Mobile Platforms:** a majority of IHRDC courses are available on all types of mobile devices

**Multilingual:** some products are available in Spanish and Portuguese

**Multifaceted:** Learning Objects can be used as elements in any Knowledge Management System or corporate search engine seamlessly

**Supported:** backed by a dedicated team of industry professionals

The 1,200 courses in 300 subject areas are currently used by 90,000 people at more than 100 companies in 164 countries around the world.

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Table of Contents

**Oil & Gas Business**

This series covers the entire oil and gas value chain and provides a comprehensive overview of the oil and gas industry. It is ideal for those who seek a solid foundation in oil and gas industry business fundamentals.

**Upstream Technology**

Designed for technical staff working in the Exploration and Production (E&P) sector, these courses enhance their knowledge of the best practices and theories in the industry. It provides three levels of instruction and covers geology, geophysics, petroleum engineering, drilling, formation evaluation, reservoir engineering, and production.

**Operations & Maintenance**

These courses provide the tools and knowledge that operators and maintenance technicians need to run plants safely and effectively. The courses can be organized in a competency-based approach to ensure workers perform their jobs properly. They cover relevant theories, plant processes, equipment, maintenance, and operations.

**Business Essentials**

The MBA-level e-learning courses in key business management areas explore finance, communications, human resource management, project management, marketing, innovation, risk management, and sustainable management. They are tailored to meet the needs of oil and gas industry professionals and developed in partnership with a leading Boston-based business school.

**Integrated Oil and Gas Value Chain**

**Competency-Based e-Learning Pathways**

**Client List**

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<th>Access and Licensing</th>
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<tr>
<td>All of IHRDC’s e-learning courses may be accessed from anywhere with an internet connection. We offer a variety of licensing options, from individual courses to corporate user-based arrangements. Please contact us at <a href="mailto:els.info@ihrdc.com">els.info@ihrdc.com</a> for more information.</td>
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<tr>
<td>Certificates</td>
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<td>IHRDC issues certificates to learners who have completed a course and related assessment with a passing score.</td>
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<td>The awarding of certificates for the successful completion of courses is an integral part of the IHRDC's e-Learning and Knowledge Solutions.</td>
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<td>The list of companies that use IHRDC’s e-Learning and Knowledge Solutions includes a diverse range of organizations from around the world.</td>
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<td>IHRDC's e-Learning and Knowledge Solutions are SCORM Compliant, meeting or exceeding the requirements as SABA and SumTotal Content Partners.</td>
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Case Study

Petroleum Online

**OVERVIEW**

The international oil and gas industry has unique practices, a specific vocabulary, and a complex value chain. Petroleum Online provides an in-depth overview of each sector of the international oil and gas industry to give users a clear understanding of how the industry functions, from both a technical and business perspective. The Oil & Gas Industry Overview course is available in Spanish, Portuguese, French, Russian, Arabic, and English.

**AUDIENCE**

These courses are ideal for anyone who wants to expand their knowledge of the oil and gas industry, from entry-level or new employees unfamiliar with energy industry fundamentals to board members seeking a more expansive perspective.

**USING PETROLEUM ONLINE TO TEACH EMPLOYEES INDUSTRY FUNDAMENTALS**

As a founding sponsor of Petroleum Online, this financial services company helped to shape course content with other industry organizations. The company provides consulting directly to their global oil and gas client base, and the consultants need to understand their clients’ business environment. Petroleum Online is a convenient and cost-effective means for the company’s oil and gas practitioners, who have little or no direct industry experience, to gain a better understanding of the value chain from wellhead to burner tip. The company uses Petroleum Online and other resources in an on-boarding training program within the Energy Practice. The use of Petroleum Online has grown substantially within the company because of internal marketing and growing demand for oil and gas training.

**CONTENT OVERVIEW**

Petroleum Online consists of 18 courses that clearly explain the dynamic drivers of the business of oil and gas through the upstream, midstream, and downstream sectors. The courses follow the Oil Value Chain or the Gas Value Chain, so learners can gain a complete understanding of the industry in an organized manner. To learn more about the entire Integrated Oil and Gas Value Chain please see page 16.

**OIL VALUE CHAIN**

**INDUSTRY OVERVIEW**

- Oil & Gas Industry Overview

**UPSTREAM OIL**

- Oil & Gas Agreements
- Petroleum Geology and the Exploration Process
- Drilling and Well Completions
- Oilfield Development
- Marketing and Trading of Crude Oil

**MIDSTREAM OIL**

- Crude Oil Transportation and Storage
- Refining and Product Specifications
- Overview of Petrochemicals

**DOWNSTREAM OIL**

- Marketing and Distribution of Petroleum Products

**BUSINESS GAME**

- Oil Industry Business Game

**GAS VALUE CHAIN**

**INDUSTRY OVERVIEW**

- Oil & Gas Industry Overview

**UPSTREAM GAS**

- Oil & Gas Agreements
- Petroleum Geology and the Exploration Process
- Drilling and Well Completions
- Gasfield Development and Wholesale Markets (in development)

**MIDSTREAM GAS**

- Gas Processing and NGL Markets
- LNG Value Chain and Markets Natural Gas Pipelines, Facilities, and Tariffs (in development)
- Load Balancing Including Underground Gas Storage (in development)
- Overview of Petrochemicals

**DOWNSTREAM GAS**

- Gas Distribution, Marketing, and Trading (in development)

**BUSINESS GAME**

- Gas Industry Business Game (in development)

*Some courses are appropriate for both oil and gas, and appear in each section above.

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“This Overview course needs to be taken by each and every person related to the energy sector.”

—Learner
## Petroleum Online Course Descriptions

### 18 COURSES

**Oil & Gas Industry Overview**
A comprehensive overview of the industry: learn what petroleum is, where it comes from and how it affects our lives on a daily basis. Become familiar with the Oil and Gas Value Chain—upstream, midstream, and downstream—key industry players, the basics of oil and gas supply, demand, pricing, and the challenges that the industry faces as demand grows by 50 percent in the next 25 years.

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### INDUSTRY OVERVIEW

**Oil & Gas Agreements**
Upstream agreements define the legal, business, and working relationships that exist between companies that explore for and produce oil and gas and the government agencies or private parties that own the mineral rights. Learn how oil and gas leases are negotiated in the U.S. and analyze the two main forms of agreements, the Concession Agreement and the Production Sharing Contract, used by host countries around the world.

**Petroleum Geology and the Exploration Process**
Examine the geological conditions that make a good petroleum prospect, and learn why oil and gas are found in some places and not others. Also learn the step-by-step process to identify projects, from initial surface reconnaissance to drilling exploratory wells.

**Drilling and Well Completions**
Geological studies and seismic surveys can indicate an oil or gas prospect, but the only way to know if that prospect contains oil or gas is to drill wells. Get an introduction to the basics of the rotary drilling process and learn about the dramatic advances in drilling technology that have taken place in recent years.

**Oilfield Development**
The development and production of an oil or gas field is among the most involved and challenging business undertakings. Learn the steps involved in field development, from its initial planning stage, through reservoir analysis, subsurface design, and surface facility construction. This course also covers components of long-term production, reservoir management, and facilities maintenance.

**Gasfield Development and Wholesale Gas Markets**
(in development)
This course provides an overview of the significant gas properties and the units that gas is used to measure and sell natural gas. It demonstrates how a gas prospect is discovered and developed into a viable producing entity. Topics include estimating resources and reserves, field design process and surface facilities required to satisfy gas market specifications, and delivering gas to markets. It ends with a summary of the nature of the wholesale gas and gas liquids markets—power, petrochemicals, gas liquids—in various countries, and typical wholesale gas sales agreements.

**Marketing and Trading of Crude Oil**
Like other commodities, the market determines the value of crude oil. Examine how crude oil markets and pricing are established based on global and regional supply and demand, and how organizations such as OPEC affect these markets on a wholesale level.

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**UPSTREAM SECTOR**

**Crude Oil Transportation and Storage**
Every day, some 85 million barrels of crude oil are transported from producing fields to refining centers, many of which are hundreds or thousands of miles apart. Learn how, and at what cost, crude oil is transported in pipelines and tankers—the two most practical and economical methods for moving large volumes of crude oil over long distances.

**Gas Processing and NGL Markets**
This course offers an overview of the expanding gas processing sector, which has been impacted by the rapid development of unconventional gas. It explains how rich natural gas is separated into methane and NGL and transported to fractionation plants, where it is separated into ethane, LPGs (propane and butanes), and natural gasoline. Special attention is given to the various uses for these liquid hydrocarbons, the market prices and economics of rich gas streams when separated and marketed into individual components, and their historical international market supply-demand and pricing profiles.

**LNG Value Chain and Markets**
This course covers the LNG value chain, from gas supply to liquefaction, shipping transportation and receiving/regasification terminals, and the processes/facilities required in each stage. The economics of a special LNG case study is presented to show the typical economics of a project. You will learn the price that must be charged for LNG delivered into a distant market, considering capital and operating costs and the impact of the revenues received for the hydrocarbon liquids produced and sold with the gas. The course also contains a summary of the historical LNG market development, including the major exporters and importers, and the various regional market prices of LNG.

**Natural Gas Pipelines, Facilities, and Tariffs**
(in development)
Natural gas pipelines play an important role in delivering gas from sources of supply to markets. This course explains pipeline systems that exist in international gas markets, and the basics of pipeline design and construction, using recently built pipelines as illustrations of the process and the costs. Attention is given to the way pipeline rates are structured by regulators, the impact of local factors, and the nature of such regulation in several countries, including the U.S. and the Netherlands.

**Load Balancing including Underground Gas Storage**
(in development)
Market demand for natural gas changes by the hour, day, month, and season. This course discusses the forces behind this and the characteristics of various load balancing options that are available to manage these load swings. Each of these options—underground storage (pore and cavern storage facilities), linepack, interruptible service and LNG peak shaving—is discussed, including operating characteristics and cost of service. The manner in which gas distribution companies use a load balancing system to manage its gas swings is presented. The course also shows how an underground gas storage field can be used to hedge gas price swings.

**Refining and Product Specifications**
Crude oil, like other raw materials, has few practical uses in and of itself. Its value lies in the products that can be extracted from it. Learn how crude oil is processed into commercial products through various refining processes. Also explore why some refineries are more complex than others and the business decisions that are required for each day’s refinery run.

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**MIDSTREAM SECTOR**

**Marketing and Distribution of Petroleum Products**
Learn how refined products make their way to pipelines, terminals, service stations and other outlets, and the economics of the modern gasoline super-station.

**Gas Distribution, Marketing, and Trading**
(in development)
This course covers the downstream gas-value chain including gas distribution, the characteristics of the key international gas markets, and the manner in which gas supply is managed and sold into the retail market. It describes the design of a typical gas distribution system, the services it provides, typical distribution tariffs, and billing structure. Gas markets discussed include residential, commercial, industrial, power generation, and vehicle fuel. Gas marketing and trading is introduced through the strategy that a “typical” gas distribution company follows in managing its gas supply in an “open access” gas industry environment.

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**DOWNSTREAM SECTOR**

**Oil & Gas Business Games**
Nicola, a dynamic Business Simulation Game, is used to integrate the subject matter of each course to recreate the challenge of discovering, producing, and marketing oil and gas to learn where value, in the form of financial performance, is created along the value chain.

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“I am now equipped with a comprehensive and broad overview of the operations of the international petroleum industry.”

—Learner
IPIMS features comprehensive content, illustrative graphics, video, and integrated assessments.

OVERVIEW

In the international oil and gas industry, exploration and production is the main value driver for most companies. Upstream technologies are constantly improving, and require increasingly specialized knowledge to put into practice. IPIMS is IHRDC’s Upstream Technology e-Learning resource. Developed in partnership with industry experts from 10 major oil and gas companies, its content is rigorous and extensive, covering all areas of upstream technology. IPIMS offers more than 800 courses in 133 E&P topic areas and advanced reporting on each learner’s progress and performance. In addition, IPIMS offers a Learning Plan Builder, which creates customized learning plans based on a company’s individual needs and requirements.

AUDIENCE

IPIMS provides both in-depth learning about specific technologies and cross-disciplinary training on broader subjects. It offers two levels of instruction: Background Learning, to gain knowledge, skills, and procedural acumen, and Action Learning, to internalize knowledge through practical applications and real-life assignments.

IMPLEMENTING IPIMS TO INCREASE KNOWLEDGE THROUGHOUT A COMPANY

A major independent integrated oil company with more than 60,000 employees around the world realized they needed an efficient way to increase its E&P workers’ knowledge and expertise. The decision to implement IPIMS throughout the organization was based on individual business units’ success with the product. The company particularly values the flexibility that IPIMS provides to its training staff, who can tailor programs to their unique development needs. The IPIMS search function is widely used as an on-demand encyclopedia on all upstream technologies. Recently the company began linking IPIMS courses to its Competency Management system to provide employees with an option to replace lecture-based learning with e-Learning. Since its global launch of IPIMS, the company has experienced strong and growing use.

CONTENT OVERVIEW

IPIMS Provides Two Levels of Learning

Users learn essential knowledge and skills with Background Learning courses and acquire proficiency in practical applications with Action Learning assignments. Both levels provide integrated assessments to measure progress and achievements.

IPIMS encompasses the four primary upstream technology disciplines divided into 26 topic areas. It covers more than 133 topics and offers more than 800 courses.

The figure below illustrates how Background and Action Learning work together to help learners progress through the Awareness, Basic Application, and Skilled Application levels as seen in a typical competency model.

BACKGROUND LEARNING

Each Background Learning course builds a foundation of core knowledge, skills, procedure, or practice. They satisfy the Awareness and Basic Application levels of most competency models. For easy user access, courses can be linked to integrated competency models, company-defined learning programs, or individually selected learning plans. Twenty-six Topic Areas are listed below:

PETROLEUM GEOLOGY

Introduction and Overview
Basic Skills of the Petroleum Geologist
Reservoir Geology
Sedimentology and Stratigraphy
Structure, Tectonics, and Rock Deformation
Geochemistry
Petroleum Technology for the Non-Engineer
Basin and Play Analysis
Surface Tools and Methods

PETROLEUM ENGINEERING

Petroleum Production Performance
Production Equipment and Operations
Drilling Engineering
Production Facilities Design
Well Completion and Stimulation
Reservoir Engineering
Offshore Operations
Other Petroleum Engineering Topics

PETROLEUM GEOPHYSICS

Introductory Topics and Seismic Signals
Seismic Instruments and Field Techniques
Seismic Processing
Seismic Interpretation
3D Seismic and Time-Lapse Methods
Borehole Geophysics and Non-Seismic Methods

FORMATION EVALUATION

Well Logging
Well Testing and Analysis
Rock and Fluid Sampling and Analysis
**PETROLEUM GEOLGY**

**Introduction and Overview**
- Fundamentals of Petroleum Geology
- Hydrocarbon Properties
- Subsurface Environment
- Resources
- Hydrocarbon Generation and Migration
- Trap
- Habitat of Hydrocarbons in Sedimentary Basins

**Basic Skills of the Petroleum Geologist**
- Geologic Cross/Sections
- Subsurface Mapping
- Prospect Generation

**Reservoir Geology**
- Nonmarine Sandstone Reservoirs
- Shelf Marine Sandstone Reservoirs
- Marginal Marine Sandstone Reservoirs
- Deepwater Marine Sandstone Reservoirs
- Exploration in Carbonate Rocks
- Porosity Evolution in Sandstone Reservoirs
- Evolution of Porosity and Permeability in Petroleum Exploration

**Sedimentology and Stratigraphy**
- Subsurface Facies Analysis
- Classic Sequence Stratigraphy
- Stratigraphic Disciplines and Sequence Stratigraphy
- Orogentic Development and Biostratigraphy
- Magnetostratigraphy
- Geochronological Dating Techniques

**Structure, Tectonics, and Rock Deformation**
- Petroleum Geomechanics
- Plate Tectonics and Sedimentary Basins
- Divergent Margins and Rift Basins
- Convergent Margin Basins

**Geochemistry**
- Introduction to Petroleum Chemistry
- Applications of Petroleum Geochemistry

**Petroleum Technology for the Non-Engineer**
- Diving and Well Completion
- Production Technology
- Reservoir Management
- Geosteering: Fundamentals, Planning, and Implementation

**Basin and Play Analysis**
- Basin Analysis
- Play Analysis

**Surface Tools and Methods**
- Photogeology and Remote Sensing
- Geographical Information Systems

**PETROLEUM GEOPHYSICS**

**Introductory Topics and Seismic Signals**
- Fundamentals of Exploration Geophysics
- Geophysical Models and the Seismic Trace
- Signal Theory: A Graphical Introduction
- Seismic Pulse Generation and Transmission
- Seismic Reflection

**Seismic Instruments and Field Techniques**
- Introduction to Field Work
- Surveying and Mapping on Land
- Positioning and Mapping at Sea
- Multichannel Seismography
- Array Design
- Vibroseis
- Choosing the Field Variables
- Quality Control in the Field
- Multicomponent Seismic Applications

**Seismic Processing**
- Basic Processing
- Initial Processes
- Velocities
- Static Corrections
- Deconvolution
- Stacking, Filtering, and Display
- Seismic Migration
- Synthetic Seismogram Modeling

**Seismic Interpretation**
- Basic Seismic Interpretation
- Fault Interpretation
- Seismic Contouring
- Velocity Interpretation and Depth Conversion
- Hydrocarbon Indicators
- Seismic Stratigraphic Modeling

**3-D Seismic and Time-Lapse Methods**
- 3-D and 4-D Seismic

**Seismic Geophysics and Non-Seismic Methods**
- Gravity and Magnetics
- Controlled Source Electromagnetic Methods
- Crosswell Seismology
- Vertical Seismic Profiles
- Other Geophysical Techniques
- Microseismic Studies of Reservoirs

**PETROLEUM ENGINEERING**

**Petroleum Production Performance**
- Fluid Flow and the Production System
- Artificial Lift Methods
- Production Performance Evaluation

**Production Equipment and Operations**
- Wellheads, Flow Control Equipment, and Flowlines
- Wellbore Production Operations
- Fluid Separation and Treatment
- Offshore Safety
- Cased Hole Logging
- Intelligent Completions

**Drilling Engineering**
- Well Planning
- Drill String Components
- Drill Bits
- Drilling Fluids and the Circulating System
- Directional and Horizontal Drilling
- Underbalanced Drilling
- Drilling Problems and Drilling Optimization

**Production Facilities Design**
- Oil Systems and Equipment
- Gas Systems and Equipment
- Water Systems and Equipment
- Utility Systems and Equipment
- Instrumentation
- Platform and Structural Design Considerations

**Well Completion and Stimulation**
- Basic Completion Design and Practices
- Caming
- Completion Equipment
- Perforating
- Acidizing and Other Chemical Treatments
- Hydraulic Fracturing
- Sand Control
- Horizontal Wells: Completion and Evaluation

**Reservoir Engineering**
- Fundamentals of Reservoir Engineering
- Reservoir Environments and Characterization
- Improved Recovery Processes
- Reservoir Modeling and Reserves Evaluation
- Issues in Reservoir Management

**Offshore Operations**
- Offshore Production Facilities
- Deepwater Drilling

**Other Petroleum Engineering Topics**
- Natural Gas Fluid Properties
- Risk Analysis Applied to Petroleum Investments
- Oil and Gas Pipelines
- Integrated Reservoir Characterization

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“I enjoyed the logic, interactive features, and data-oriented content.”

– Learner
IPIMS Action Learning allows individuals to “learn by doing” with realistic and engaging assignments—the best way to develop practical specialty skills. A learner will perform tasks that simulate the management of a petroleum project, from initial discovery to field abandonment. While performing these assignments learners use field data and references as well as Background Knowledge to help make well-informed decisions.

Action Learning is divided into 18 topic areas, with 87 courses comprising realistic E&P job assignments.

### Exploration
- Basin Analysis
  - Sedimentology
  - Sequence Stratigraphy
  - Tectonics
- Surface Geology and Reconnaissance
  - Surface Geology
  - Remote Sensing
- Seismic Methods
  - Seismic Data Acquisition
  - Seismic Survey Design
- 3D Seismic Interpretation

### Reservoir Description and Characterization
- Petrophysical Evaluation
- Interpretation of Well Logs
- Reservoir Geology
- Reservoir Geophysics
- Exploration Geostatistics

### Wellsite Geological Operations
- Geological Operations and Logistics
- Data Logging and Geological Information
- Exploratory and delineation Drilling

### Exploration Project Management
- Exploration Process
- Project Economics, Risk, and Uncertainty Analysis
- Value of Information
- Exploration Business Management
- Exploration Project Management

### Corporate Exploration Planning and Management
- Strategic Scenario Planning and Business Analysis
- Exploration Project Best Practices and Procedures
- Corporate Portfolio Management
- Portfolio Performance Optimization
- Environmental Impact Evaluation

### Reservoir Engineering Fundamentals
- Reservoir Rock and Fluid Properties
- Rock Mechanics Fundamentals
- Stability and Rock Deformation Models
- Reservoir Drive Mechanisms
- Multidisciplinary Reservoir Management

### Well Logging and Subsurface Mapping
- Interdisciplinary Data Acquisition
- Wellsite Well Logging
- Well Log Quality Control
- Well Log Interpretation
- Subsurface Mapping
- Reserves Definitions, Reporting, and Mapping

### Reservoir Characterization and Modeling
- Reservoir Characterization and Modeling
- Compaction and Subsidence
- Pressure/Production Data Analysis
- Flow Unit Determination
- Reservoir Simulation

### Reservoir Surveillance
- Data Acquisition
- Geologic/Seismic Integration
- Geological Monitoring
- Petrophysical Model Updating
- Reservoir Model Updating

### Reservoir Development Strategies
- Economic Evaluation
- Permitting for Well Operations
- Health, Safety, and Environment
- Reservoir Management and Control
- Improved Recovery

### Reservoir Management Practices
- Implementation of Reservoir Development Strategies
- Reservoir Surveillance and Control
- Contacts

### Drilling and Well Completion
- Drilling, Workover, and Well Servicing Fundamentals
  - Drilling and Workover Fluids
  - Drilling and Workover Hydraulics
  - Cementing
- Directional, Horizontal, and Multilateral Wells
- Drilling and Well Completion Practices
  - Initial Well Planning
  - Well Design
  - Drilling Program Planning and Implementation
  - Drilling Operations
  - Well Completion Operations

### Production Engineering and Operations
- Production Fundamentals
  - Production Methods
  - Production Optimization
  - Production Facilities
- Well Testing
- Production and Operating Practices
  - Flowing Well Performance and Production System Analysis
  - Artificial Lift Methods
  - Wall Simulation and Sand Control
  - Workover Planning and Operations
  - Surface Production Operations
IHRDC's O&M e-Learning provides training from the fundamentals of operations and maintenance to advanced troubleshooting skills on complex equipment. Covering Fundamentals, Health Safety and Environment (HSE), Maintenance, and Operations, IHRDC's O&M e-Learning consists of 390 courses, including 245 also offered in Spanish. The courses are available in Competency-Based e-Learning Pathways to provide learners with a progressive curriculum that will help employees perform their jobs safely and effectively.

AUDIENCE
This series is for operators and maintenance technicians in the oil and gas industry from upstream to downstream sectors, including production and process operations, processing and refining, and transportation and distribution.

TRAINING SOLUTIONS FOR FIELD WORKERS, NEW OR EXPERIENCED
A major international oil and gas company was searching for a way to train their O&M workers to ensure it had a competent, well-trained workforce across all levels of the organization. The company has E&P operations around the world, including shale and oil sands. It required several elements for its training resources: SCORM-compliant courses, coverage of the entire oil and gas value chain, and that the courses were useful for all of its field workers—from new hires to senior employees. The company selected IHRDC’s O&M e-Learning for approximately 10,000 workers, to provide consistent instruction, and therefore knowledge, across the entire company and different business units. The continuity in training has helped all of the company’s employees become more effective.
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<td>Hazardous Waste Operations</td>
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<td>Material Safety Data Sheets (MSDS)</td>
<td>Personal Safety for Lab Technicians</td>
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<td>Introduction to Power Tools</td>
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<td>Precision Measurement Instruments</td>
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</table>

“"The knowledge gained from the courses will assist me in my job.”” —Learner

“"These courses are such a good resource.”” —Learner
The courses are both challenging and rewarding."

—Learner
**INSTRUMENTATION & CONTROL**

- **Actuator, Valve, and Motor Controllers**
  - Basic Functions of AC Motor Controllers
  - Electric and Hydraulic Actuators
  - Introduction to Actuators
  - Motor Controllers and Operation
  - Motor Operation
  - Pneumatic Control
  - Principles of Controllers
  - Smart Controllers
  - Troubleshooting AC Motor Controllers
- **Distributed Control Systems**
  - Introduction to Distributed Control Systems
  - Troubleshooting DCS I/Os: Practices
  - Troubleshooting DCS I/Os: Procedures
- **Field Device Configuration**
  - Field Devices: Analog Configuration
  - Field Devices: Configuring with a Laptop PC
  - Field Devices: Digital Configuration with a DCS
- **Human-Machine Interface & Plant Protection Systems**
  - The Human-Machine Interface
  - Human-Machine Interface and Troubleshooting
  - Plant Protection Equipment and Integrated Systems
- **Measurement Devices**
  - Digital and Analog Oscilloscopes
  - Field Devices: Analysers
  - Field Devices: Level and Flow
  - Field Devices: Pressure, Temperature, and Weight
  - Field Devices: Using Field Communications
  - Introduction to Vibration Analysis
  - Measurement of Concentration
  - Measurement of Density, Clarity, and Moisture
  - Measurement of Level and Flow
  - Measurement of Pressure and Temperature
- **Networks**
  - Fiber Optic Systems
  - Introduction to Control and Data Systems
  - Introduction to Networks
  - Setting Up and Troubleshooting of Networks

**Process Control**

- Automatic Process Control 1
- Automatic Process Control 2
- Multiple Loop Control
- Principles of Process Control
- Single Loop Control
- Troubleshooting Loops
- Tuning Loops

**Programmable Logic Controllers**

- Architecture, Types, and Networks of PLCs
- I/O Communication
- Installing and Maintaining PLCs
- Introduction to Digital Logic
- Introduction to Programming
- Ladder Logic and Symbology
- Program Entry, Testing, and Modification
- Programming Common Functions
- Troubleshooting Hardware
- Troubleshooting Software and Networks

**Variable Speed Drives**

- Applications of VSDs
- Introduction to VSDs
- Programming Controllers
- System Troubleshooting of VSDs
- Systems and Integration of VSDs
- Troubleshooting VSD Controllers

**Power Plant Operation**

**Refining Process Technologies**
- Alkylation Operations
- Asphalting, Extractive, and Vacuum Columns
- Blending Operations
- Crude Distillation Operations
- Fluid Catalytic Cracking Operations
- Hydroprocessing and Catalytic Reforming
- Hydrocracking and Catalytic Reforming
- Process Reactor Fundamentals
- Treating and Sulfer Recovery Operations
- Typical Process Reactions, Part 1
- Typical Process Reactions, Part 2

**Laboratory Operations**

- Basic Lab Operations
- Laboratory Glassware
- Laboratory Hardware
- Laboratory Robotics
- QA/QC in the Laboratory
- Sample Preparation
- Separation and Isolation of Materials
- Weighing and Measuring Techniques

**Analytical Chemistry Operations**

- Analytical Procedures
  - Atomic Absorption
  - Gas Chromatography
  - High Pressure Liquid Chromatography
  - Infrared Analysis
  - Ion Concentration Analysis
  - Mass Spectrometry
  - Nuclear Magnetic Resonance
  - Optical Analysis
  - UV Visible Spectroscopy

**Oil & Gas Processes**

- Basic & Heavy Lifting
  - Basic Lifting
  - Heavy Lifting
  - Overview of Rigging
- **Boilers**
  - Abnormal Conditions and Emergencies
  - Combustion and Boiler Operations
  - Condensate and Feedwater Systems
  - Condenser and Circulating Water
  - Normal Operations of Boilers
  - Startup and Shutdown of Boilers
  - Water and Steam

**Distillation**

- Basic Distillation System Components and Operation
- Basic Principles of Distillation
- Distillation Control Systems
- Distillation Operating Problems
- Distillation System Startup and Shutdown
- Towers, Reboilers, and Condensers

**Furnaces**

- Introduction to Furnaces
- Furnace Operating Conditions
- Furnace Startup and Shutdown

**Heat Exchangers**

- Introduction to Heat Exchangers
- Condensers and Reboilers
- Cooling Towers
- Operation of Shell- and Tube-Type Heat Exchangers

**Pumps**

- Basic Pump Types and Operation
- Fundamentals of Centrifugal Pumps
- Operation of Centrifugal Pumps
- Performance and Inspection of Pumps
- Reciprocating Positive Displacement Pumps
- Rotary Positive Displacement Pumps

**Refrigeration System**

- Basic Concepts of Refrigeration Systems
- Operations of Refrigeration Systems
- Refrigeration Systems, Part 1
- Refrigeration Systems, Part 2

**Storage Tank Operations**

- Above Ground Storage Tanks, Part 1
- Above Ground Storage Tanks, Part 2
- Above Ground Storage Tanks, Part 3

**Turbines & Steam Systems**

- Bearings and Operation
- Boiler and Turbine Protection
- Steam Flow and Steam Turbines
- Steam Systems
- Steam Traps

**Other Systems & Equipment**

- Auxilary Vessels
- Fans
- Filtration and Scavenging Unit Operations
- Flaring, Venting, and Purging
- Fundamentals of Process Solubility
- Material Handling of Bulk Liquids
- Portable and Emergency Equipment
Although the oil and gas industry is unique, it shares many functions with all businesses. Business Essentials provides practical business knowledge and skills on foundational business topics, tailored for the oil and gas industry. The MBA-level courses cover finance, communications, human resource management, project management, marketing, innovation, project risk management, and sustainable management.

Business Essentials is ideal for anyone who needs to improve their understanding and knowledge of business processes and proficiencies within the context of the oil and gas industry.

### DEVELOPING PROJECT MANAGEMENT AND COMMUNICATION SKILLS WITH BUSINESS ESSENTIALS

A national joint-venture LNG company was in the initial stages of construction and manpower development for a substantial new project. As they progressed, upper management recognized the need to implement more formal project management awareness and develop critical communication skills for their employees. After investigating several options, the company determined that IHRDC’s Business Essentials, specifically the Project Management and Communications courses, provided an economic and easy-to-execute solution. One important aspect was that the courses follow the Project Management Institute’s Project Management Body of Knowledge (PMBOK) and prepare learners for the PMBOK certification exam. The company implemented the e-Learning courses using IHRDC’s LMS. Because all employees in the company have access to the courses, it has become one of the largest users of IHRDC’s e-Learning.

### BUSINESS ESSENTIALS COURSES

For optimum flexibility, Business Essentials courses may be pursued individually, organized into a curriculum, or incorporated into a learning management system to supplement basic business knowledge.

#### AGILE

These courses explore the methodologies, practices, and tools of Agile development and explain the key concepts and principles that form the foundation of Agile project management.

#### COMMUNICATIONS

This series teaches the fundamentals of effective business writing and presentation methods using relevant oil and gas industry examples.

#### CREATIVEITY AND INNOVATION

Just because a job is not in the “creative” field does not mean that creativity and innovation is not necessary. These courses provide methods to develop creativity and innovation for individuals and organizations.

#### FINANCE

With detailed oil and gas industry examples, these finance courses enable non-financial professionals to understand corporate financial fundamentals, read financial statements, and understand what they say about a business.

#### HUMAN RESOURCES MANAGEMENT

The courses address vital personnel issues, from planning and recruiting to performance management, using examples drawn from the international oil and gas industry.

#### INTERNATIONAL TRADE

These courses teach learners about finance, marketing, management, and the supply chain on a global scale, knowledge that is required to be successful in the international oil and gas industry.

#### LEADERSHIP

Being a leader requires the ability to manage people, organizations, and change. These courses provide a foundation in these skills.

#### MANAGEMENT

This series addresses the methods to properly manage a team, taking into account the new realities of contemporary business practices.

#### MARKETING

Without marketing, companies would not be able to communicate with their customers and clients. These courses explain the fundamentals of marketing, with an emphasis on its function in the oil and gas industry.

#### PROJECT MANAGEMENT

Using relevant oil and gas case studies, this series of courses covers both the theory and practice of project management. It follows the Project Management Institute’s Project Management Body of Knowledge (PMBOK) and prepares learners for the PMBOK exam.

#### PROJECT RISK MANAGEMENT

The oil and gas industry is inherently risky. Accidents will happen, and having a solid plan in place before a problem occurs will save time, money, and reputation. These courses give a foundation in planning for, communicating about, and responding to risks.

#### SUSTAINABLE MANAGEMENT

Sustainability is sometimes perceived as a trend, but it is fast becoming an industry reality for both environmental and business reasons. These courses explore several aspects of Sustainable Management, from ethical, leadership, and economic perspectives.
Introduction to Agile
Agile Team Challenges
Integrating Agile and Waterfall Practices
Agile Certified Practitioner (PMI-ACP®) Exam
Exams & Exam Strategies

Effective Communication
Organizing and Structuring
Writing Effectively
Presentation Basics
Purposeful Presentations

Creativity in Teams and Organizations
Innovation in Teams and Organizations
Introduction to Critical Thinking
Personal Creativity

Overview of Finance
Accounting Concepts and Financial Statement Analysis
Time Value of Money Principles
Risk and Return
Budgeting
Practical Tools for Planning and Control
Valuing Real Assets
Introduction to Business Statistics

Introduction to Human Resource Management
Planning and Recruiting
Employee Selection
Training and Development
Employment Benefits
Performance Management
Compensation
Talent Management and Career Development
Equal Employment Opportunity
Ethics, Employee Rights, and Discipline
Employee Health and Safety
Other HRM Issues: Work-life Balance and Global HRM

Global Business Management
Global Marketing
Global Supply Chain Management
Global Trade Finance

Introduction to Leadership
Leaders and Work-Life Balance
Leading and Managing Change
Leading Teams

Managing in a Modern Organization
Managing People
Time Management
Effective Negotiations
How to Coach

Overview of Marketing
Marketing Planning

Risk Communication
Risk Analysis
Risk Response Planning
Risk Governance
Risk Practice Exams and Exam Strategies

Overview of Sustainable Management
Corporate Social Responsibility
Measuring Sustainable Management Performance
Sustainable Management: Leadership Ethics
Triple Bottom Line Accounting

“The presentation and format of the training was excellent.”

—Learner
IHRDC’s e-Learning and Knowledge Solutions span the entire oil and gas value chain, offering a wide range of courses that enable professionals in the energy industry to gain the knowledge and skills necessary to achieve success in their careers and for their organizations. IHRDC’s e-Learning courses include both foundational knowledge to understand the industry and in-depth instruction on complex technical and operational subjects.

**Oil & Gas Business**: Petroleum Online provides an overview of the entire oil and gas value chain, explaining how business and technology function and intersect within the industry. (18 courses)

**Upstream Technology**: IPIMS courses encompass the Exploration & Production sector with extensive topics on background knowledge and more in-depth courses that simulate on-the-job assignments and decision-making processes. (More than 800 courses)

**Operations & Maintenance**: O&M includes the majority of the oil and gas value chain with a focus on the tasks involved in operating and maintaining facilities and plants from production through refining and distribution. (340 courses)

**Business Essentials**: explores the oil and gas value chain from a business perspective, offering foundational topics common to all industries, with an approach relevant to the oil and gas industry. (69 courses)

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IHRDC’s Competency-Based e-Learning Pathways are designed for learners to progress in their training from foundational industry knowledge, to generalized functional training, and finally to industry segment-specific learning. By following these Pathways, learners can achieve the required level of competency to better perform their jobs.

Stage I: Foundation Training provides the background learning required for new personnel.

Stage II: Functional Training Pathways are divided into separate pathways, one for each functional area.

Stage III: Industry Sector Training Pathways provide a deeper knowledge of a specific area of the oil and gas industry.

LICENSING CONSIDERATIONS

Clients have the option of licensing our Competency-Based e-Learning Pathways by stage or as a complete package. Courses are also available individually.

ESTIMATED LEARNING TIME TO COMPLETE THE PATHWAYS

The time that it takes to complete a selected Pathway depends upon the learner’s pace and amount of time available for learning. Each Pathway provides 150-200 hours of learning and is available for one year after purchase.

When a new hire begins his training he will first complete Stage I: Foundation Training, which provides a solid understanding of the oil and gas industry as a whole, as well as the necessary training to safely and accurately perform his job.

As the learner progresses in his training he will select a specialty, in this example, Instrumentation and Controls, and will follow the Instrument Pathway in Stage II: Functional Training Pathway.

In this case, because this learner is working in a refinery, he will then complete the Plant Operations courses, which include equipment operations, operator responsibilities, and troubleshooting, and Refinery courses, which include refining technologies, process reactions, and major unit operations, in Stage III: Industry Sector Pathway.
Our e-Learning Solutions have won numerous awards, including a 2012 AVA Platinum Award, 18 Telly Awards, and a Distance Learning Award for Excellence.

**SUPERAJOR**
- BP
- Chevron
- ConocoPhillips
- ExxonMobil Chemical
- Shell International Exploration and Production

**TOTAL**
- Abu Dhabi Company for Onshore Oil Operations
- Abu Dhabi Marine Operating Company
- CNOCC: SES Indonesia
- Ecopetrol
- Ghana National Petroleum Corporation
- INJ
- JOGMEC
- Korea Gas Corporation
- Korea National Oil Company
- Kuwait Oil Company
- National Oil Company of Liberia
- Oil and Natural Gas Corporation - India
- Petamina
- Pertamina Hulu
- Petronas Carigali Sdn. Bhd.
- Petrotrin
- PetroVietnam Exploration & Production Corporation
- PTT Exploration and Production Public Company Ltd.
- SAFER-Yemen
- Saudi Arabian Oil Company
- SONATRACH
- Zuaim Development Company

**DOWNSTREAM**
- CHS, Inc.
- CRICO Petroleum Corporation
- Consumers Co-Operative Refineries Limited
- Delaware City Refining Company LLC
- Delek Refining, Ltd.
- Flint Hill Resources
- Holly Frontier Companies
- Lindsay-Thagard
- Marathon Petroleum Corporation
- Phillips 66
- Valero Refining

**INDEPENDENT**
- Afren
- African Petroleum Corporation
- Barry Petroleum
- Cairn Energy India
- Canadian Natural Resources Ltd.
- CEPSA E&P
- Coastal Energy
- Companhia Energética de Minas Gerais - Cemig
- Dana Gas Egypt
- DCP Midstream
- Energean
- Essar Oil
- GAIL Energy
- Hess Corporation
- Husky Energy
- Hyperdynamics Corporation
- INP
- INPEX Corporation
- JK Nippon Oil & Gas Exploration Corporation
- Kuwait Energy Company
- Marathon Oil Corporation
- Mitsui Oil Exploration Co. Ltd.
- MOI Hungarian Oil & Gas Company
- Oando Plc
- Occidental Petroleum Corporation
- Origin Energy (Australia)
- Pacific Rubiales
- PanAustralian Energy Tanzania Ltd.
- Perenco Guatemala
- Pioneer Natural Resources
- Roc Oil Company Limited
- Santos - Indonesia
- SASCOL Petroleum International (SPI)
- SAWA Peru
- Sunoco Energy Inc.
- Talisman Energy Inc.
- Tullow South Africa (Pty) Ltd.
- United Energy, Pakistan
- Wintershall Holding AG
- Wintershall Norge AS
- Woodside Energy Ltd.
- YPF Chaco

**SERVICE COMPANY**
- 10EQS Knowledge Exchange Ltd.
- 3M Company (Global Oil & Gas)
- Accenture
- Alcatel-Lucent
- Baker Hughes
- Baker TMM
- Dassault Industries Co., Ltd.
- Deloitte
- Geokinetics
- Geotrace
- Global Training Solutions, Inc.
- Halliburton Energy Services Group
- Infizis
- Ion Geophysical
- Maersk Oil Qatar AS
- National Oilwell Varco
- Oldsite Wireline Services Limited
- PD Energy Solutions
- Petroleum Geo-Services
- Schlumberger
- TECON Engineering GmbH
- Wipro Technologies

**PROFESSIONAL ASSOCIATION**
- National Cooperative Refinery Association
- Society of Exploration Geophysicists

**ACADEMIC**
- Bossier Parish Community College
- COSTECH
- Technical Book Sources
- University of Clausthal
- Vietnam Petroleum Institute

**About IHRDC**
IHRDC was founded in 1969 with a commitment to offer international oil and gas companies excellent products and services to train and develop their workforce. In the four decades since then—from both our Boston headquarters and our offices in Houston, Amsterdam, Kuala Lumpur, Jakarta, and Lagos—we have set a worldwide standard of excellence through our Instructional Programs, e-Learning Solutions, and Competency Management. Our offerings are used daily by thousands of industry leaders.

**Instructional Programs** offers outstanding workshops that teach management and petroleum business essentials using challenging business games.

**e-Learning and Knowledge Solutions** provides innovative products that deliver accelerated, effective, and on-demand learning and knowledge to the international oil and gas industry.

**Competency Management** has industry-leading competency and compliance solutions to assess, develop, and manage your workforce.

To learn more about how IHRDC can help you build a world-class workforce please visit www.ihrdc.com.