COURSE OVERVIEW TM0821
Integrating Planning (E-Learning Module)

Course Title
Integrating Planning (E-Learning Module)

Course Reference
TM0821

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 integrated planning. It covers the integrated operations planning and supply chain planning; the factors that drive effective planning and supply chain visibility; the utilization of resource, demand planning, production planning and logistics planning; the conflicts between sales and operations groups; the 5 major plans to be integrated; the involvement of senior leadership to make S&OP work in an organization; the 8 keys to successful S&OP implementation, APS framework and the benefits of integrated business planning; and the collaborative planning, forecasting and replenishment (CPFR).

During this course, participants will learn the relationships for CPFR in a retail situation; the influence of replenishment time and economies of scale to forecasting; the forecasting model components for time period, the components of an effective forecast management process and forecast management process components; the integrated and consistent combination of components for a meaningful forecast process; the bullwhip effect showing requirements error amplification between supply chain partners; the criteria for evaluating applicability of forecast techniques including its categories; the difference between forecasts and actual sales; and the alternative measures of forecast.

Course Objectives

Upon the successful completion of this course, participants will be able to:-

- Apply and gain an in-depth knowledge on integrated planning
- Employ integrated operations planning and supply chain planning
- Identify the factors that drive effective planning and review supply chain visibility
- Utilize resource and carryout demand planning, production planning and logistics planning
- Discuss the conflicts between sales and operations groups as well as the process illustrating 5 major plans to be integrated
- Involve senior leadership to make S&OP work in an organization
- Identify the 8 keys to successful S&OP implementation and describe APS framework including the benefits of integrated business planning
- Employ collaborative planning, forecasting and replenishment (CPFR)
- Discuss the relationships for CPFR illustrated in a retail situation
- Explain how forecasting is influenced by replenishment time and economies of scale
- Employ logistics forecasts to support collaborative planning, drive requirements planning and improve resource management
- Describe forecasting model components for time period t including the components of an effective forecast management process and forecast management process components
- Apply an integrated and consistent combination of components for a meaningful forecast process
- Illustrate bullwhip effect showing requirements error amplification between supply chain partners
- Identify the criteria for evaluating applicability of forecast techniques including its categories
- Explain the difference between forecasts and actual sales as well as illustrate alternative measures of forecast error and how relative forecast error will vary based on the level of measurement

Who Should Attend

This course is designed for a multi-disciplined audience from project and operations sectors of the oil and gas industry, including both professional and support staff. This includes directors, managers, project managers, team leaders, department heads, project engineers, production managers, operations managers, facility engineers, maintenance managers, maintenance engineers, consultants and group leaders.

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.

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 Fee

As per proposal

Course Contents

- Integrated Operations Planning
- What is Integrated Operations?
- Overview of Integrated Operations Planning
- Supply Chain Planning Requires Coordination of Key Processes
- Factors that Drive Effective Planning
- Supply Chain Visibility
- Simultaneous Resource Consideration
- Resource Utilization
- Supply Chain Planning Applications Overview
- Demand Planning
- Production Planning
- Logistics Planning
- Logistics Requirements
- Sales & Operations Planning (S&OP)
- Traditional Conflicts Between Sales and Operations Groups must be Resolved to Reach Consensus
- An Overview of the S&OP Process illustrating 5 Major Plans to be Integrated
- Making S&OP work in an Organization Requires Senior Leadership Involvement

- 8 Keys to Successful S&OP Implementation
- APS Framework
- Sample APS Planning Situation
- APS System Components
- Supply Chain Planning Benefits
- Benefits of Integrated Business Planning
- Collaborative Planning, Forecasting and Replenishment (CPFR)
- CPFR Process Steps
- Basic Relationships for CPFR Illustrated in a Retail Situation
- Forecasting
- Forecasting is Influenced by Replenishment Time and Economies of Scale
- Forecasting Requirements
- Logistics Forecasts are Necessary to - Support Collaborative Planning
- Logistics Forecasts are Necessary to - Drive Requirements Planning
- Logistics Forecasts are Necessary to - Improve Resource Management
- Forecasting Model Components for Time Period t
- Description of Model Components
- Components of an Effective Forecast Management Process
- Description of Forecast Management Process Components
- Forecast Database
- Technique
- Support System
- Administration
- Meaningful Forecast Process Requires Integrated and Consistent Combination of Components
- Bullwhip Effect Showing Requirements Error Amplification Between Supply Chain Partners
- Criteria for Evaluating Applicability of Forecasting Techniques
- Categories of Forecast Techniques
- Qualitative
- Time Series
- Causal
- Forecast Techniques

- Forecasting Accuracy Refers to the Difference Between Forecasts and Actual Sales
- Illustration of Alternative Measures of Forecast Error
- Illustration of How Relative Forecast Error will Vary Based on the Level of measurement
- Oil & Gas Integrated Operations using aspenONE
- Drivers for Integrated Operations
- Importance of Asset Monitoring
- Total Exploration
- aspenONE Asset Monitoring for Oil & Gas
- The Digital Oil Field
- Typical Production Architecture
- Integration Evolution
- Integration Infrastructure versus OPC
- Event Driven, Message-based Integration
- Typical Dashboard
- Example Well Overview
- Event Management – Diagnosis
- Role Based Visualization - Create Once – Use Many Times
- Flexible Data Structures Support Your Applications - Create Objects that model your Assets
- More than just Real-Time Process Data
- Model Integration using OSE™
- Integrated Asset Modelling
- Aspen OSE™
- Asset Management Optimization using Model-Based Decision Support
- Integration Methodology – Hypotheses
- Integration Methodology – Gathering System
- Integration Methodology – Process Model
- Integration Methodology – Mass
- Optimization Methodology
- Case Study – Network
- Case Study – Gas Lift Optimization
- Case Study – Condensate Recovery

- Case studies – Oil and Associated Gas Sheet
- Case studies - Tested 3 Different Optimization Methodologies
- Case studies - Results
- Case Study – NGL Optimization
- Conclusions
- Using Integrated Asset Modelling to Improve Oil and Gas Planning Decisions in a Volatile Market
- Video - Inside Volkswagen's Transparent Factory in Dresden
- VW Transparent Factory
- The Oil and Gas Factory
- Integrated Asset Modelling - The Digital Oil & Gas Factory
- The Corporate Value Driver
- Is IAM of Value to YOU?
- Deloitte's SEAOOC 2014 - Queensland Gas Industry (Current Approach)
- Deloitte's SEAOOC 2014 - "Australia could Innovate its Oil and Gas Business Model along the Lines of a Factory"
- Deloitte's SEAOOC 2014 - Can a Spreadsheet be part of IAM?
- Is this an Integrated Asset Modelling Workflow?
- Reservoir Modelling
- Chaining the Workflow with Too Much Detail
- The Oil and Gas Factory Assembly Line
- Assembly Line Components - Reservoir Modelling
- Assembly Line Components - Well-bore Modelling
- Assembly Line Components - Facilities Modelling
- Assembly Line Components - Compression
- Examples – Assembly Line Templates
- Exploration – Project Feasibility (Digital Assembly Line Template)
- Pre-Development Planning – Digital Assembly Line Template
- Market Optimization - Digital Assembly Line Template
- Flow Assurance - Digital Assembly Line Template
- LNG Portfolio Optimization - Digital Assembly Line Template
- The Oil & Gas Factory - Digital Assembly Line
- Lessons from Volkswagen
- Integrated Field Development Plan

- Project Management
- The Project Plan
- Organization
- Project Control Schedules
- Project Milestones and Authorization Process
- Project Control Budget
- Project Procedure Manual
- Peculiarities of the Upstream Oil and Gas Industry
- Oil or Gas Field Life Cycle
- Appraisal Phase
- Field Appraisal Objective
- Making Good Decision
- Activities to Reach the First Oil
- The Main Topics to be faced for a Proper Oil or Gas Field Development Project
- Main Differences Between
- Onshore and Offshore Field Development Practices
- Onshore vs Offshore Field Development
- Onshore vs Offshore Field Development Average Operational Costs
- Onshore vs Offshore Breakdown Costs - $/bbl -for Regional Oil Production
- Offshore vs Onshore Drilling Activities
- Offshore vs Onshore Drilling Cost
- Offshore vs Onshore Drilling Rigs
- Offshore vs Onshore Storage and Transport
- Offshore vs Onshore Cost Differences
- Define Project Details of the Oil Recovery Scheme
- Identification of Most Cost-Effective UR
- Production Build-Up Period and the Duration of Production Plateau Optimization
- Step-by-step Procedure for an Effective Field Development Plan According to the Front-End-Loading (FEL) Process
- Front-End-Loading (FEL) Process
- Objectives and Key Activities of the Phases
- Front-end Loading Methodology
- Front-end Loading Phases for Full Field Development Project
- Tasks to be Accomplished for a Reliable Field Development Plan

- Contents of Final FDP Document - Typical Contents of a Field Development Plan Document
- Set an Integrated FDP Team and Define a clear Target
- Identification and Assessment of Opportunities
- Identification and Assessment of Opportunities
- Field Development Planning (FDP)
- Feasibility Study
- Outcomes of the Feasibility Study
- Feasibility Study Working Plan
- FDP Integrated Team
- Responsibility and Role of the Team Coordinator
- FDP Target Identification
- Main causes of the Failure of FDP
- Reservoir Model as the Standard Tool for FDP
- Typical Reservoir Study Contents
- Reservoir Characterization
- Reservoir Connectivity
- Evaluation of Development Strategies
- Expected Reservoir Study Outcomes
- Data Acquisition and Analysis
- The Integrated Database
- Three Levels Database
- Database Structure and data QC
- Project Data Analysis and Lesson Learning
- Data Required to Build a Reservoir Model
- Development of a Robust Reservoir Model
- Typical Application of the Reservoir Model
- Major Tasks of the Reservoir Engineers
- Why We Need a Reservoir Simulation Model
- Geological and Dynamic Reservoir Model
- Geological Modelling Workflow
- Info to be Generated by Reservoir Study
- Reservoir Characteristics
- Reservoir Rock Properties

- Reservoir Fluid Properties
- Primary Producing Mechanism
- Distribution of Oil at Beginning of Waterfall
- Rock/Fluid Properties
- Integrated Team for Reservoir Modelling
- Integrated Planning for Reservoir Studies
- Guidelines for Field Development Planning - Reservoir Development Strategy
- Field Flow Production Profile
- Reservoir Drive Mechanisms
- Solutions Gas Drive Reservoir Behavior and Development Strategy
- Development Strategy for Depletion or Solution Gas Drive Reservoirs
- The Typical Recovery Factor (RF) from a Reservoir Development by Solution Gas Drive is in the Range 5-30%
- The Low RF may be Boosted by Implementing Secondary Recovery Techniques, Particularly Water Injection, or Gas Injection
- Solution Gas Drive Reservoirs Performance
- Gas Cap Drive Reservoir Behavior and Development Strategy
- Development Strategy for Gas Cap Drive Reservoir
- Gas Cap Drive Reservoir Characteristics
- Segregating Gas Caps Reservoir
- Non-Segregating Gas Caps Reservoir
- Gas Cap Drive Reservoir Performance
- Water Drive Reservoir Behavior and Development Strategy
- Development Strategy for Water Drive Reservoir
- Peripheral Waterdrive
- Edgewater Drive
- Bottomwater Drive
- Waterflooding
- Basic of Waterflooding Process
- Immiscible Displacement
- Microscopic Displacement Efficiency
- Wettability, Absolute Permeability, Relative Permeability and Critical Saturation
- Relative Permeability Curve
- Relative Permeability Laboratory Measurements

- Relative Permeability: Unsteady State Techniques
- Factors Governing the Waterflooding Process
- Mobility Ratio
- Mobility Ratio M
- Mobility Ratio [M] Impact on Sweep Efficiency
- Reservoir Heterogeneity
- Areal Sweep Efficiency
- Vertical Sweep Efficiency
- Heterogeneity Unfavorable for Waterflooding
- Impact of Permeability Heterogeneity on Oil Displacement Efficiency
- Impact of Permeability Distribution Across a Continuous Reservoir Section on Displacement Efficiency
- Recipe for Evaluating Vertical Sweep Efficiency in Heterogeneous Reservoirs
- Gravity Segregation
- Vertical Equilibrium and Effect of Gravity Forces
- Vertical Displacement
- Stepwise Waterflooding Project
- Well Architecture
- Well Drilling and Completion Planning
- Well Architecture and Completion Strategy
- Vertical Well
- J-shape
- Horizontal Well
- Multilateral Well
- Well Completion
- Well Completion Strategy
- Completion Planning
- Single Completion
- Multiple Zone Completion
- Single Multiple Zone Completion
- Dual Multi Zone Completion
- Dual Completion
- Horizontal WellTypical Completion
- Multilateral Completion

- Offshore Wells Completion
- Wet Tree Systems
- Vertical Monobore Subsea Tree Systems
- Subsea Manifold
- Integrated Field Development Plan - Conceptual Definition of the Field Development Scenario
- Conceptual Definition of the Field Development Scenario
- Field Development Scenario Workflow
- Gate 1 – Is the Project Feasible?
- Setting the Field Development Strategy
- Analyze Alternatives for Field Development
- Select among the Possible Development Scenario
- Objective of Field Development Planning
- Items to be Considered to Define a Proper Field Development Strategy
- FDP Items and their Impacts
- Identification of a FDP Clear Strategy
- Focus and Emphasis of Development Strategy
- Gate 2 – Is it the Best Scenario?
- Consolidation of the Reservoir Development Scenario
- Consolidation of the Field Development Scenario - Selection Phase
- Consolidation of the Field Development Scenario Workflow - Case without Production History
- Economic Evaluation
- Project Economic Evaluation
- Input Data for the Project Economic Evaluation
- Economic Evaluation Criteria
- Key Economic Parameters
- Selection of the Business Cases based on Economic Analysis
- Basic Economic Evaluation Procedure
- Project Economic Evaluation Example
- Uncertainty Analysis
- Uncertainties vs Risk
- Typical Uncertainties in Upstream Oil Industry
- Typical Technical Uncertainties

- Typical Economical Uncertainties
- Uncertainty Measurement
- Probability Density Function (PDF)
- Cumulative Probability
- Quantifying Uncertainty Related to the Reservoir Model Outcomes
- Uncertainty Generates Risk and Opportunity
- Benefice of Performing the Uncertainty Assessment
- Risk Analysis
- Reservoir Development Decision Tree
- Project Risk Management
- Possible Risks
- Quantitative Risk Assessment [QRA]
- Project Risk Matrix
- Risk Analysis Step-by-Step Procedure
- Risk Register
- Risks Mitigation
- Risks Mitigation Strategy
- Strategies for Positive risks or Opportunities
- Methods and Strategies to Reduce Uncertainty
- Summary of Risks, Uncertainties and Mitigations Actions
- Health, Safety and Environmental
- Health Safety and Environmental (HSE) Considerations
- HSE Common Principles
- Safety and Environment
- Safety Performance Standards
- Gate 2 – Work Quality and Economics ok?
- Final Selection of Preferred Alternative for the Field Development
- Feasibility Study
- Define
- Define Project Details of the Oil Recovery Scheme
- Identification of Most Cost-Effective UR
- Production Build-Up Period and the Duration of Production Plateau Optimization
- Project Approval

- Management Project Approval
- Field Development Roadmap to Reach the Project Target
- Production Planning and Control (PPC)
- Production Planning
- Production Control
- PPC: History
- PPC: Characteristics
- PPC: Objectives
- PPC: Process
- Planning
- Routing
- Scheduling
- Types of Schedules
- Loading
- Dispatching
- Dispatching Procedures
- Follow Up & Expediting
- Inspection
- Corrective Measures
- PPC: Limitations
- PPC: Significance
- PPC: Toyota Way
- Conclusion