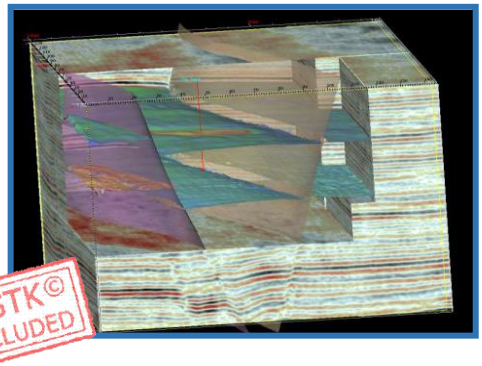
COURSE OVERVIEW DE0580
2D and 3D Seismic Interpretation



Course Title
2D and 3D Seismic Interpretation

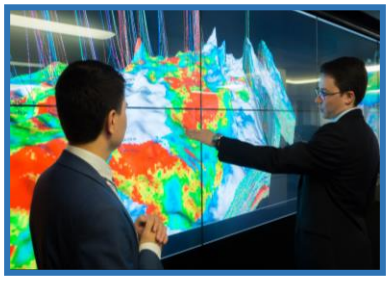
Course Reference
DE0580

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

Course Date/Venue

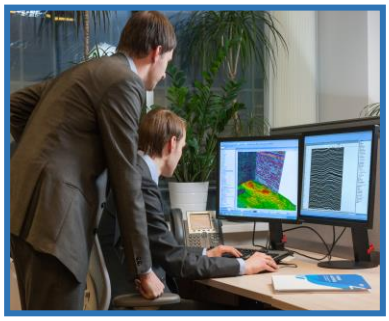
Session(s)	Date	Venue
1	June 22-26, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai UAE
2	August 18-22, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
3	October 26-30, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai UAE
4	December 22-26, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

Seismic acquisition processing, imaging, interpretation and extraction of geological and petrophysical information. Data examples, exercises, and workshops are used to illustrate key concepts, practical issues, and pitfalls as they affect the interpretation and integration of seismic data and information into E&P workflows.



Practical aspects of seismic interpretation are covered with examples that involve the distinct aspects of geological and tectonic provinces relative to their hydrocarbon potential. Interpretation workshops build understanding of the main techniques in seismic interpretation and in structural contour mapping. Special emphasis is given to hand contouring map interpretation comparisons with modern workstation interpretation mapping for 2D and 3D data sets.

This course is designed to provide participants with a detailed and up-to-date overview of advanced seismic data acquisition and processing. It covers the role of seismic in reservoir life cycle; the types of seismic methods; the principles of seismic wave propagation; and the principles of seismic reflection and signal processing tools.

During this interactive course, participants will learn the effect of acquisition on interpretation, spatial sampling and aliasing; the noise types and how to attenuate noise in the field; the 3D survey parameters and design, acquisition systems & operations; the special issues and techniques of data interpretation and AVO analysis; the concept of quality assurance & business/cost overview, data processing flows and pre-stack analysis and signal corrections; sorting, gain, phase, deconvolution, velocity filtering and multiple attenuation; the velocity, velocity analysis and statics; the difference between filed statics and weathering corrections; the refraction and reflection based statics; the concept of time, prestack, depth migrations, prestack depth workflow, velocity model building and iteration; the processing pitfalls and quality assurance, seismic inversion and wavelet processing; the principles of AVO, rock physics, attributes, frequency and phase; the coherency and multi-component methods; the time lapse (4D) techniques; the subsurface integration for reservoir characterization; and the seismic acquisition, processing and interpretation.

Course Objectives

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

- Apply and gain an advanced knowledge on seismic acquisition and processing
- Recognize the role of seismic in reservoir life cycle
- Identify the types of seismic methods and the principles of seismic wave propagation
- Apply the principles of seismic reflection and signal processing tools
- Determine the effect of acquisition on interpretation, spatial sampling and aliasing
- Identify the noise types and how to attenuate noise in the field
- Discuss the 3D survey parameters and design, acquisition systems & operations as well as the special issues and techniques of data interpretation and AVO analysis
- Enumerate the concept of quality assurance & business/cost overview, data processing flows and pre-stack analysis and signal corrections
- Describe sorting, gain, phase, deconvolution, velocity filtering and multiple attenuation and discuss velocity, velocity analysis and statics
- Explain the difference between filed statics and weathering corrections and discuss refraction and reflection based statics
- Recognize the concept of time, prestack, depth migrations, prestack depth workflow and velocity model building and iteration
- Develop the processing pitfalls and quality assurance as well as seismic inversion and wavelet processing
- Apply the principles of AVO, rock physics, attributes, frequency and phase and explain coherency and multi-component methods
- Use time lapse (4D) techniques and discuss subsurface integration for reservoir characterization
- Review seismic acquisition, processing and interpretation

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 3D seismic horizon and fault interpretation for geoscienptists and engineers.

Course Fee

US$ 8,000 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.

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 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:

Mr. Stan Constantino, MSc, BSc, is a **Senior Petroleum & Reservoir Engineer** with over **35 years** of **Offshore & Onshore** extensive experience within the **Oil**, **Gas & Petroleum** industries**.** His area of expertise include **Reserves & Resources**, **Reserves Estimation & Uncertainty**, **Reservoir** Characterization, **Unconventiona**l **Resource & Reserves** Evaluation, **Oil & Gas Reserves** Estimation, Methods for **Aggregation of Reserves & Resources**, **Fractured Reservoir** Classification & Evaluation, **Sequence Stratigraphy**, **Petrophysics & Rock** Properties, **Seismic** Technology, **Geological** Modelling, **Water Saturation**, **Crude Oil & Natural Gas** Demand, **Exploration Agreements & Financial** Modelling, **Seismic Survey** Evaluation, **Exploration Well** Identification, **Field Production** Operation, **Field Development** Evaluation, Crude Oil Marketing, **Core & Log Data** Integration, **Core Logging**, Advanced **Core & Log Integration**, **Well Logs & Core Analysis**, Advanced Petrophysics/Interpretation of **Cased Hole Logs**, **Cased Hole Formation Evaluation**, **Cased Hole Formation** Evaluation, **Cased Hole Evaluation**, **Cased-Hole Logging**, Applied **Production Logging & Cased Hole & Production Log** Evaluation, **Cased Hole Logging & Formation** Evaluation, Open & Cased Hole Logging, Screening of Oil Reservoirs for **Enhanced Oil Recovery**, **Enhanced Oil Recovery**, **Enhanced Oil Recovery** Techniques, **Petroleum Economic** Analysis, **Oil Industry** Orientation, **Oil Production & Refining**, **Crude Oil Market**, **Global Oil Supply & Demand**, **Global Oil Reserves**, **Crude Oil** Types & Specifications, **Oil Processing**, **Oil Transportation-Methods**, **Oil & Gas** Exploration and Methods, **Oil & Gas** Extraction, Technology Usage in Industrial Security; **Upstream**, **Midstream** & **Downstream Operations**; **Oil Reservoir** Evaluation & Estimation, **Oil Supply & Demand**, **Oil Contracts**, **Government Legislation & Oil Contractual Agreements**, **Oil Projects** & Their Feasibility (revenue and profitability), **Water Flooding**, **Reservoir** Souring & Water Breakthrough, **Reservoir Performance** Using Classical Methods, **Fractured Reservoir** Evaluation & Management, **Reservoir Surveillance** & Management, **Reservoir Engineering** & Simulation, **Reservoir Monitoring**, **Pressure Transient** Testing & **Reservoir** Performance Evaluation, **Reservoir** Characterization, **Reservoir** Engineering Applications with ESP and Heavy Oil, **Reservoir** Volumetrics, Water Drive Reservoir, **Reserve** Evaluation, Rock & Fluid Properties, Fluid Flow Mechanics, PVT Analysis, Material Balance, Darcy's Law & Applications, Radial Flow, **Gas Well** Testing, Natural Water Influx, EOR Methods, Directional Drilling, **Drilling** Production & Operations, Field Development & Production of Oil & Gas, **Wireline Logging**, **Mud Logging**, **Cased Hole Logging**, **Production Logging**, **Slick Line**, **Coil Tubing**, Exploration Wells Evaluation, **Horizontal Wells**, **Well Surveillance**, **Well Testing**, **Design & Analysis**, **Well Testing & Oil Well Performance**, **Well Log Interpretation** (**WLI**), **Formation Evaluation**, **Well Workover Supervision**, **Pressure Transient Analysis** and **Petrophysical Log Analysis**. Currently, he is the **CEO** & **Managing Director** of **Geo Resources Technology** wherein he is responsible in managing the services and providing technical supports to underground energy related projects concerning **field development**, **production**, **drilling**, **reservoir engineering** and **simulation**.

Throughout his long career life, Mr. Stan has worked for many international companies such as the **Kavala Oil**, **North Aegean Petroleum Company** and **Texaco Inc.**, as the **Managing Director**, **Operations Manager**, **Technical Trainer**, **Training Consultant**, **Petroleum Engineering & Exploration Department Head**, **Assistant Chief Petroleum Engineer**, **Reservoir Engineer, Resident Petroleum Engineer**, **Senior Petroleum Engineer** and **Petroleum Engineer** wherein he has been managing the evaluation of exploration wells, reservoir simulation, development training, production monitoring, wireline logging and well testing including selection and field application of well completion methods.

Mr. Stan has a **Master's** degree in **Petroleum Engineering** and a **Bachelor's** degree in **Geology** from the **New Mexico Institute of Mining & Technology** (**USA**) and from the **Aristotelian University** (**Greece**) respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership of Management (ILM**) and a member of the Society of Petroleum Engineers, USA (**SPE**), Society of Well Log Professional Analysts, USA (**SPWLA**) and European Association of Petroleum Geoscientists & Engineers (**EAGE**). Moreover, Mr. Stan published numerous scientific and technical papers and delivered various trainings, courses and workshops worldwide.

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	***Role of Seismic in Reservoir Life Cycle***
0930 – 0945	*Break*
0945 – 1040	***Types of Seismic Methods***
1040 – 1135	***Principles of Seismic Wave Propagation*** *Ray and Wavefronts • Snell's Law • Reflection • Refraction & Critical Angle • Amplitude Behaviour*
1135 - 1230	***Seismic Reflection Principles*** *Acoustic Impedence • Seismic Resolution • Factor Affecting Wave Propagation*
1230 – 1245	*Break*
1245 – 1335	***Signal Processing Tools***
1335 - 1420	***Effect of Acquisition on Interpretation, Spatial Sampling & Aliasing***
1420 – 1430	***Recap***
1430	*End of Day One*

Day 2

0730 – 0830	***Noise Types & How to Attenuate Noise in the Field***
0830 - 0930	***3D Survey Parameters & Design***
0930 – 0945	*Break*
0945 – 1040	***Acquisition Systems & Operations***
1040 – 1135	***Special Issues & Techniques***
1135 - 1230	***Quality Assurance & Business/Cost Overview***
1230 – 1245	*Break*
1245 – 1335	***Data Processing Flows***
1335 - 1420	***Pre-Stack Analysis & Signal Corrections***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Sorting, Gain, Phase, Deconvolution, Velocity Filtering & Multiple Attenuation***
0830 - 0930	***Velocity, Velocity Analysis & Statics***
0930 – 0945	*Break*
0945 – 1040	***Field Statics & Weathering Corrections*** *Short Period vs. Long Period*
1040 – 1135	***Refraction & Reflection Based Statics***
1135 - 1230	***Time, Prestack, Depth Migrations***
1230 – 1245	*Break*
1245 – 1335	***Prestack Depth Workflow***
1335 - 1420	***Velocity Model Building & Iteration***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

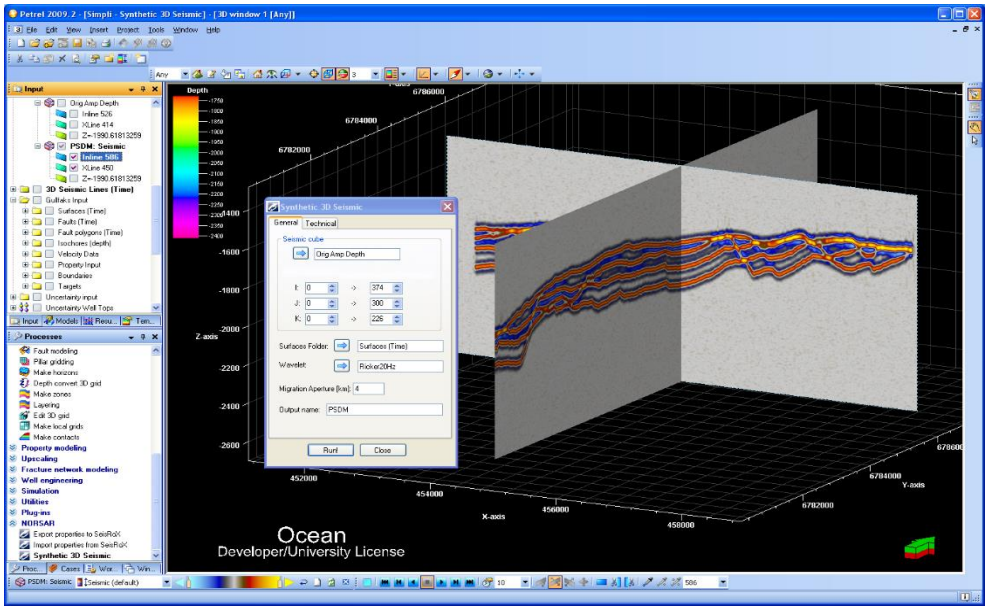
0730 – 0830	***Processing Pitfalls & Quality Assurance***
0830 - 0930	***Seismic Inversion & Wavelet Processing***
0930 – 0945	*Break*
0945 – 1040	***AVO Principles, Rock Physics, Attributes, Frequency & Phase***
1040 – 1135	***Coherency & Multi-Component Methods***
1135 - 1230	***Time Lapse (4D) Techniques***
1230 – 1245	*Break*
1245 – 1335	***Subsurface Integration for Reservoir Characterization***
1335 - 1420	***Mapping Exercise # 1 :*** *Base High • Mapping Techniques – Discussion • Map Contouring*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

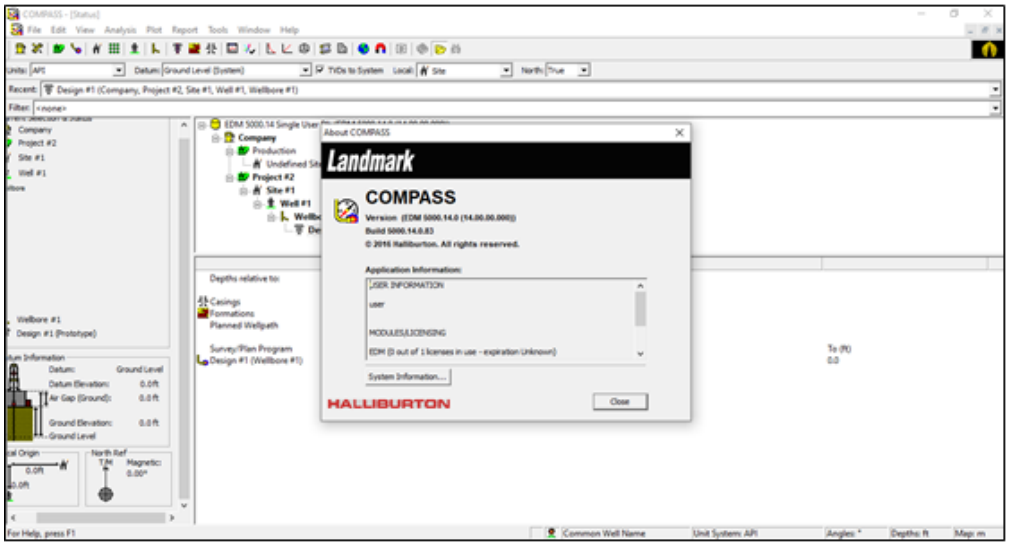
0730 – 0930	***Mapping Exercise # 2 :*** *Carbonate Build-up • Seismic Velocities • Depth Conversion Techniques*
0930 – 0945	*Break*
0945 – 1025	***Review of Seismic Acquisition, Processing & Interpretation***
1025 – 1105	***Comparative Interpretation of Post-Stack & Pre-Stack Time Migration***
1105 – 1145	***Pre-Stack Depth Migration - Interpretation***
1145 – 1230	***Mapping Exercise # 3 :*** *Rift Basin • Mapping Techniques Precision • Map Contouring – Block Faulting • Gravity & Magnetic Mapping • Seismic Velocities & Well Velocities • Wells Location Precision • Depths Maps Prescision*
1230 – 1245	*Break*
1245 - 1345	***Mapping Exercise # 4 :*** *Compressional Tectonics • Fault Contouring • Discussion of Mapping Techniques • Velocities • Wells Location • Depth Map Construction*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

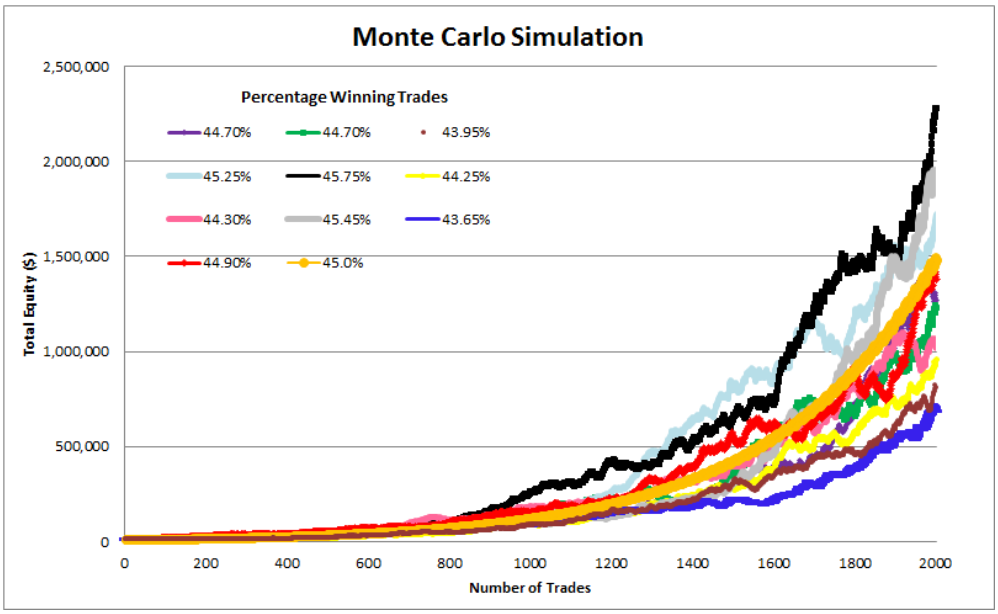
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the "Petrel Software", "COMPASS", "Monte Carlo", "KAPPA", "Interactive Petrophysics (IP)", "ECRIN", "PIPESIM", "Eclipse Software" and "PROSPER" software's.



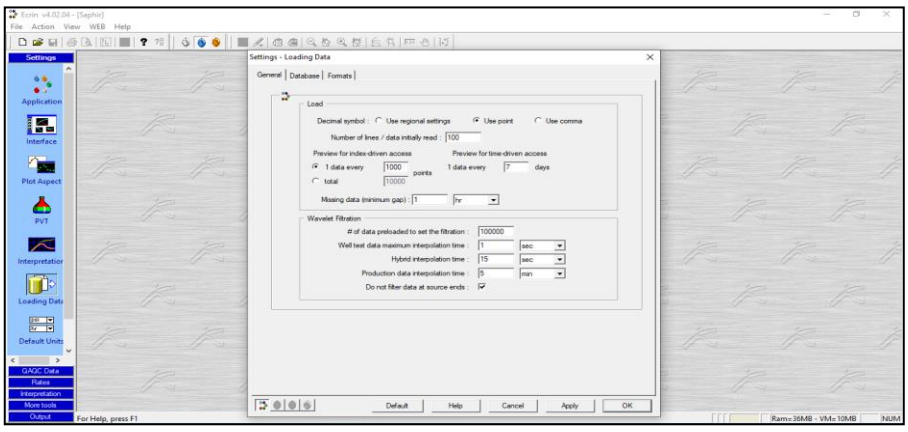
Petrel Software



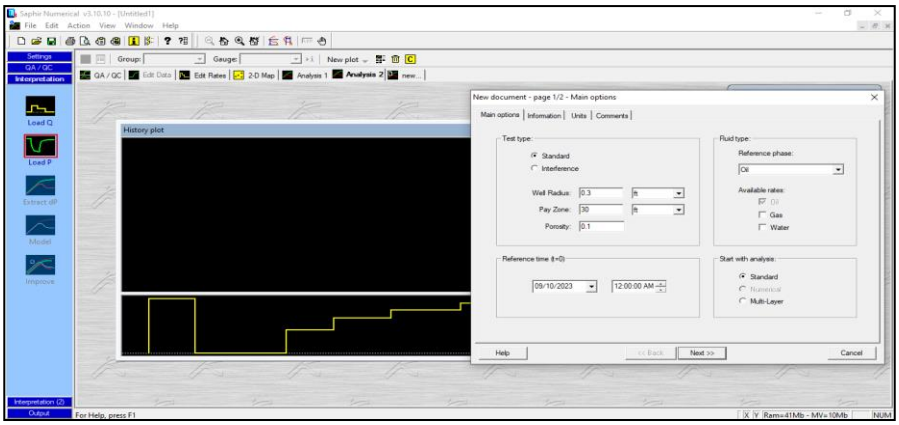
COMPASS



Monte Carlo Simulation



KAPPA Ecrin v4.02.04



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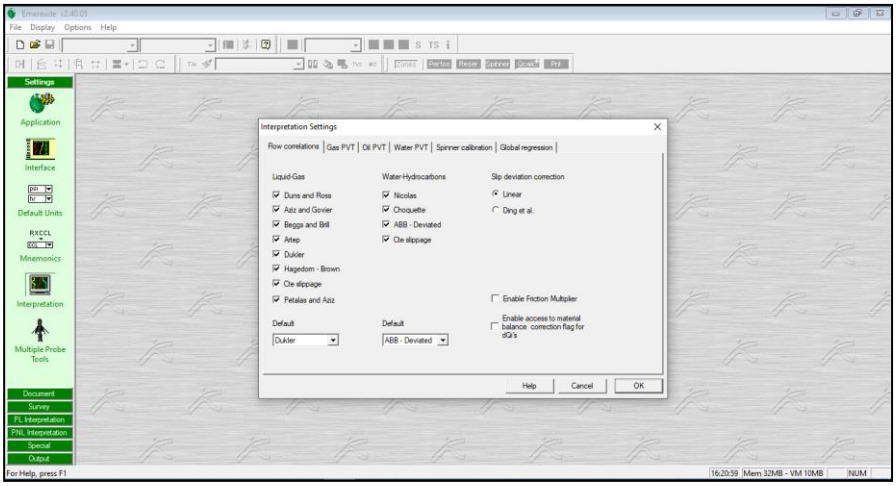
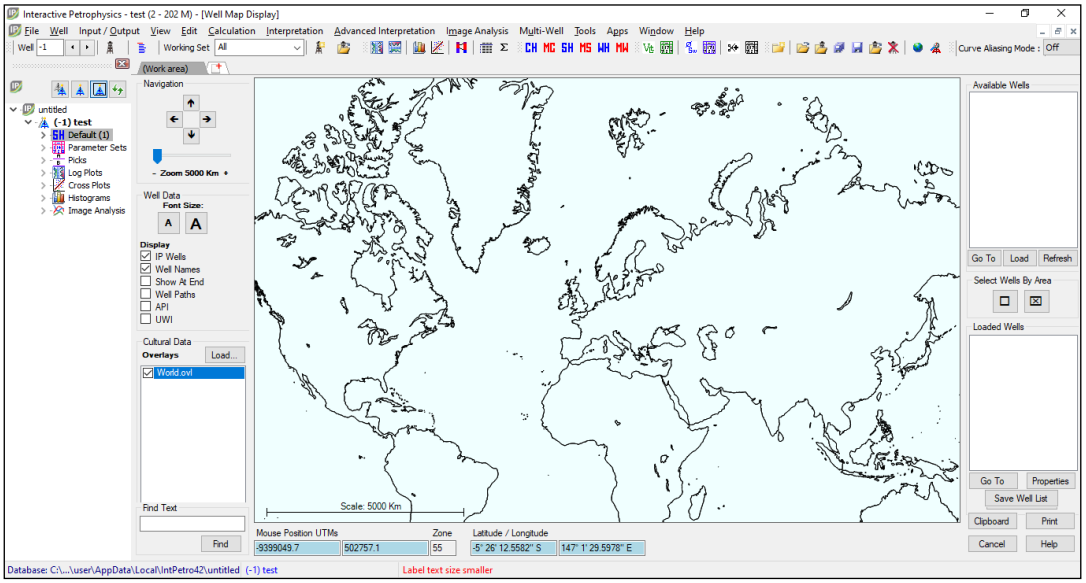
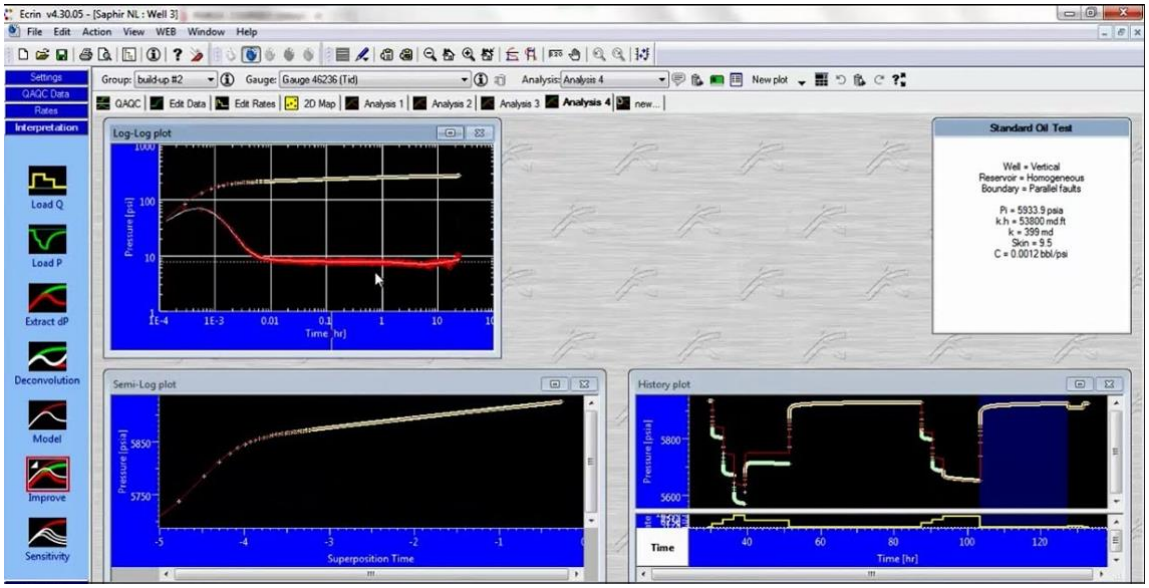


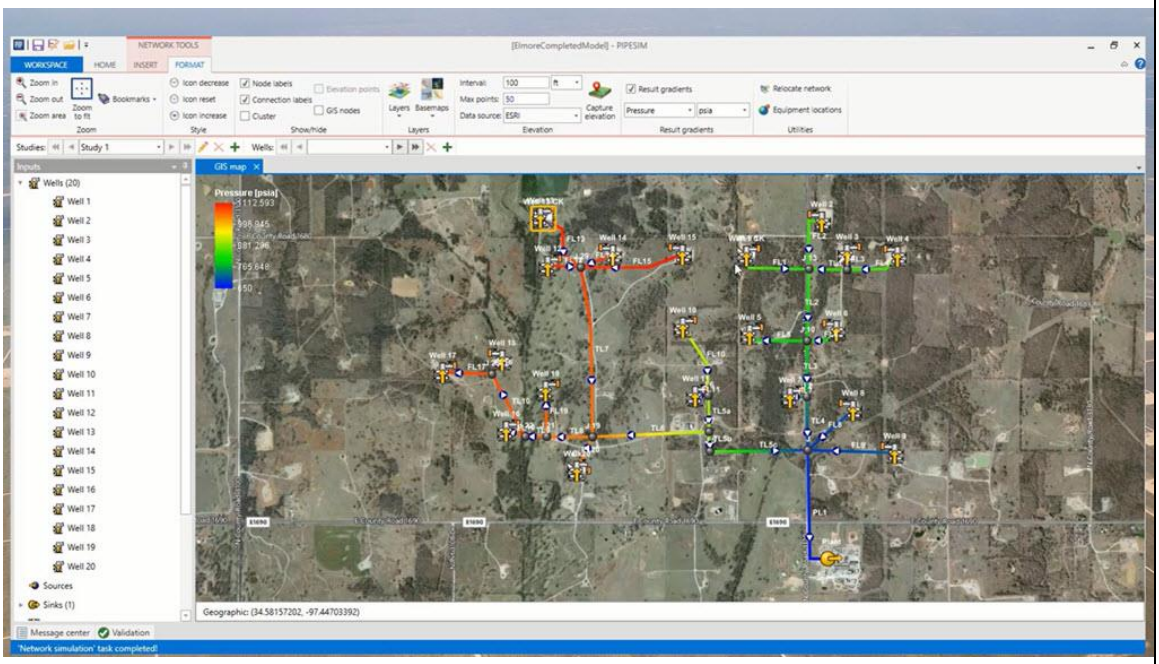
KAPPA Emeraude v2.40.05



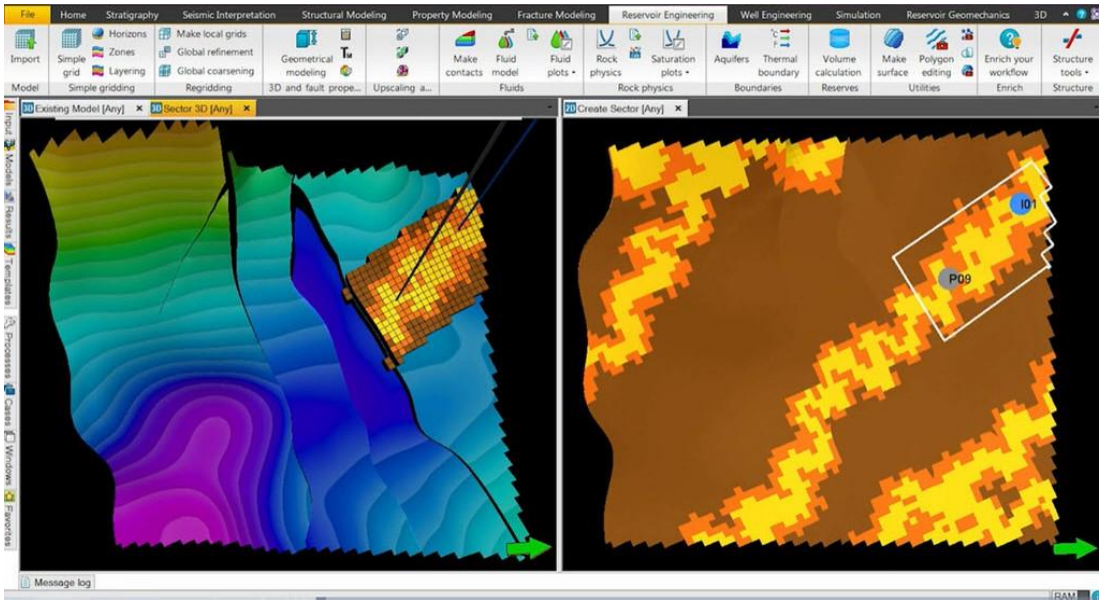
Interactive Petrophysics (IP) Software



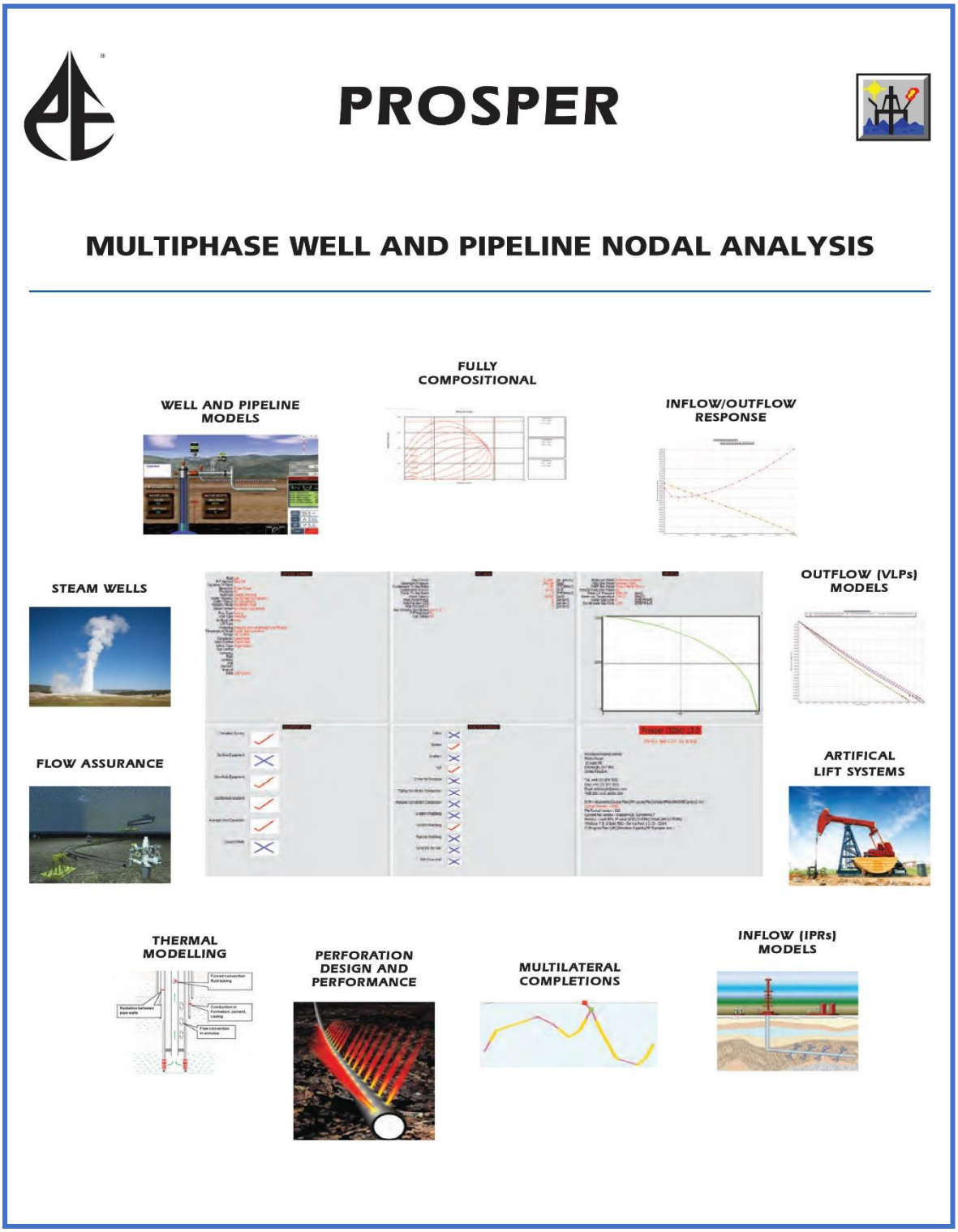
ECRIN Software



PIPESIM



Eclipse Software



Course Coordinator
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