COURSE OVERVIEW DE0805
Coring and Core Analysis and Special Core Analysis

Course Title
Coring and Core Analysis and Special Core Analysis

Course Reference
DE0805

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

Course Date/Venue

Session(s)	Date	Venue
1	June 30-July 04, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	September 14-18, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	October 27-31, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	December 14-18, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, 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.

This course is designed to provide participants with a detailed and up-to-date overview of Coring and Core Analysis and Special Core Analysis. It covers the applications and types of coring and the selection criteria for coring intervals; the core acquisition techniques, core handling at the wellsite, core orientation and marking; the core preservation methods, health, safety, and environmental considerations and core preparation for analysis; the porosity measurement, permeability determination, grain density and mineralogy; and the fluid saturation measurements and routine data quality control.

During this interactive course, participants will learn the difference between SCAL and routine core analysis; the capillary pressure measurements and relative permeability measurements; the wettability evaluation, electrical properties and formation factor; the SCAL data integration and relative permeability in complex rocks; the fracture and matrix analysis, NMR and digital rock physics; the SCAL in unconventional reservoirs, designing a SCAL program and integrating core and log data; and the reservoir characterization using core data, applications in static and dynamic models, quality control in core laboratories and core data reporting and communication.

Course Objectives

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

- Apply and gain an in-depth knowledge on coring and core analysis and special core analysis
- Discuss the applications and types of coring and the selection criteria for coring intervals
- Carryout core acquisition techniques, core handling at the wellsite, core orientation and marking
- Employ core preservation methods, health, safety, and environmental considerations and core preparation for analysis
- Apply porosity measurement and discuss permeability determination, grain density and mineralogy
- Implement fluid saturation measurements and routine data quality control
- Differentiate SCAL versus routine core analysis and apply capillary pressure measurements and relative permeability measurements
- Carryout wettability evaluation and identify electrical properties and formation factor
- Employ SCAL data integration and describe relative permeability in complex rocks
- Apply fracture and matrix analysis and discuss NMR and digital rock physics
- Interpret SCAL in unconventional reservoirs, design a SCAL program and integrate core and log data
- Carryout reservoir characterization using core data, applications in static and dynamic models, quality control in core laboratories and core data reporting and communication

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

The course provides an overview of all significant aspects and considerations of special core analysis for geoscientists, reservoir engineers, exploration and development geologists, core and log analysts, geophysicists, drilling and completion 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:

Mr. Dimitri Massaras is a **Senior Drilling Engineer & Certified Professional Geologist** with over **40 years** of **Offshore & Onshore** experience within the **Oil** & **Gas** industries. His expertise widely covers **Pore Pressure Prediction & Wellbore Stability**, **Formation Pressure & Well Control**, **Pore Pressure** Analysis & Risk Mitigation, **Geomechanics** for Pore Pressure and Fracture Gradient Analysis, **Well Control** & Blowout Prevention, **Drilling Hydraulics & Well Control** Principles, **Play Assessment & Prospect Evaluation**, **Basin Potential Assessment**, **Petroleum Trilogy** Relative Timings of Events, **Prospect Analysis** & **Evaluation**, **Source Rock Estimation**, Cross Correlation & Interpretation with Seismic Data, Calculation Parameters & Estimation of Uncertainties, **Reserve Estimation** & **Uncertainty**, **Reserve Evaluation**, **Uncertainty Calculations**, **Prospect Evaluation**, **Risk** Analysis, **Exploration Prospect Conversion** in Potential Reservoir, **Well Potential Productivity** Assessment, Potential Field Development Plan, **Shale Plays Evaluation** & **Finding Sweet Spots**, **Shale Explosion**, **Geochemical Aspects**, **Unconventional Shale Plays**, **Shale Hydrocarbon Reservoirs** & their Evaluation, **Sweet Spot Determination**, **Shale Exploration**, Introduction to **Data Management**, The **International Petroleum Business**, Commercial Acumen of the **Oil & Gas Value Chain**, **DTS** (Distributed Temperature Sensing) **Production & Injection Well Testing**, Control Well-Flow Lines Parameters, **Casing & Cementing**, **Cased Hole Logging**, **Case Hole Formation Evaluation**, **Reservoir** Management, **Reservoir** Engineering, **Development Geology**, **Petroleum Geology**, **Exploration Production**, **Tectonics** & **Structural Development**, **Petroleum** Systems, **Reservoir Characterization**, **Clastic Reservoir**, **Carbonate Reservoir**, **Subsurface Facies Analysis**, **Borehole Images**, **Geophysical** Methods, **Oil** & **Gas Exploration**, **Exploration Geochemistry**, **Structural Geology**, **Wellsite Geology**, **Geologic** Modeling, **Analytic Modelling** Methods, **Economic Evaluation**, **Petroleum Geology**, **Geophysics**, **Geophysical Exploration**, **Advanced Petrophysics**, **Petroleum Exploration**, **Petroleum Economics**, **Petroleum** Engineering, **Reservoir** Modelling, **Drilling**, **Core Analysis**, **Core-to-Log Data Integration** (**SCAL**), **Basin Modelling** & **Total Petroleum** System (**TPS**), **Seismic** Interpretation, **Seismic** Methods, **Seismic Coherence** Techniques, **Seismic Attribute** Analysis, **Seismic Inversion** Techniques, **Well Logging**, **Rock Physics & Seismic Data**, **Formation Evaluation**, **Well Testing & Data Interpretation** and **Oil & Gas Reserves Estimations**. He is also an expert in **Risk Analysis**, **Refining Unit** (**De-asphalting**), **Catalytic Cracking Unit** (**CCU**), **Lube Oil Unit**, **Lighter Fluid Unit**, Oil, Gas & Water Samples for **HPLC Testing and Analysis**, **Petrel**, SeisWorks, StrataModel, Finder, Charisma, Zmap, Seitex, **LogTech & GeoLog**, ASU, VSPC and many more. Currently, he is the **Senior Petroleum Trainer & Asset Manager** of one of the leading exploration companies wherein he is in-charge of **petroleum exploration** in various regions particularly in Algeria and Europe.

During his long career, Mr. Massaras has gained his practical and field experience through his various significant positions and dedication as the **Drilling Manager**, **Senior Petroleum Consultant/Instructor/Trainer, Technical Trainer**, **Senior Geologist**, **Project Geologist**, **Operations Geologist** and **Refinery Unit Operator** of numerous international companies such as the **Pennzoil E & P Company**, **Petrofina SA** and **Gulf Oil E & P Company** just to name a few.

Mr. Massaras, a **Certified Professional Geologist** from the **American Institute of Professional Geologist** and has a **Bachelor's** degree in **Petroleum Geology & Geophysics** from the **University of Massachusetts**, **USA**. Further, he is a **Certified Instructor/Trainer**; a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**); a former **Director** of Swiss Section of the **Society of Petroleum Engineers** (**SPE**); an active member of **Swiss Association** of **Energy Geoscientists** (**SASEG**) and has delivered innumerable trainings and workshops worldwide.

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$ 8,000 per Delegate. 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	***Overview of Coring Operations*** *Objectives & Applications of Coring • Types of Coring (Conventional, Sidewall, Rotary) • Selection Criteria for Coring Intervals • Planning Coring Programs*
0930 - 0945	*Break*
0945 – 1045	***Core Acquisition Technique*** *Core Barrel Types & Configurations • Wireline versus Conventional Coring • Drilling Fluid Compatibility • Core Recovery Optimization*
1045 - 1145	***Core Handling at Wellsite*** *Procedures for Safe Core Retrieval • Labeling, Orientation & Initial Inspection • Core Transportation & Storage • Preservation of Core Integrity*
1145 - 1230	***Core Orientation & Marking*** *Importance of Core Orientation • Techniques: Mechanical Orientation Tools, Imaging • Oriented Core Applications • Quality Assurance Practices*
1230 – 1245	*Break*
1245 – 1330	***Core Preservation Methods*** *Preservation of Hydrocarbons & Water • Use of Sealing Agents, Freezing, or Refrigeration • Core Shrinkage & Swelling Issues • Preserving Fragile Formations*

1330 - 1420	***Health, Safety & Environmental Considerations*** *Handling Hazardous Materials • HSE Policies in Coring Operations • Waste Disposal & Contamination Control • Emergency Response Planning*
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 – 0830	***Core Preparation for Analysis*** *Slabbing & Plugging • Cleaning & Drying Methods • Sample Selection Strategy • Preservation of Plug Quality*
0830 – 0930	***Porosity Measurement*** *Helium Porosimetry • Boyle's Law & Gas Expansion Methods • Interpretation & Limitations • Comparison with Log-Derived Porosity*
0930 - 0945	*Break*
0945 – 1130	***Permeability Determination*** *Steady-State versus Unsteady-State Methods • Gas versus Liquid Permeability • Anisotropy & Directionality • Darcy's Law Fundamentals*
1130 - 1230	***Grain Density & Mineralogy*** *Pycnometry & Density Logging • XRD/XRF Integration • Identifying Non-Reservoir Minerals • Lithofacies Characterization*
1230 - 1245	*Break*
1245 - 1330	***Fluid Saturation Measurements*** *Dean-Stark Extraction • Centrifuge & Distillation Methods • Irreducible Water Saturation • Capillary Pressure Correlation*
1330 - 1420	***Routine Data Quality Control*** *Repeatability & Reproducibility • Sample Representativeness • Error Sources & Uncertainty • Documentation & Reporting Standards*
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 – 0830	***SCAL versus Routine Core Analysis*** *Key Differences & Data Applications • SCAL Workflow Overview • Role in Reservoir Simulation • Limitations & Challenges*
0830 – 0930	***Capillary Pressure Measurements*** *Mercury Injection Capillary Pressure (MICP) • Centrifuge & Porous Plate Methods • Leverett J-Function Application • Saturation-Height Modeling*
0930 - 0945	*Break*
0945 – 1130	***Relative Permeability Measurements*** *Steady-State & Unsteady-State Methods • Data Requirements for Simulation • Oil-Water, Gas-Oil & Three-Phase Tests • Data Normalization & Upscaling*
1130 - 1230	***Wettability Evaluation*** *Qualitative & Quantitative Approaches • Amott-Harvey & USBM Methods • Contact Angle Measurements • Impact on Multiphase Flow*

1230 - 1245	*Break*
1245 - 1330	***Electrical Properties & Formation Factor*** *Archie's Equation • Formation Resistivity Factor • Cementation & Saturation Exponents • Core-Log Calibration*
1330 - 1420	***SCAL Data Integration*** *Linking SCAL to Log & Reservoir Models • Data Scaling & Uncertainties • Reservoir Rock Types & Flow Units • Use in Enhanced Oil Recovery (EOR) Planning*
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 – 0830	***Relative Permeability in Complex Rocks*** *Carbonates versus Clastics • Dual Porosity Systems • Challenges in Low-Permeability Rocks • Fractured Reservoir Considerations*
0830 – 0930	***Fracture & Matrix Analysis*** *Core Fracture Analysis • Laboratory Fracture Modeling • Permeability Anisotropy in Fractured Media • Matrix-Fracture Interaction*
0930 - 0945	*Break*
0945 – 1130	***NMR & Digital Rock Physics*** *Nuclear Magnetic Resonance (NMR) on Cores • Pore Size Distribution & Free/Bound Fluids • Micro-CT & Image-Based Modeling • Digital Core Analysis Applications*
1130 - 1230	***SCAL in Unconventional Reservoirs*** *Shale & Tight Gas Formations • Low-Perm Relative Permeability • SCAL Test Design in Unconventional Plays • Use of Core Data in Resource Assessment*
1230 - 1245	*Break*
1245 - 1330	***EOR-Specific SCAL Studies*** *Wettability Alteration Monitoring • Polymer & Surfactant Flood Compatibility • CO_2 Injection & Miscibility Effects • Data Needs for EOR Modeling*
1330 - 1420	***Designing a SCAL Program*** *Project Objective Alignment • Laboratory Selection & Test Sequence • Time & Budget Considerations • QA/QC & Data Validation*
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*

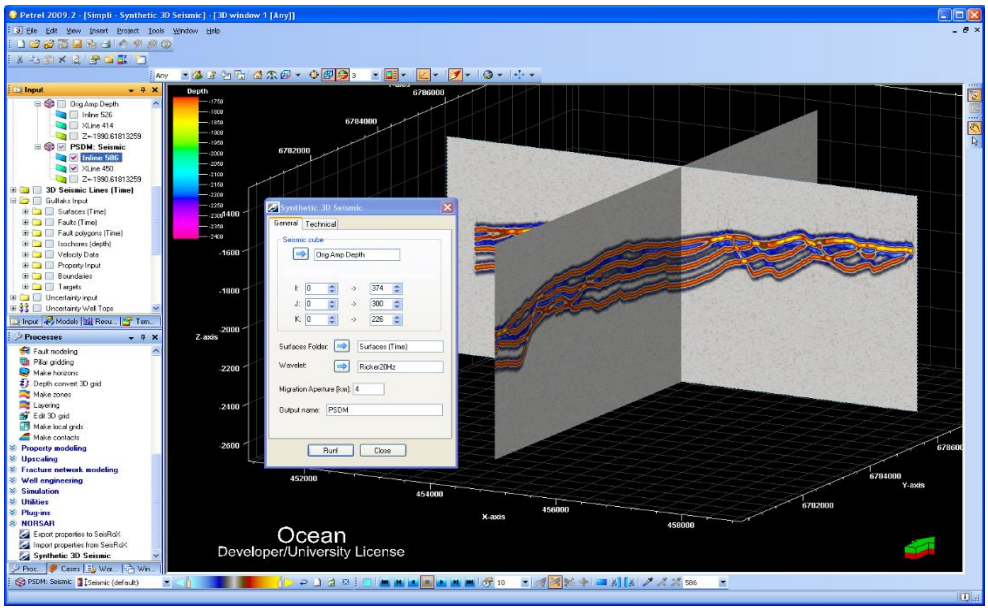
Day 5

0730 – 0930	***Integration of Core & Log Data*** *Matching Core Depth to Log Depth • Scaling Core Data to Reservoir Conditions • Calibrating Petrophysical Models • Cross-Validation of Datasets*
0930 – 0945	*Break*
0945 - 1030	***Reservoir Characterization Using Core Data*** *Flow Unit Classification • Rock Typing & Zonation • Core-Based Permeability Models • Reservoir Quality Indexing*

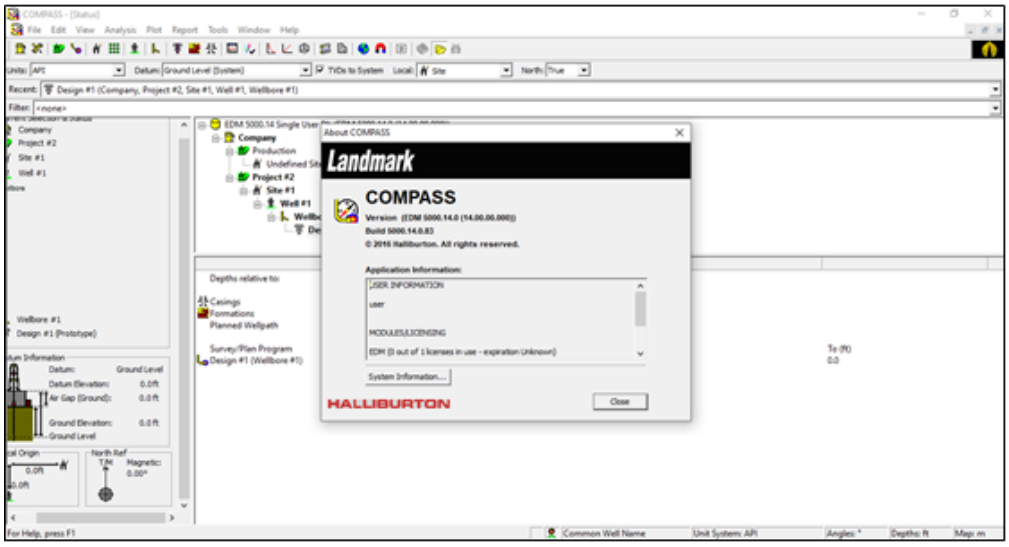
1030 - 1130	***Applications in Static & Dynamic Models*** *Input to Static Model Facies & Properties • Dynamic Model Initialization • History Matching & Validation • SCAL in Uncertainty Analysis*
1130 - 1230	***Quality Control in Core Laboratories*** *Standard Operating Procedures • ISO & API Best Practices • Audits & Benchmarking • Vendor Selection & Evaluation*
1230 - 1245	*Break*
1245 - 1300	***Core Data Reporting & Communication*** *Structuring Technical Reports • Visualization & Data Interpretation • Collaboration with Multi-Disciplinary Teams • Case Study Presentations*
1300 – 1345	***Workshop: Core Data Interpretation & Case Studies*** *Hands-on Exercise: Interpreting Porosity/Permeability • Capillary Pressure & Saturation Height Curve Generation • Relative Permeability Interpretation Session • Group-Based Core Analysis Project & Discussion*
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*

Simulator (Hands-on Practical Sessions)

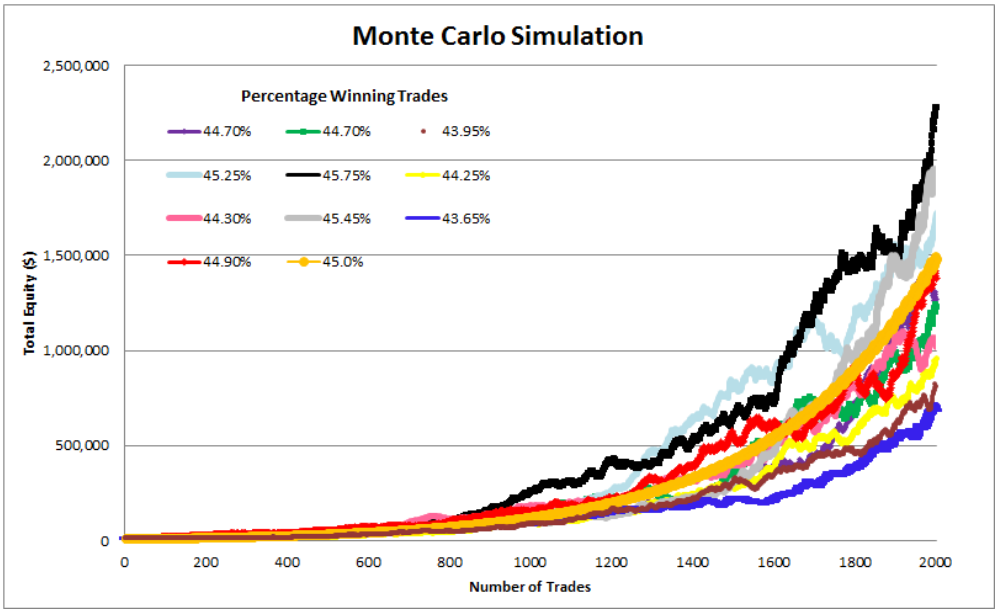
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the "Petrel Software", "COMPASS", "Monte Carlo", "KAPPA", "Interactive Petrophysics (IP)", "ECRIN", "PIPESIM", "Eclipse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



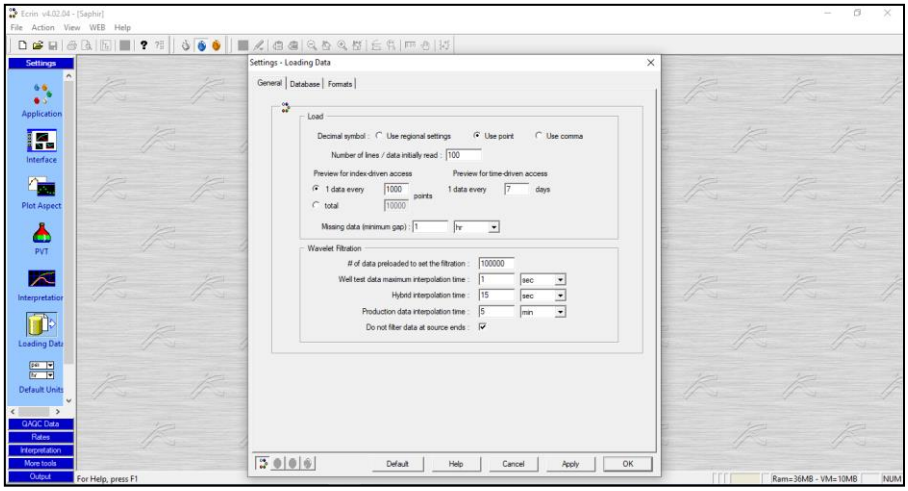
Petrel Software



COMPASS



Monte Carlo Simulation



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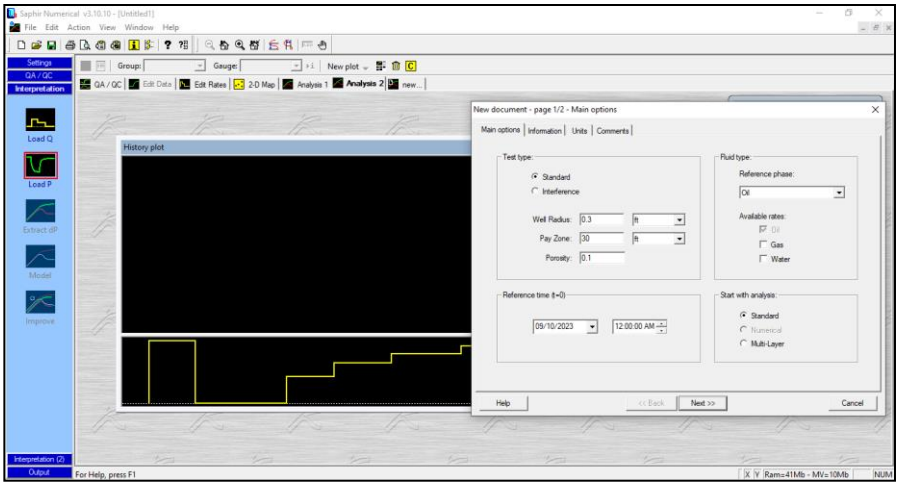

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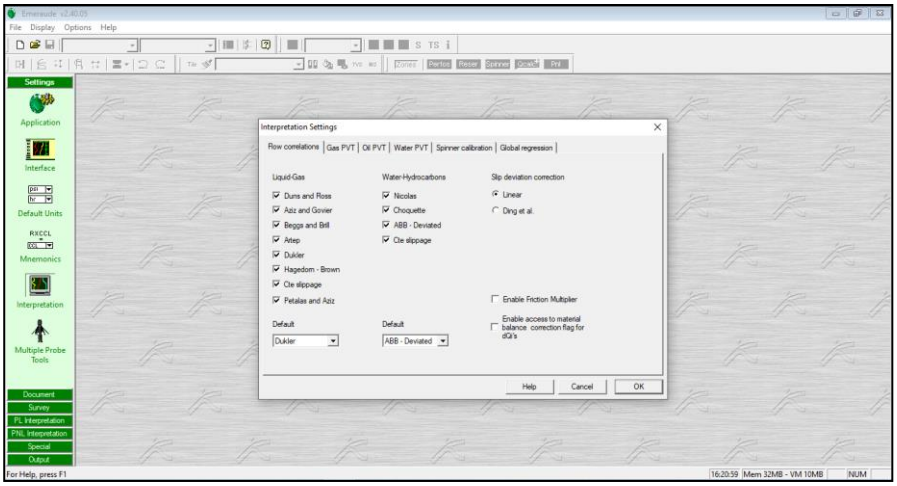

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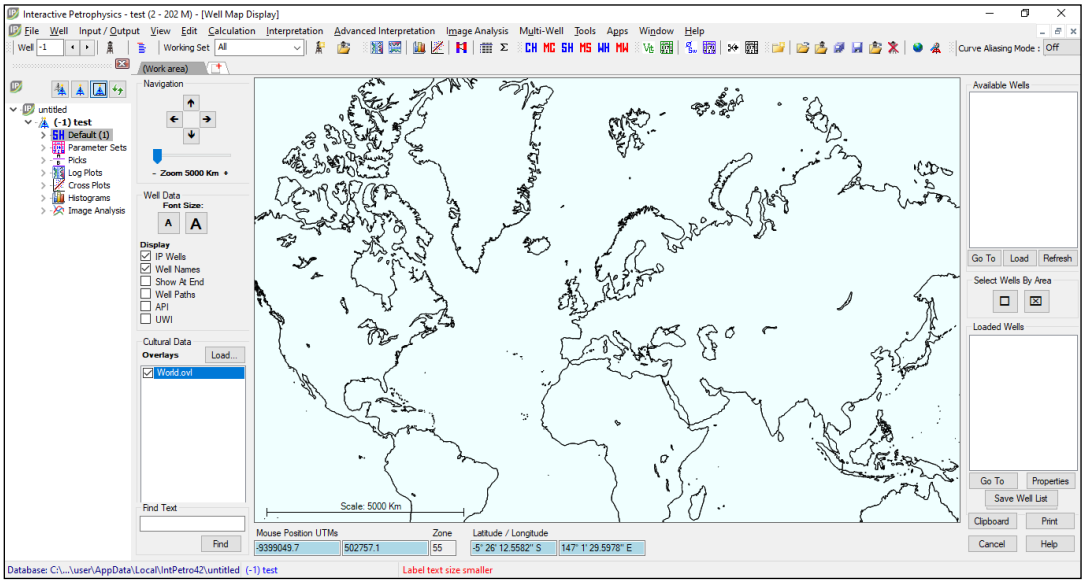
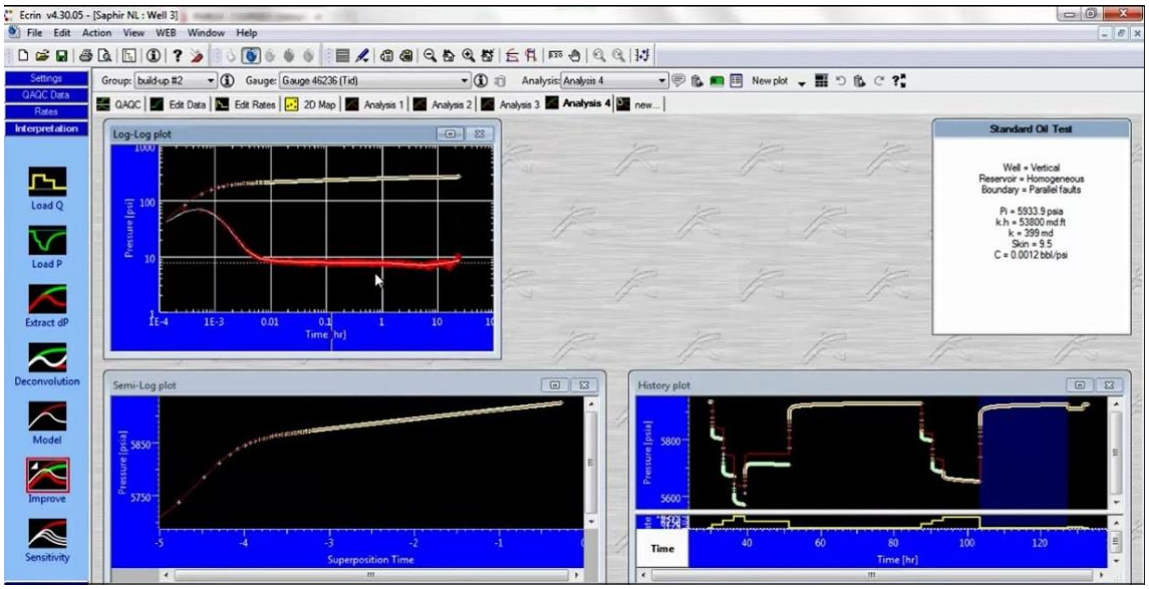
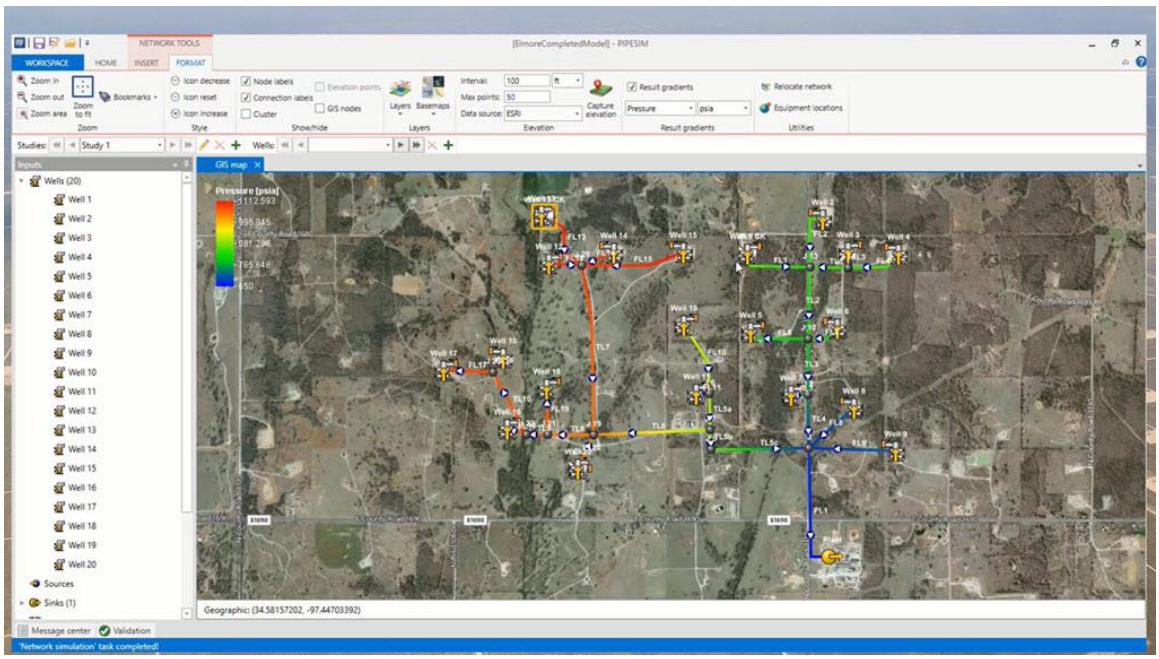


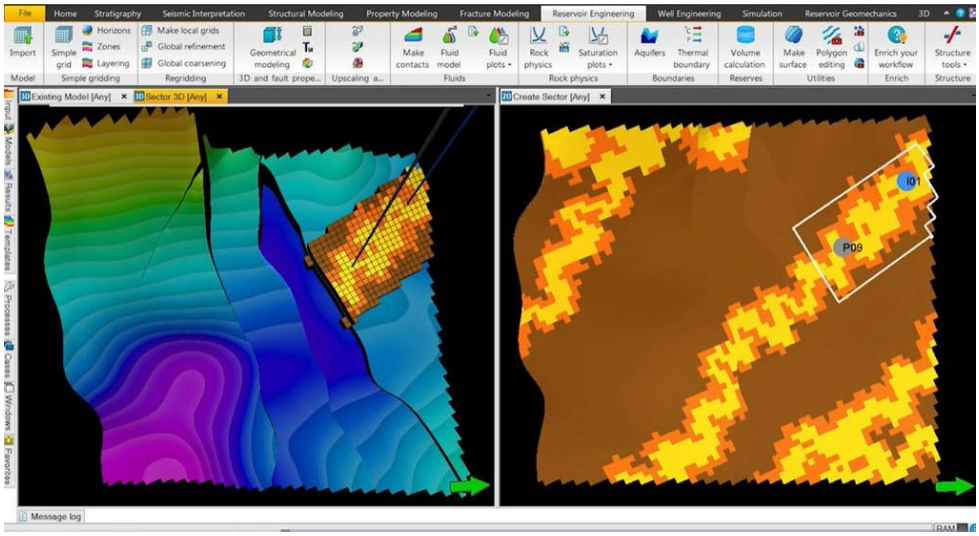
Interactive Petrophysics (IP) Software



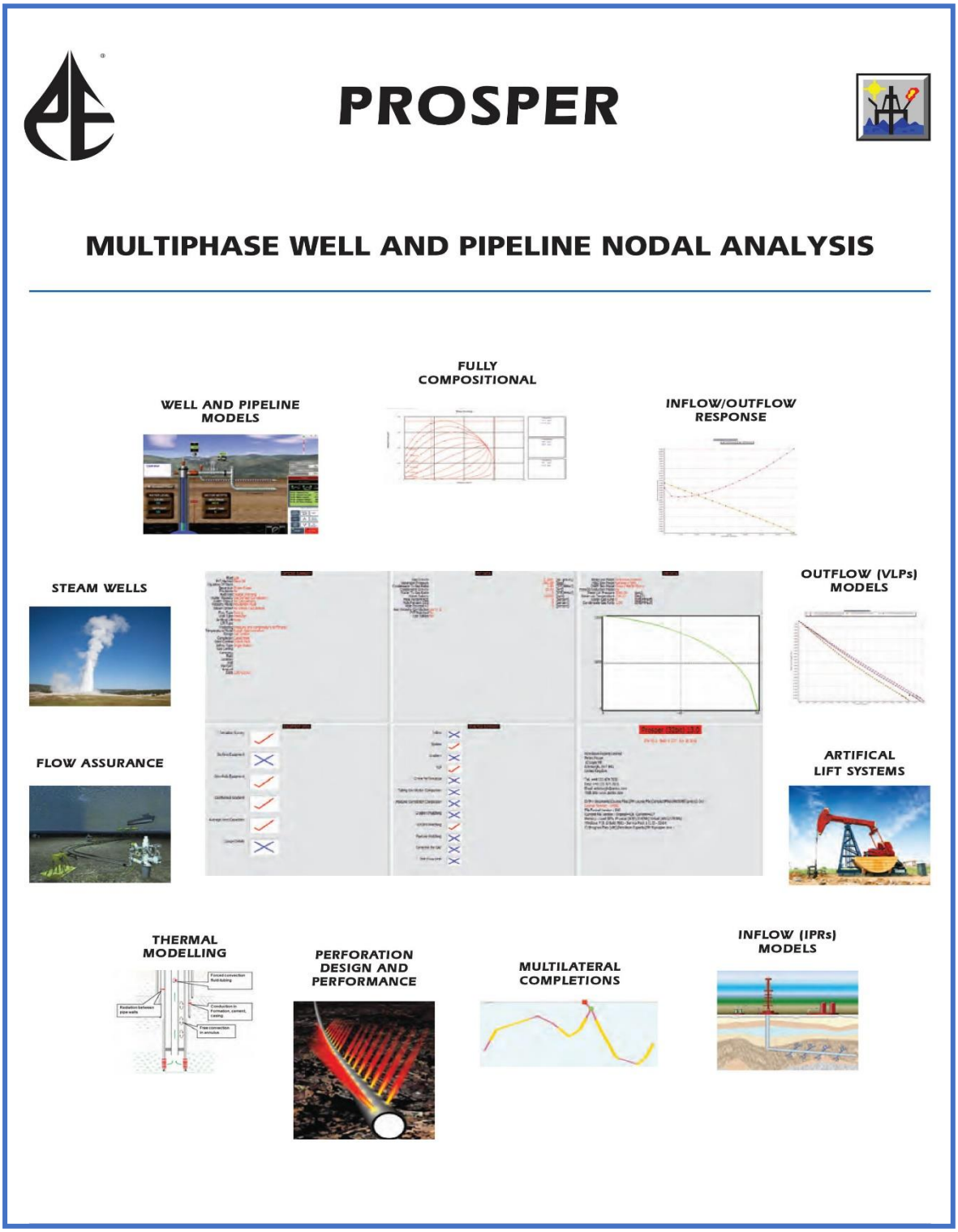
ECRIN Software



PIPESIM



Eclipse Software



Course Coordinator
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