COURSE OVERVIEW DE0956
Prospect Generation
(E-Learning Module)

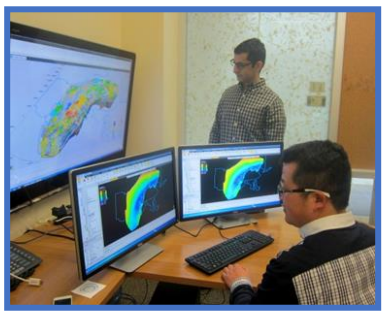
Course Title
Prospect Generation (E-Learning Module)

Course Reference
DE0956

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 prospect generation. It covers the prospect evaluation process, volumetric estimation, prospect risk analysis and economic evaluation; the timing risk and post-well analysis on existing wells; the probabilistic volumetric and chance of success for leads and prospects; the petroleum economics challenges and optimization of exploration workflows; the exploration project cycle, workflow-prospectivity, additional geophysical workflow components, upstream full cycle and downstream cycle; and the volumetric calculation, estimated reserves, wire-line logging, net to gross and two stage net to gross.

During this course, participants will learn the risk analysis and the benefit of risk assessment and risk management; the categories of uncertainty and various approaches and methods to risk analysis that include deterministic methods and probabilistic methods; the prospect generation and evaluation including petroleum system, anomaly and geological concepts; the geophysical and surface exploration; the seismic refraction, gravity, magnetic survey using a proton magnetometer; and the geochemical exploration methods, down hole logging surveys and direct exploration methods.

Course Objectives

After completing the course, the employee will:-

- Apply and gain a comprehensive knowledge on prospect generation
- Employ the prospect evaluation process, volumetric estimation, prospect risk analysis and economic evaluation
- Identify timing risk and carryout post-well analysis on existing wells
- Explain probabilistic volumetric and chance of success for leads and prospects
- Recognize petroleum economics challenges and optimize exploration workflows
- Describe the exploration project cycle, workflow-prospectivity, additional geophysical workflow components, upstream full cycle and downstream cycle
- Discuss volumetric calculation, estimated reserves, wire-line logging, net to gross and two stage net to gross
- Perform risk analysis and explain the benefit of risk assessment and risk management
- Describe the categories of uncertainty and apply various approaches and methods to risk analysis that include deterministic methods and probabilistic methods
- Discuss prospect generation and evaluation including petroleum system, anomaly and geological concepts
- Employ geophysical and surface exploration as well as discuss seismic refraction, gravity, magnetic survey using a proton magnetometer
- Apply geochemical exploration methods, down hole logging surveys and direct exploration methods

Who Should Attend

This course provides an overview of all significant aspects and considerations of prospect generation for petroleum prospect generation for geologists, engineers and managers.

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

- Prospect Evaluation Process
- Prospect Identification
- Volumetric Estimation
- Prospect Risk Analysis
- Economic Evaluation
- Fundamentals
- Finding the Best Potential within the Play
- Timing Risk
- Post-well Analysis on Existing Wells
- Probabilistic Volumetric and Chance of Success for Leads and Prospects
- Prospect Ranking - Beyond “Risked Resources”
- Prospect Generation
- Prospect Assessment
- Petroleum Economics Challenges and Optimization Exploration Workflows
- Exploration Project Cycle
- Workflow-Prospectivity
- Additional Geophysical Workflow Components
- Upstream Full Cycle
- Downstream Cycle
- Oil and Gas Projects Evaluation
- Methodology
- Involved Parties
- Geoscientists and Engineers
- Economist, Accountant and Engineers
- Senior Management

- Involved Parties – Uncertainty
- How to Calculate the Volumes
- Volumetric Calculation
- Estimated Reserves
- Wire-line Logging
- Net to Gross
- Two Stage Net to Gross
- Example
- Risk Analysis
- Learning Objectives
- What is Risk Analysis?
- Risk Definition
- Benefit of Risk Assessment & Risk Management
- Involved Parties
- Risk and Uncertainty
- Spain the Wheel
- Household Budget
- Risk Analysis
- Exploration Prospect
- Why Do Risk Analysis?
- Investment Example
- Oil and Gas Investment
- Categories of Uncertainty
- Approaches to Risk Analysis
- Method to Assess Risk
- Deterministic Methods
- Probabilistic Methods
- Overview on Prospect Generation and Evaluation
- Petroleum system
- Anomaly

- Definitions
- Lead
- Play and prospect
- Play
- Prospect
- Prospect Generation
- Chance Mapping
- Exploration Techniques for Prospect Generation
- Exploration Techniques
- Geological Concepts
- Geophysical Exploration
- Seismic Refraction
- Gravity
- Magnetic Survey Using a Proton Magnetometer
- Surface Exploration
- Geochemical Exploration Methods
- Down Hole Logging Surveys
- Resistivity
- Direct Exploration Methods
- Drilling
- Mapping
- Funds Flow in Upstream Operations
- Oil Traps
- Reservoir Rocks
- Seismic Surveys
- Prospect Evaluation
- Drilling the Well
- Enhanced Recovery
- Transport
- Uses of Crude Oil and Natural Gas

- At the Refinery
- Exploration Cycle in a Sedimentary Basin
- Exploration Flowchart
- Field Discovery
- Field Evaluation
- Economic Assessment
- Economic Assessment Results
- Exploration Evaluation Process
- Field Development
- Delineation Well
- G&G in Development
- Data for Development
- G&G in Production
- Reservoir Simulation
- The Value of G&G to an Oil Company
- Let's Fast Forward a Number of Years
- A Geologic Model
- Using a Simulation
- Field Production
- Examples of Field Development Concepts for an Oil Field.
- Field Abandonment
- Prospect Generation Tools
- Well logs
- Driller's Log
- Wire Line Logs
- Electric Logs
- Nuclear Logs
- Acoustic Logs
- Wire Line Logs
- Sample Logs

- Core Samples
- Cutting Samples
- Drill Stem Test
- Strat Test
- Stratigraphic Correlation
- Maps
- Contour Maps
- Vertical Cross Sections
- Questions
- Prospect Generation
- Chance Mapping
- Amplitude Extraction
- Near Reflector Geometry
- Formation or Interval Attributes
- Defining the Geometric Framework of the Reservoir
- Angola Prospectivity from Seismic
- Seismic Interpretation
- Coherence
- Seismic Time Slice
- Coherence Time Slice
- Attribute Expression of Structure and Stratigraphy
- Complex Faulting
- Vertical Section Between Two Salt Withdrawal Basins
- Offshore Trinidad - 1200 ms
- Seismic
- Conventional Time Structure Map Top Devonian – Central Basin Platform, TX
- Dip/azimuth/Coherence Central Basin Platform. t = 1.200 s
- Principle Component Coherence (No Smoothing) t = 1.000 s
- Reflector Curvature t = 1.000 s
- Principle Component Coherence (No Smoothing) t = 1.200 s

- Crossline (EW) Gradient of Coherent Energy t = 1.200 s
- Fracture and Fault Central Basin Platform
- Joints and Fractures
- Curvature
- Most Positive Curvature
- Lineation Directions
- Strain Ellipsoid
- Reefs
- Time Structure Map – Winnepegosis Reef (SE Sask)
- Time Thickness Map – Winnepegosis Reef (SE Sask)
- Most Negative Curvature (Highlights Synclinal Features)
- Amplitude Extraction – Winnepegosis Horizon (SE Sask)
- Most Negative Curvature of Coherent Amplitude (Highlights Destructive Interference)
- Most Positive Curvature of Coherent Amplitude (Highlights Constructive Interference)
- Why do Attributes Show Us Features of Interest that are Otherwise Difficult to See?
- Attribute-assisted Fault Interpretation Methodology
- Advantages of Attribute-Assisted Fault Interpretation
- Why do we See Channels on Seismic Attributes?
- Summary
- Prospect Evaluation
- Petroleum Reserve Estimation, Production, and Production Sharing Contract (PSC)
- Lead
- Prospect
- Play
- Prospect Evaluation
- Basin Framework
- Petroleum System Framework

- Prospect Definition
- Presence of Reservoir Facies
- Reservoir Depth vs. Data
- Presence of Effective Structural Closure
- Probability of an Effective Sealing Mechanism
- Probability of Effective Source Rock with Respect to Quantity and Maturity
- Probability of Effective Migration and Timing
- Exploration
- Prospects Generation
- Prospects Evaluation
- Prospect Assessment
- Basic Principles of Exploration Geology
- Prospect Analysis: Volumetric
- Basin, Play and Prospect Interrelationship
- Play Risk: Critical Risk Maps (Traffic Light Maps)
- Prospect Analysis: Risking
- Prospect Analysis: Volumetric output from Montecarlo Simulation
- Prospects Evaluation
- Prospects Evaluation, Barents Sea
- Hamlet
- Probability Distribution
- Volumetric Calculation
- Cumulative Probability
- Area Risk
- Volumetric Example
- Recovery Factor
- Net reservoir Set Porosity Cut off
- Formation Volume Factor
- Alaska North Slope Formation Volume Factor (FVF)
- Gertrude

- How to Compare Two Prospects?
- Gertrude Prospect
- Technical & Economical Evaluation
- Prospect Evaluation, Resource Assessment and Risking
- Purpose of Prospect Evaluation by the Government
- The Norwegian Licensing Round
- Volumetric Calculation
- The Volumetric Function
- HCPV
- The Rock Volume
- The Trap
- The Maps
- Gross Rock Volume, Some North Sea Fields
- Reservoir Description
- Reservoir Parametres
- Gross Thickness
- Net Pay
- Porosity
- Poroperm Plot
- HC-saturation
- Spread in Input Data
- In-Place Resources
- Oil to the Surface
- In-Place Resources
- Recoverable Resources
- Recovery Factors for some Norwegian Oil Fields
- Recoverable and In-Place Resources
- HCPV-prognosis vs Result
- Conclusions, Volume Assessments
- Recommendations, - Volume Assessments

- Risking Resources
- Risk Analysis
- Some Definitions
- Risk – Probability
- Success Rate
- Probability Categories
- The Independent Risk Factors – NPD's Risk Factors
- Probability of Discovery
- Reconstruction of Hydrocarbon Accumulation Process
- Sum Up – Main Principles
- Probability of Discovery
- Prospect Prognosis and Drilling Results
- Prospect Assessment
- Purpose of Prospect Evaluation
- Methodology
- The Volumetric Equation
- HCPV
- Finding the Volume
- The Trap
- The Maps
- Volume vs. Depth
- Area/Depth Graph
- Anticline Geometry Corrections
- Geometry Multiplier
- Reservoir Parameters 1
- Reservoir Parameters 2
- Recovery Factor
- Exercise Volume Calculations
- Volume Calculation- Solution