COURSE OVERVIEW DE0728
Reservoir Management
(E-Learning Module)

Course Title
Reservoir Management (E-Learning Module)

Course Reference
DE0728

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 provide participants with a detailed and up-to-date overview of reservoir management. It covers the integrated reservoir management and the purpose of reservoir management; the reservoir life cycle, reservoir management input/output system, data management, sequential activities and current activities; the reservoir modelling and dynamic value of hydrocarbon asset; the decision tree approach and seismic reservoir characterization; the hydrocarbon reservoirs, conventional reservoir and unconventional reservoir and unconventional hydrocarbon resources; the economic optimization, well testing, increment of reserves and production; and the reservoir management issues and reservoir management process.

During this course, participants will learn the reservoir management benefits, data captured and interpreted data; the fluid-flow characteristics, development and updating of depletion plan and wellbore utilization plan; the survey of performance and surveillance; the strategies of development and maximum production from the common fields in order to achieve the macro oil field goals; the evaluation of opportunity, definition of uncertainty and flow and reservoir surveillance; the aquifer influx mechanism/direction and dominant fluid flow direction; and the seismic reservoir monitoring or time-lapse and the applications of reservoir monitoring.

Course Objectives

After completing the course, the employee will be able to:-

- Apply and gain a comprehensive knowledge on reservoir management
- Employ integrated reservoir management and explain the purpose of reservoir management
- Illustrate reservoir life cycle, reservoir management input/output system, data management, sequential activities and current activities
- Carryout reservoir modelling and identify the dynamic value of hydrocarbon asset
- Apply decision tree approach and seismic reservoir characterization as well as describe hydrocarbon reservoirs, conventional reservoir and unconventional reservoir and unconventional hydrocarbon resources
- Employ economic optimization and well testing as well as increase reserves and production
- Identify the reservoir management issues and employ the reservoir management process
- Explain reservoir management benefits and review data captured and interpreted data
- Describe fluid-flow characteristics as well as develop and update depletion plan and wellbore utilization plan
- Carryout survey of performance and surveillance including some of the strategies of development and maximum production from the common fields in order to achieve the macro–oil field goals
- Evaluate opportunity, define uncertainty and employ flow and reservoir surveillance
- Recognize aquifer influx mechanism/direction and dominant fluid flow direction
- Employ seismic reservoir monitoring or time-lapse seismic including the applications of reservoir monitoring

Who Should Attend

This course provides an overview of all significant aspects and considerations of reservoir management for petroleum engineers, geoscientists, math and science graduates, operations and technical supervisors and managers, particularly those who will become members of reservoir management or surveillance teams.

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

- Integrated Reservoir Management
- Introduction
- Reservoir Management
- The Purpose of Reservoir Management
- Objective
- Reservoir Life Cycle
- Organization
- Reservoir Management Input/Output System
- Data Management
- Sequential Activities
- Current Activities
- Reservoir Modelling
- What is a Value
- Dynamic Value of Hydrocarbon Asset
- Decision Tree Approach
- Case Study
- Overall Goals of the Learn
- Case Study
- The Results of the Team Efforts in this Filed Study
- General Overview
- Integrated Reservoir Management
- Reservoir Management
- To Achieve Reservoir Management
- Reservoir Management Team Skills
- Introduction Reservoir Characterization
- Two Fundamentals Topics in Reservoir Characterization
- Seismic Reservoir Characterization
- Hydrocarbon Reservoirs

- Reservoirs
- Conventional Reservoir
- Unconventional Reservoir
- Unconventional Hydrocarbon Resources
- Reservoir Management
- Teamwork
- What Is the Difference Between a Team and a Group?
- Value
- Main Objectives of the Reservoir Management Activities
- Economic Optimization
- Well Testing
- Increasing Reserves and Production
- THE Reservoir Management Issues
- The Reservoir Management Process
- Reservoir Management Benefits
- 4. Reservoir Management Team
- Data Management
- Data Captured
- Interpreted Data
- Quality Assurance
- Original in Place Volumes
- Fluid-Flow Characteristics
- Depletion Plan Development and Updating
- Need for Improved Recovery Projects
- 4.3.4 Wellbore Utilization Plan
- Reservoir Models
- Reservoir Issues
- Implement and Operate
- Operating Plan
- Survey of Performance

- Surveillance
- Rank, Justify, and Fund Opportunities
- Reservoir Management Leadership Team
- Human Resources
- Achieving a Quality Program
- Some of the Strategies of Development and Maximum Production from the Common Fields in Order to Achieve the Macro Oil Field Goals
- Opportunity Evaluation
- Why Economics
- Accounting
- Financial Accounting
- Risk vs. Uncertainty
- Definition of Risk
- Definition of Uncertainty
- Definitions
- Top Reservoir Uncertainty
- Uncertainty in HCIIP
- Reservoir- Management Efforts
- Flow Surveillance
- Reservoir Surveillance
- Aquifer Influx Mechanism/Direction
- Dominant Fluid Flow Direction
- Seismic Reservoir Monitoring or Time-Lapse Seismic
- Applications of Reservoir Monitoring
- 4D Seismic – the Concept
- Time lapse Monitoring
- Geostatics and time-Lapse Seismology
- Time Lapse or 4D Seismic Monitoring
- 4D – True Relative Scaling – No Cross-Equalization
- Classification of Gullfaks Data

- Integrated Reservoir Management
- Integrated Information System of Reservoir Management.
- Reservoir Management | Fundamentals
- The Reservoir Management
- Main Objectives of the Reservoir Management activities
- The Economic Optimization of Oil and Gas Recovery
- Reservoir Management Process
- Reservoir Management Relies on a Fundamental Tool Which is Reservoir Modeling.
- Modelling Process
- Reservoir Management Data Acquisition and Characterization
- In Detail the Main Steps of this Process
- Data Processing
- Data Integration and Reservoir Characterization
- Typical Information Produced by the Reservoir Characterization Process
- Well Logging
- Depending on the Wellbore Status, the Logs are Classified as:
- Core Analysis
- Routine Core Analysis
- Special Core Analysis
- SCAL
- Logs and Core Correlation
- Fluid Properties
- Basic Quantities
- Depletion Step
- Thermodynamic Functions
- Well Testing
- Economics
- The Economic Value
- Uncertainty Analysis

- Political Issues Deserve
- Integrated Reservoir Management
- Data Management of Reservoir Management
- Evolution of Reservoir Management Techniques
- Content
- Reservoir Management
- Objectives of Reservoir Management
- Reservoir Management Tool
- The Modelling Process
- Reservoir Management Process
- Reservoir Characterization
- Interpretation Models
- Integration of Interpretation Models
- Reservoir Model Verification
- Verification of Reservoir Model Flow Behaviour
- Reservoir Model Flow Verification
- Reservoir Model Flow Behaviour Verification
- History Matching
- Characterization: an Iterative Process
- Production Prediction
- Decline Curve Analysis
- Reservoir Simulation (1960's to 1970's)
- Reservoir Simulation (1980's)
- Frequently Asked Question
- Implementation through New Technology
- Computer Aided Production (CAP) Tools
- Needs of the Practicing Professional
- Competitive Advantage
- Well Test Analysis
- Content

- New Curriculum
- The Ultimate Reservoir Management Goal
- Reservoir's Advanced Management Strategies
- Development and Expansion
- Utilization of New Technologies
- Considering the Conventional Models
- Depletion Rate
- Gathering Information and Monitoring
- Create a Coherent Strategy Fits
- Considering the Technology Principals
- New Exploration Fields
- Investment Contracts
- The Academic Courses
- Financial Priorities
- Scientific and Optimal Method of Reservoir Development
- Common Reservoir Management
- Optimal Exploitation
- Integrated Reservoir and Production Management: Solutions and Field Examples
- Integrated Reservoir and Production Management (IRPM) Solutions
- Some Critical Components for IRPM
- PROMAC Inflow Control System
- Water Monitoring Radar
- The DACQUS System
- The Metering System
- IRPM Field Cases
- Field Case B:
- Field Case C: The Huldra Field
- Conclusions
- Integrated Reservoir Management

- Introduction to Seismic Reservoir Management
- Reservoir Management
- Introduction to Seismic Reservoir Characterization
- Seismic Reservoir Characterization
- To Achieve Seismic Reservoir Characterization
- How is it Integrated?
- Seismic Reservoir Characterization Hydrocarbon Detection and Modeling
- What is Seismic Reservoir Characterization?
- Two Fundamentals Topics in reservoir Characterization
- The Goal of Reservoir Characterization
- The Purpose of RC
- Analysis of Share-Wave Anisotropy
- The Future of Reservoir Characterization
- Reservoir Characterization Categories
- Applications of 4C
- Lithology/Fluid prediction
- Seismic Anisotropy
- Reservoir Management
- Teamwork
- Value
- Opportunity Evaluation
- Influence Diagram
- Role of Reservoir Services Management to Lead Shift Toward Reservoir Management Solutions
- Angola Prospectivity from Seismic
- Seismic Interpretation
- Inversion and Modelling
- Seismic Inversion to Impedance
- Definitions
- Introduction: Basic AVO Concepts

- What can we Expect from AVO
- Rather that ACO we should say AVA
- Amplitude vs Angle
- AVO Intercept and Gradient
- Reservoir Properties from Seismic Data (Pre-Stack)
- Post-Stack Acoustic Inversion
- Flow Surveillance
- Reservoir Surveillance
- Aquifer Influx Mechanism/Direction
- Seismic Reservoir Monitoring or Time-Lapse Seismic
- Applications of Reservoir monitoring
- 4D Seismic – The Concepts
- Geostatics and Time-Lapse Seismology
- Time-Lapse or 4-D seismic Monitoring
- Marine of 4-D Seismic Acquisition
- Differences Between Base and Repeat Surveys
- Classification of Gullfaks Data
- Quantitative Seismic Reservoir Analysis
- Quantitative Seismic Attributes Interpretation
- Why do we need Quantitative Interpretation?
- The Essentials of Amplitude Interpretation
- Basic Rock Properties
- Seismic Reservoir Analysis
- Coherence Attributes
- Curvative Attributes
- Multi-spectral Estimates of Curvatures
- Reflector Convergence
- Fracture Analysis Using Curvature Attributes
- Visualization of Attributes
- Thin-Bed Reflectivity

- Correction for Spurious Phase Via Estimation of Non-Minimum Phase Wavelet
- Rock Physics Analysis
- AVO/LMR Analysis
- Special Decomposition
- Seismic Facies Classification
- Impedance Inversion
- Angle-Dependent Inversion
- Extended Elastic Impedance Inversion
- Multi-Attributes Analysis