COURSE OVERVIEW DE0735
Reserves Estimation
(E-Learning Module)

Course Title
Reserves Estimation (E-Learning Module)

Course Reference
DE0735

Course Format & Compatibility
SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)

Course Duration
30 online contact hours
(3.0 CEUs/30 PDHs)

Course Description

This E-Learning course is designed to give participants a detailed overview of the reserve estimation methods and the uncertainty calculations. It covers the current techniques used for resource and reserves analysis including exploration, "green-field" and "brown field" development, economic and operational risk and production forecasting. The implications for the evaluation of oil and gas resources are discussed and how these impacts the technical appraisal process.

The course will update geologists, geophysicists and reservoir engineers with the newest and most accurate methods for obtaining the value of a reserve. Following the completion of this course, all participants should be able to manage deterministic and probabilistic methods, with the aim of gaining a thorough understanding of various reserve levels and their equivalence in both systems.

Modern methods of resource appraisal including reservoir simulation, response surface analysis and stochastic simulation will be introduced and the benefits from using these techniques will be discussed in the course.

During this course, participants will learn the petroleum resources, reserves & resources commerciality and resource uncertainty categories; the project status categories, operational issues, fuel, flare and operational & third-party gas; the wet & dry gas, non-hydrocarbon gases, gas re-injection, liquid conversion to oil equivalent and gas conversion to oil equivalent; the gas balancing, current economic conditions and interpretation of current economic conditions; the production-sharing contract/contract extensions and current economic conditions; the operating costs and abandonment in current economic calculations for proved reserves; the reserves and resources, proved reserves, unproved reserves, contingent resources and undiscovered resources; the static analysis of reserves, recovery of sales products from the well streams and selecting distribution functions for individual parameters; the aggregation of reserves, reservoir behaviour from performance plots, dependencies between estimates, use of correlations and aggregating resource categories; the geostatistics in the petroleum industry, geostatistical methods, seismic applications, flow surveillance and full-wavefield seismic analysis; and the rock & fluid properties, seismic estimation of reserves & resources, full-wavefield seismic analysis, reserve recognition under production-sharing & other nontraditional agreements.

Course Objectives

After completing the course, the employee will:-

- Apply a comprehensive knowledge on reserves estimation

- To review principles of reservoir characterization and reserves evaluation

- To learn about main concepts of risks and uncertainties management

- To learn about integrating risks and uncertainties into reserves evaluation - static uncertainties, dynamic uncertainties, geostochastic modeling, etc

- Classify and define petroleum resources, reserves & resources commerciality and resource uncertainty categories

- Identify project status categories, operational issues, fuel, flare and operational & third-party gas

- Identify wet & dry gas, non-hydrocarbon gases, gas re-injection, liquid conversion to oil equivalent and gas conversion to oil equivalent

- Apply gas balancing, current economic conditions and interpretation of current economic conditions

- Explain operating costs and abandonment in current economic calculations for proved reserves

- Carryout production-sharing contract/contract extensions and current economic conditions

- Employ probabilistic estimation procedures and quoting reserve and resource quantities using probabilistic methods

- Explain reserves and resources, proved reserves, unproved reserves, contingent resources and undiscovered resources

- Apply static analysis of reserves, recovery of sales products from the well streams and selecting distribution functions for individual parameters

- Determine aggregation of reserves, reservoir behaviour from performance plots, dependencies between estimates, use of correlations and aggregating resource categories

- Apply geostatistics in the petroleum industry, geostatistical methods, seismic applications, flow surveillance and full-wavefield seismic analysis

- Recognize rock & fluid properties, seismic estimation of reserves & resources, full-wavefield seismic analysis, reserve recognition under production-sharing & other nontraditional agreements

Who Should Attend

This course provides an overview of all significant aspects and considerations of reserve estimation for geologists, geoscientists, engineers, business analysts, investment bankers, oil and gas company asset managers, oil and gas economists, government regulatory officers, financial analysts, private equity and venture capitalists as well as acquisition, divestment and new business professionals.

Training Methodology

This Trainee-centered course includes the following training methodologies:-

- Talking presentation Slides (ppt with audio)
- Simulation & Animation
- Exercises
- Videos
- Case Studies
- Gamification (learning through games)
- Quizzes, Pre-test & Post-test

Every section/module of the course ends up with a Quiz which must be passed by the trainee in order to move to the next section/module. A Post-test at the end of the course must be passed in order to get the online accredited certificate.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations
Certificates are accredited by the following international accreditation organizations: -

- USA International Association for Continuing Education and Training (IACET)

Haward Technology is an Authorized Training Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 1-2013 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 1-2013 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Association for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Fee
As per proposal

Course Contents

- Introduction
- Petroleum Resources Classification & Definition
- Reserves & Resources
- Related Definitions
- Commerciality
- Resource Uncertainty Categories
- Project Status Categories
- Operational Issues
- Fuel, Flare, Operational & Third-Party Gas
- Wet & Dry Gas
- Non-Hydrocarbon Gases
- Other Substances – Sulphur
- Gas Re-Injection
- Liquid Conversion to Oil Equivalent
- Gas Conversion to Oil Equivalent
- Royalty
- Overlift/Underlift
- Gas Balancing
- Current Economic Conditions
- Introduction-History & Background/Interpretation of Current Economic Conditions
- Current Economic Conditions Defined
- Operating Costs & Abandonment in Current Economic Calculations for Proved Reserves
- Production-Sharing Contract/Contract Extensions and Current Economic Conditions
- Probabilistic Estimation Procedures
- Quoting Reserve and Resource Quantities Using Probabilistic Methods
- Reserves and Resources
- Proved Reserves
- Unproved Reserves
- Contingent Resources and Undiscovered Resources

- Reserve Description
- Static Analysis of Reserves
- Reserves as the Sum of Sales Forecasts in Time
- Parameters and their Uncertainty Distribution
- Reservoir Volume
- Reservoir Parameters
- Recovery from Reservoirs
- Recovery of Sales Products from the Well Streams
- Entitlement
- Selecting Distribution Functions for Individual Parameters
- Some Guidelines
- Definitions & Rules
- Aggregation of Reserves
- Introduction: Issues in Reserves Aggregation
- Aggregating Over Levels
- Reservoir Behaviour from Performance Plots
- Dependencies Between Estimates
- Level of Aggregation
- Adding Proved Reserves
- Difference Between Dependent & Independent Addition
- Use of Correlations
- Aggregating Resource Categories
- Scenario Methods
- Normalization & Standardization of Volumes
- Aggregation of Reserves
- Introduction: Issues in Reserves Aggregation
- Aggregating Over Reserves Levels
- Reservoir Behaviour
- Dependencies between Estimates
- Two Levels of Aggregation
- Adding Proved Reserves
- Difference between Dependent & Independent Addition
- Arithmetic or Dependent Addition

- Probabilistic or Independent Addition

- The Intermediate Case – Using Correlation Matrices

- Aggregating Over Resource Categories

- Scenario Methods

- Example of Low Dependence Between Reservoir Elements

- Example of Dependent Reservoir Elements

- Comparing Degrees of Dependence

- Comparing Scenario Trees & Correlation Methods

- Normalization & Standardization of Volumes

- Summary – Some Guidelines

- Application of Geostatistics in the Petroleum Industry

- Geostatistical Methods

- Geostatistical Methods, Heterogeneitty Modeling

- Uncertainty and Geostatistics

- Terminology

- Historical Review

- Application of Geostatistical Methods

- New Developments & Areas of Application

- Conclusions

- Seismic Applications

- Trap Geometry

- Rock & Fluid properties

- Flow Surveillance

- Full-Wavefield Seismic Analysis

- Seismic Applications

- Seismic Estimation of Reserves & Resources

- Uncertainty in Seismic Predictions

- Seismic Inversion

- Full-Wavefield Seismic Analysis

- Reserve Recognition Under Production-Sharing & Other Nontraditional Agreements

- Regulations, Standards & Definitions

- Regulations – US Securities & Exchange Commission

- Regulatory Summary – Elements Supporting Reserves Reporting
- Interpretive Differences
- Agreements & Contracts
- Base Case Example
- Conclusions