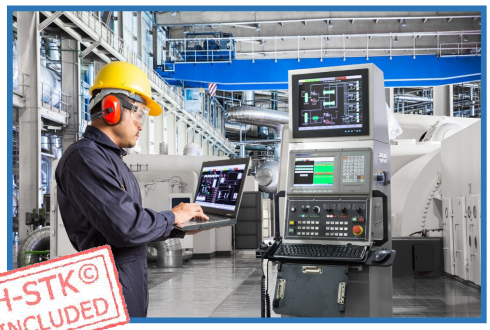
COURSE OVERVIEW DE0592
Integrated Asset Modelling

Course Title
Integrated Asset Modelling



Course Date/Venue
Session 1: April 06-10, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
Session 2: September 08-12, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
DE0592

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This hands-on, highly-interactive course includes real-life case studies where participants will be engaged in a series of interactive small groups and class workshops.

Oil and gas assets are made up of interconnected, dynamic systems and processes. As traditional asset modeling is a static and serial process, it cannot account for the complexity that arises from the interdependencies and dynamic nature of E&P assets. Today, this challenge is addressed through integrated asset modeling that links simulators across technical disciplines, assets, computing environments, and locations.

Integrated asset modeling represents a shift in oil and gas field management. This collaborative methodology allows engineers to account for complex production operations, the increasing quantity and nature of acquired data, and the need for rapid data analysis. The technique delivers more accurate models with which field development engineers are able to optimize production.

Integrated Asset Modeling (IAM) provides an overview of this methodology that is able to supplement operators with a clear picture of field behavior, production potential hence economics over the life of the asset.

New opportunities can be discovered, optimal artificial lift programs can be implemented to meet production targets. State of the art of IAM tools is reviewed, with emphasis on the solution implemented. Benefits and criticalities are then discussed on the basis of three cases, including integrated models for regional gas production systems, deep water mixed oil-gas assets and gas lifted reservoir. Indeed, it has been noted that integrated surface-subsurface modeling will have a critical impact on field management by offering increased accuracy in forecasting reservoir behaviour and maximising the recovery factor at minimum cost.

Nowadays oilfield development has become more technically and economically challenging and a high degree of interdisciplinary interaction is needed to have an effective and efficient management of the field. The achievement of this goal is made possible only if all the different resources of an organization work together sharing the same reservoir model. Indeed, the main breakthrough behind Integrated Asset Modeling (IAM) is to combine reservoir, production and surface engineering modeling into an asset management tool that allows the simulation of the whole oilfield system. Coupling dynamic reservoir and surface facility models into a single integrated model may address the following issues: pressure interaction between the surface and the subsurface; mixing of different fluids and flow assurance; accounting for facilities constraints; and identification of system bottlenecks and backpressures. In this way, unnecessary drilling can be avoided.

Crude Oil has been the primary energy driver for a number of decades and the current fluctuation in oil price puts many operators' future investments in limbo. Natural gas exploration, production and distribution however, have increased tremendously in recent years. Oil production primarily focuses on maximizing liquid hydrocarbon recovery and minimizing gas production, whereas gas production is typically driven by long term contracts generating both opportunities and challenges in optimizing reservoir production. Integrated asset models provide a pathway for planners and engineers to combine their views from often conflicting objectives. IAM tools enable optimal hydrocarbon resources to be recovered by oil and gas companies. The details required for building an asset model depend on the type of optimization problem we strive to address. It is common practice for E&P companies to use the same tools for optimizing different types of reservoirs; however, gas reservoirs are significantly different to manage when compared to oil reservoirs. Asset management teams in E&P companies, joint venture partners and Government regulatory authorities rely upon the Integrated Asset Models for making informed decisions.

There are numbers of applications for IAMs and the focus is on:-

- How IAM is important as a corporate planning tool
- How market based models provide robust optimization for oil and natural gas exploration and production
- Facility representation in IAM – how much detail is optimal and for what purpose
- How to find system bottlenecks and enforce facility constraints for field development optimization
- Good forecasting models – how they aid exploring challenging fields (High CO2, H2S, etc.)
- Integrated Asset Models are typically used for:-
    - Field surveillance & troubleshooting
    - Production optimization
    - Production forecasting
    - Evaluation of investment opportunities
    - System design

IAM solutions have been deployed in a variety of production systems and locations, from simple two-well systems to complex systems with hundreds of wells and decades of production history.

- Modelling reservoirs, wells and facilities independently requires knowledge of or assumptions about boundary conditions (e.g. FBHP, FWHP, Separator Pressure etc.)
- Coupling all elements into one single model ensures common boundary conditions are used.

The integration process fosters cross-discipline understanding of asset performance.

Course Objectives

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

- Apply and gain systematic techniques and methodologies on integrated asset modelling (IAM)
- Discuss value integrated asset modelling including integrated asset modeling as part of the field development planning
- Describe uncertainties and sensitivity comprising of realistic characterization, range of uncertainties which affect field development, potential impact on value, significant impact on development plans and highlighting both critical risks and opportunities
- Consider new technology for uncertainty in economic modeling, commercial and contractual responses and team and models integration
- Perform best practices in production covering history matching, well and reservoir performance, production sensitivity analysis and other components such as ICD, gas lift and artificial lift
- Identify flow assurance and process modeling covering robust and accurate integrated models, flow assurance and process design
- Carryout best practices relating to flow assurance and process design which includes total production system pressure and energy analysis, steady state flow assurance, dynamics modeling and process system modelling
- Discuss production optimization and recognize right – sizing integrated models
- Illustrate well modelling and perform integration production models to economical model

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of integrated asset modelling (IAM) for reservoir engineers, formation evaluation engineers, production geologists and production engineers.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- 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.

- The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors 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 2018-1 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 2018-1 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 Accreditors 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.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Dr. Chris Kapetan, PhD, MSc, is a **Senior Petroleum Engineer** with over **30 years** of international experience within the **onshore** and **offshore oil** & **gas** industry. His wide experience covers **Asset Management** Principles, Risks & Economics, **Petroleum Economics**, **Decision Analytic Modelling Methods** for **Economic Evaluation**, **Probabilistic Risk Analysis** (**Monte Carlo Simulator**) **Risk Analysis Foundations**, **Global Oil Demand**, Crude Oil Market, Global Oil Reserves, Oil Supply & Demand, Governmental Legislation, Contractual Agreements, **Financial** Modeling, **Oil Contracts**, **Project Risk Analysis**, **Feasibility Analysis** Techniques, **Capital Operational Costs**, Oil & Gas Exploration Methods, **Reservoir** Evaluation, **Extraction of Oil & Gas**, **Crude** Oil Types & Specifications, Sulphur, Sour Natural Gas, **Natural Gas Sweeting**, **Petroleum Production**, Field Layout, **Production** Techniques & Control, **Surface Production** Operations, **Oil Processing**, Oil Transportation-Methods, **Flowmetering & Custody Transfer** and **Oil Refinery**. Further, he is also well-versed in Enhanced Oil Recovery (**EOR**), Electrical Submersible Pumps (**ESP**), **Oil Industries Orientation**, **Geophysics**, Cased Hole **Formation Evaluation**, Cased Hole **Applications**, Cased Hole **Logs**, Production **Operations**, Production **Management**, Perforating **Methods & Design**, Perforating **Operations**, **Fishing** Operations, **Well & Reservoir** Testing, **Reservoir Stimulation**, **Hydraulic Fracturing**, **Carbonate** Acidizing, **Sandstone** Acidizing, **Drilling Fluids Technology**, Drilling **Operations**, **Directional** Drilling, **Artificial Lift**, **Gas Lift Design**, **Gas Lift Operations**, **Petroleum Business**, **Field Development Planning**, **Gas Lift Valve** Changing & Installation, **Well Completion** Design & Operation, Well **Surveillance**, Well **Testing**, Well **Stimulation** & **Control** and **Workover Planning**, **Completions** & **Workover**, **Rig Sizing**, **Hole Cleaning** & **Logging**, **Well Completion**, **Servicing** and **Work-Over Operations**, Practical **Reservoir Engineering**, **X-mas Tree & Wellhead** Operations, Maintenance & Testing, **Advanced Petrophysics/Interpretation** of **Well Composite**, **Construction Integrity** & **Completion**, **Coiled Tubing Technology**, **Corrosion Control**, **Slickline**, **Wireline & Coil Tubing**, **Pipeline Pigging**, **Corrosion Monitoring**, **Cathodic Protection** as well as Root Cause Analysis (**RCA**), Root Cause Failure Analysis (**RCFA**), **Gas Conditioning & Process Technology**, **Production Safety** and **Delusion of Asphalt**. Currently, he is the **Operations Consultant** & the **Technical Advisor** at **GEOTECH** and an independent **Drilling Operations Consultant** of various engineering services providers to the international clients as he offers his expertise in many areas of the **drilling & petroleum discipline** and is well **recognized & respected** for his process and procedural expertise as well as ongoing participation, interest and experience in continuing to promote technology to producers around the world.

Throughout his long career life, Dr. Chris has worked for many international companies and has spent several years **managing** technically **complex wellbore interventions** in both **drilling** & **servicing**. He is a **well-regarded** for his **process** and **procedural expertise**. Further, he was the **Operations Manager** at **ETP Crude Oil Pipeline Services** where he was fully responsible for optimum operations of crude oil pipeline, **workover** and **directional drilling**, **drilling rigs** and equipment, drilling of various geothermal deep wells and **exploration wells**. Dr. Chris was the **Drilling** & **Workover Manager** & **Superintendent** for **Kavala Oil** wherein he was responsible for supervision of **drilling operations** and **offshore exploration**, quality control of performance of **rigs**, **coiled tubing**, crude oil transportation via pipeline and abandonment of **well** as per the API requirements. He had occupied various key positions as the **Drilling Operations Consultant**, **Site Manager**, **Branch Manager**, **Senior Drilling** & **Workover Manager** & **Engineer** and **Drilling** & **Workover Engineer**, **Operations Consultant**, **Technical Advisor** in several petroleum companies responsible mainly on an **offshore** sour oil field (under water flood and gas lift) and a gas field. Further, Dr. Chris has been a **Professor** of the **Oil Technology College**.

Dr. Chris has **PhD** in **Reservoir Engineering** and a **Master's** degree in **Drilling & Production Engineering** from the **Petrol-Gaze Din Ploiesti University**. Further, he is a **Certified Surfaced BOP Stack Supervisor** of **IWCF**, a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and has conducted **numerous short courses**, **seminars** and **workshops** and has published several technical books on **Production Logging**, **Safety Drilling Rigs** and **Oil Reservoir**.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 8,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Program

The following program is planned for this course. However, the course Instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Integrated Asset Modelling: An Introduction***
0930 – 0945	*Break*
0945 – 1100	***Value of Integrated Asset Modelling*** *Production Forecasting & Decision Making Process ● Benefit from this Technology & Effectively Integrate Different Part of a Production System*
1100 – 1230	***Value of Integrated Asset Modelling (cont'd)*** *Integration of Surface & Subsurface Team ● Reservoir, Well & Facilities Management ● Benefits of Integrated Production Systems*
1230 – 1245	*Break*
1245 – 1420	***Integrated Asset Modeling as Part of the Field Development Planning*** *Field Development Planning (FDP) ● Process Integration of Various Systems from Reservoir to Plant ● Integrated Gas (LNG) Development ● FDP/Project Stage Gate Requirements ● How Simple or Complex IPM Systems ● Unlock Understanding of Key Issues for Decision-Making*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Delivering Value by Understanding Uncertainties & Sensitivity & New Technology Considerations*** *Realistic Characterization of the Range of Uncertainties which Affect Field Development ● Potential Impact on Value ● Significant Impact on Development Plans ● Highlighting both Critical Risks & Opportunities*
0930 – 0945	*Break*
0945 – 1100	***Delivering Value by Understanding Uncertainties & Sensitivity & New Technology Considerations (cont'd)*** *Focus of Practical Approaches to Handle Uncertainty in Economic Modeling ● Appropriate Commercial & Contractual Responses ● Team Integration ● Models Integration*
1100 – 1230	***New Technology Considerations (cont'd)*** *Vast Amount of Data Processing ● Production System Integration ● Data Mining & Data Processing ● The Future of Field Management (Software, Cloud Technology, Data Analysis, Data Driven Models & Value of Real Time Field Management using Integrated Production Modeling)*
1230 – 1245	*Break*
1245 – 1420	***Production Modelling: Best Practices*** *History Matching ● Well & Reservoir Performance ● Production Sensitivity Analysis ● Introducing Components such as ICD, Gas Lift & Artificial Lift*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Flow Assurance & Process Modeling*** *Robust & Accurate Integrated Models ● Flow Assurance & Process Design*
0930 – 0945	*Break*
0945 – 1100	***Flow Assurance & Process Modeling (cont'd)*** *Designing & Operating Complex Facilities whilst Minimizing Risk & Optimizing Production*
1100 – 1230	***Best Practice & Case Studies Relating to Flow Assurance & Process Design*** *Total Production System Pressure & Energy Analysis (from Sand-Face to Sale-Line) ● Steady State Flow Assurance*
1230 – 1245	*Break*
1245 – 1420	***Best Practice & Case Studies Relating to Flow Assurance & Process Design*** *Dynamics Modeling ● Process System Modelling*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Production Optimization Best Practices***
0930 – 0945	*Break*
0945 – 1100	***Case Studies & Exercises***
1100 – 1230	***Right - Sizing Integrated Models*** *Coupled Reservoir ● Wellbore ● Pipeline*
1230 – 1245	*Break*
1245 – 1420	***Right - Sizing Integrated Models (cont'd)*** *Facility & Market of Varying Levels of Complexity ● Discuss How the Intended Application (e.g. Design Scoping, Production Forecasting & Optimization) Must be Carefully Considered in Model Design*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Well Modelling*** *Introduction to Integrated Production System & Overall Approach ● Pressure Loss in the Wellbore & Reservoir*
0930 – 0945	*Break*
0945 – 1100	***Well Modelling (cont'd)*** *Importance of PVT for Well Modelling ● VLP Correlations Theory ● Building a Wellbore Model, Matching PVT & Flow Correlations & Generation of Lift Curves for Integration*
1100 – 1230	***Integration Production Models to Economical Model*** *General Concept ● Integrated Asset Models to Economical Model (in Excel)*
1230 – 1245	*Break*
1245 – 1345	***Integration Production Models to Economical Model (cont'd)*** *Run Sensitivities for Various Development Plans (Batch Runs) & Select Most Economical ● Discussion and Q&A*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This hands-on, highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org