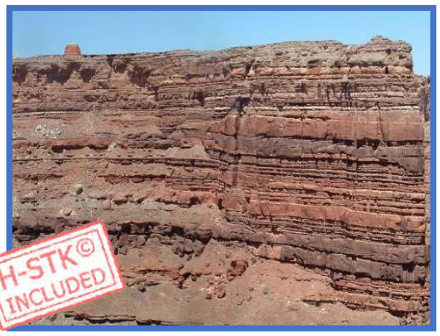
COURSE OVERVIEW DE0022

Sequence Stratigraphy: Principles & Applications

Course Title
Sequence Stratigraphy: Principles & Applications

Course Reference
DE0022

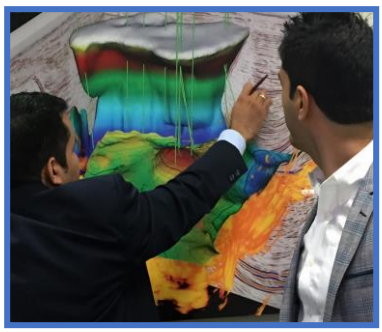
Course Duration/Credits
Five days/3.0 CEUs/30 PDHs



Course Date/Venue

Session(s)	Date	Venue
1	May 25-29, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
2	July 21-25, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
3	September 07-11, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
4	November 17-21, 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.

This course is designed to provide participants with a detailed and up-to-date overview of Sequence Stratigraphy: Principles and Applications. It covers the stratigraphic principles and depositional systems and environments; the stratigraphic surfaces and boundaries, accommodation space and base level and time and stratigraphic correlation; the systems tracts covering lowstand systems tract (LST), transgressive systems tract (TST), highstand systems tract (HST) and falling stage systems tract (FSST); the sequence stratigraphic model construction and seismic stratigraphy in sequence analysis; and the well log interpretation for stratigraphy, core data and sedimentology, biostratigraphy and chronostratigraphy.

During this interactive course, participants will learn the chemostratigraphy and isotope analysis; the stratigraphic cross-sections and correlation panels; the sequence stratigraphy in reservoir characterization, stratigraphic traps and hydrocarbon plays; the sequence stratigraphy in source rock prediction, stratigraphy and reservoir modelling and sequence stratigraphy in carbonates versus clastics; the high-resolution sequence stratigraphy, application in unconventional plays and sequence stratigraphy in outcrop analysis; and the real-time stratigraphic updates while drilling and MWD/LWD tools and log responses.

Course Objectives

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

- Apply and gain the principles and applications of sequence stratigraphy
- Discuss stratigraphic principles, basic principles of sequence stratigraphy and depositional systems and environments
- Recognize stratigraphic surfaces and boundaries, accommodation space and base level and time and stratigraphic correlation
- Identify systems tracts covering lowstand systems tract (LST), transgressive systems tract (TST), highstand systems tract (HST) and falling stage systems tract (FSST)
- Illustrate sequence stratigraphic model construction and seismic stratigraphy in sequence analysis
- Carryout well log interpretation for stratigraphy, core data and sedimentology, biostratigraphy and chronostratigraphy
- Apply chemostratigraphy and isotope analysis and discuss stratigraphic cross-sections and correlation panels
- Describe sequence stratigraphy in reservoir characterization, stratigraphic traps and hydrocarbon plays
- Determine sequence stratigraphy in source rock prediction, stratigraphy and reservoir modelling and sequence stratigraphy in carbonates versus clastics
- Discuss high-resolution sequence stratigraphy, application in unconventional plays and sequence stratigraphy in outcrop analysis
- Monitor real-time stratigraphic updates while drilling and apply MWD/LWD tools and log responses

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 the principles and applications of sequence stratigraphy for geoscientists and reservoir engineers especially those who are working on carbonate reservoirs.

Accommodation

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

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 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.

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. Steve Ehrenberg, PhD, MSc, BSc, is a **Senior Geologist & Reservoir Engineer** with over **30 years** of extensive experience within the **Oil** & **Gas**, **Petrochemical** and **Refinery** industries. His wide experience covers in the areas of **Core** & **Log Integration**, **Water Saturation**, **Coring** & **Core Analysis**, **Special Core Analysis**, **Log** Interpretation, Cased-Hole Logging, **Core Calibration**, **Core Analysis**, Core-to-Log Data Integration (**SCAL**), **Wireline** Logging, **Mud** Logging, **Cased Hole** Logging, **Production** Logging, **Well Logging**, **Reservoir** Management, **Reservoir** Appraisal & Development, **Carbonate Reservoir** Management, **Fractured Reservoirs** Evaluation & Management, **Naturally Fractured Reservoir**, Integrated **Carbonate Reservoir** Characterization, **Geological Modelling**, **Reservoir Characterization**, **Geomodelling**, Development **Geology**, **Petroleum Geology**, **Exploration Production**, **Structural Geology**, **Wellsite Geology**, Analytic Modelling Methods, **Sedimentary Geology**, **Geophysics**, **Geophysical Exploration**, **Reservoir** Engineering, **Reservoir** Engineering Applications, **Reservoir** Engineering & Stimulation, **Reservoir** Characterization, **Clastic Reservoir**, **Carbonate Reservoir Petrology**, Subsurface Facies Analysis, **Borehole Images, Geophysical Methods**, **Oil & Gas Exploration**, **Marine & Petroleum Geology**, **Reservoir Performance** Using Classical Methods, **Fractured Reservoir** Evaluation & Management, **Reservoir** Surveillance & Management, **Reservoir Monitoring**, , **Reservoir Volumetrics**, **Water Drive Reservoir**, **Reservoir Evaluation**, **Well Surveillance**, **Well Testing**, **Well Testing** & Oil Well Performance, Well Log Interpretation (**WLI**), Rock Physics & Seismic Data, **Formation Evaluation**, **Well Testing** & Data Interpretation, **Pore Pressure** Prediction and **Oil & Gas Reserves Estimations**, Well Workover Supervision, Description and Prediction of **Reservoir Quality**, **Sequence Stratigraphy** of Carbonate Systems and Introductory Geology.

During his career life, Dr. Ehrenberg held significant positions and dedication as **Consultant**, **Professor**, **Senior Reservoir Geologist**, **Senior Geologist**, **Research Geologist**, **Associate Professor**, **Assistant Professor** and **Senior Instructor/Trainer** from various international companies and universities such as the Badley Ashton & Associates Ltd., Khalifa University of Science and Technology, Sultan Qaboos University, PanTerra Geoconsultants B.V, UAE University, Statoil, Stavanger, Shell Development Company and Northern Illinois University.

Dr. Ehrenberg has a **PhD**, **Master's** and **Bachelor's** degree in **Geology** from the **University of California**, **USA** and **Occidental College**, **USA**, respectively. Further, he is a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**), a **Certified Instructor/Trainer** and has delivered numerous trainings, workshops, courses, seminars and conferences internationally.

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 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	***Introduction to Stratigraphy*** *Definition and Evolution of Stratigraphy • Importance in Geological Studies • Overview of Stratigraphic Principles • Historical Development of Sequence Stratigraphy*
0900 – 0930	***Basic Principles of Sequence Stratigraphy*** *Concept of Stratigraphic Sequences • Hierarchy of Stratigraphic Units • Unconformities and Bounding Surfaces • Walther's Law and Facies Models*
0930 – 0945	*Break*
0945– 1130	***Depositional Systems & Environments*** *Continental, Transitional, and Marine Systems • Identification of Depositional Environments • Process-Response Models • Facies Architecture in Depositional Systems*
1130 – 1215	***Stratigraphic Surfaces & Boundaries*** *Sequence Boundaries • Transgressive and Regressive Surfaces • Maximum Flooding Surfaces (MFS) • Correlation Challenges and Techniques*
1215 – 1230	*Break*
1230 – 1330	***Accommodation Space & Base Level*** *Concept of Accommodation Space • Changes in Relative Sea Level • Subsidence, Sediment Supply, and Eustasy • Impact on Sedimentation Patterns*
1330 – 1420	***Time & Stratigraphic Correlation*** *Isochronous versus Diachronous Surfaces • Chronostratigraphy and Biostratigraphy • Stratigraphic Resolution and Time Lines • Tools for Correlation: Seismic, Well Logs, Cores*
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	***Systems Tracts: Overview*** *Lowstand Systems Tract (LST) • Transgressive Systems Tract (TST) • Highstand Systems Tract (HST) • Falling Stage Systems Tract (FSST)*
0830 – 0930	***Lowstand Systems Tract (LST)*** *Characteristics and Deposition • Submarine Fans and Slope Deposits • Seismic and Log Identification • Reservoir Quality and Hydrocarbon Potential*
0930 – 0945	*Break*
0945 – 1100	***Transgressive Systems Tract (TST)*** *Nature of Retrogradational Stacking • Marine Flooding Events • Condensed Sections and Fossil Assemblages • Facies Changes and Environmental Shifts*
1100 – 1215	***Highstand Systems Tract (HST)*** *Aggradational to Progradational Patterns • Deltaic and Shallow Marine Deposits • Identification in Seismic and Logs • Diagenesis and Reservoir Implications*
1215 – 1230	*Break*
1230 – 1330	***Falling Stage Systems Tract (FSST)*** *Definition and Recent Recognition • Basinward Shifts in Facies • Erosional Surfaces and Bypass Zones • Implications for Stratigraphic Traps*
1330 – 1420	***Sequence Stratigraphic Model Construction*** *Workflow and Data Requirements • Core-Log-Seismic Integration • Sequence Boundary Placement • Regional Stratigraphic Mapping*
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	***Seismic Stratigraphy in Sequence Analysis*** *Seismic Facies and Reflection Terminations • Onlap, Toplap, Downlap, Truncation • Seismic Sequences and Chronostratigraphy • Interpreting Depositional Environments*
0830 – 0930	***Well Log Interpretation for Stratigraphy*** *Gamma-Ray and SP Logs • Log Motifs for Systems Tracts • Cross Sections and Correlations • Core-Log Integration Techniques*
0930 – 0945	*Break*
0945 – 1100	***Core Data & Sedimentology*** *Core Description Protocols • Grain Size, Structures and Ichnology • Facies Models from Core Data • Tying Core to Log and Seismic*
1100 – 1215	***Biostratigraphy & Chronostratigraphy*** *Fossil Assemblages and Environmental Indicators • Biozone Correlation and Dating • Integration with Sequence Surfaces • Biostratigraphic Pitfalls in Sequence Work*
1215 – 1230	*Break*
1230 – 1330	***Chemostratigraphy & Isotope Analysis*** *Carbon and Oxygen Isotope Markers • Elemental Ratios for Correlation • Geochemical Profiles and Flooding Surfaces • Integration with Litho- and Biostratigraphy*

1330 – 1420	***Stratigraphic Cross-Sections & Correlation Panels*** *Building Regional Cross-Sections • Correlating Between Wells and Outcrops • Use of Stratigraphic Charts • Depiction of Systems Tracts and Surfaces*
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	***Sequence Stratigraphy in Reservoir Characterization*** *Reservoir Geometry and Heterogeneity • Flow Barriers and Baffles • Porosity/Permeability Distribution • Impact of Diagenesis on Quality*
0830 – 0930	***Stratigraphic Traps & Hydrocarbon Plays*** *Trap Types in Stratigraphic Context • Pinch-Outs, Unconformities, and Onlaps • Sealing Potential of Shale Drapes • Examples from Real Field Cases*
0930 – 0945	*Break*
0945 – 1100	***Sequence Stratigraphy in Source Rock Prediction*** *Organic-Rich Facies in TST and MFS • Anoxic Conditions and Preservation Potential • Thickness and Extent Prediction • Basin Modeling Support*
1100 – 1215	***Stratigraphy & Reservoir Modelling*** *Input for Static Models • Gridding and Layering from Sequences • Variogram Modeling by Systems Tract • Flow Simulation Impacts*
1215 – 1230	*Break*
1230 – 1330	***Sequence Stratigraphy in Carbonates versus Clastics*** *Differences in Response to Base Level • Facies Architecture and Stacking • Platform Margin Development • Examples from Both Lithologies*
1330 – 1420	***Global Case Studies*** *Gulf of Mexico Deepwater Stratigraphy • North Sea Shelf Margin Systems • Middle East Carbonate Platforms • Southeast Asian Deltaic Basins*
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*

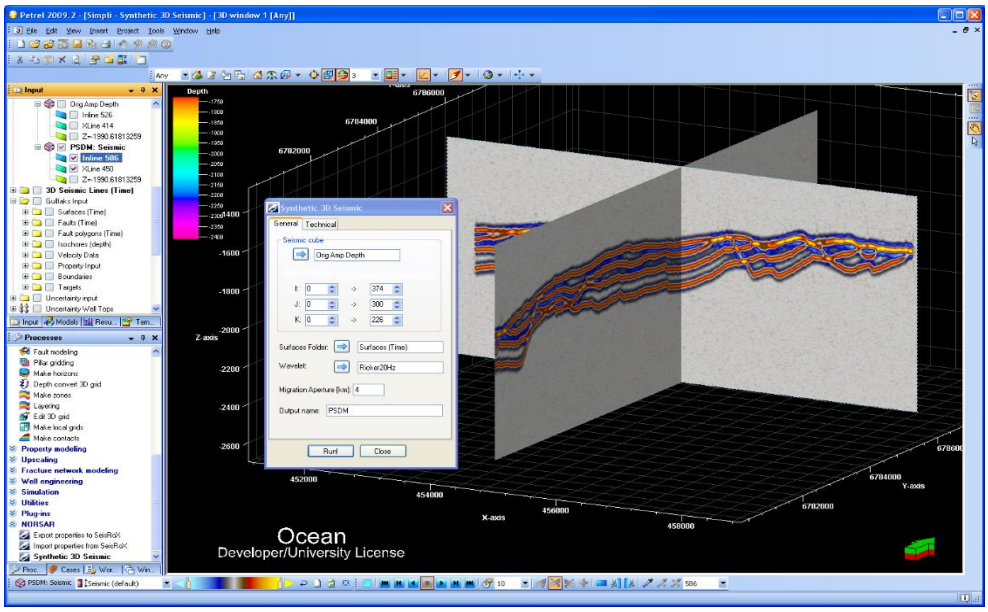
Day 5

0730 – 0830	***High-Resolution Sequence Stratigraphy*** *Parasequences and Stacking Patterns • Milankovitch Cyclicity and Climate Effects • Decameter-Scale Interpretation • Applications in Tight Reservoirs*
0830 – 0930	***Application in Unconventional Plays*** *Shale Plays and Organic Facies • TOC Prediction with Stratigraphic Models • Sequence Control on Fracture Development • Integration with Geomechanics*
0930 – 0945	*Break*
0945 – 1100	***Sequence Stratigraphy in Outcrop Analysis*** *Field Techniques and Interpretation • Measured Sections and Strat Columns • Linking Outcrop to Subsurface • Applications in Analogue Studies*

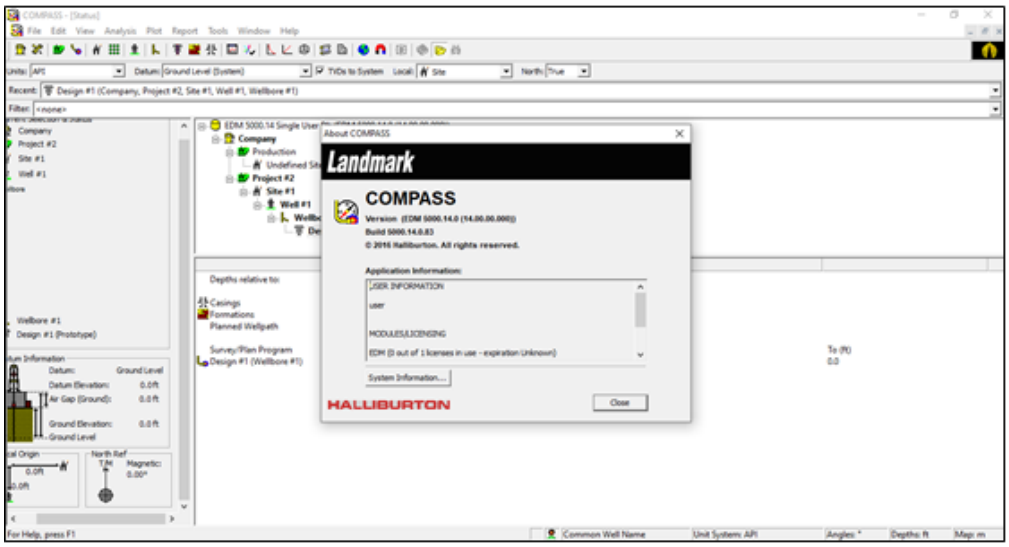
1100 – 1215	***Sequence Stratigraphy & Geosteering*** *Real-Time Stratigraphic Updates While Drilling • MWD/LWD Tools and Log Responses • Targeting Reservoir Bodies • Case Examples from Horizontal Drilling*
1215 – 1230	*Break*
1230 - 1400	***Hands-On Workshop: Sequence Interpretation*** *Log Correlation Exercise • Core-to-Log Facies Mapping • Seismic Section Interpretation • Building a Sequence Model*
1400 – 1415	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1415 – 1430	***POST-TEST***
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

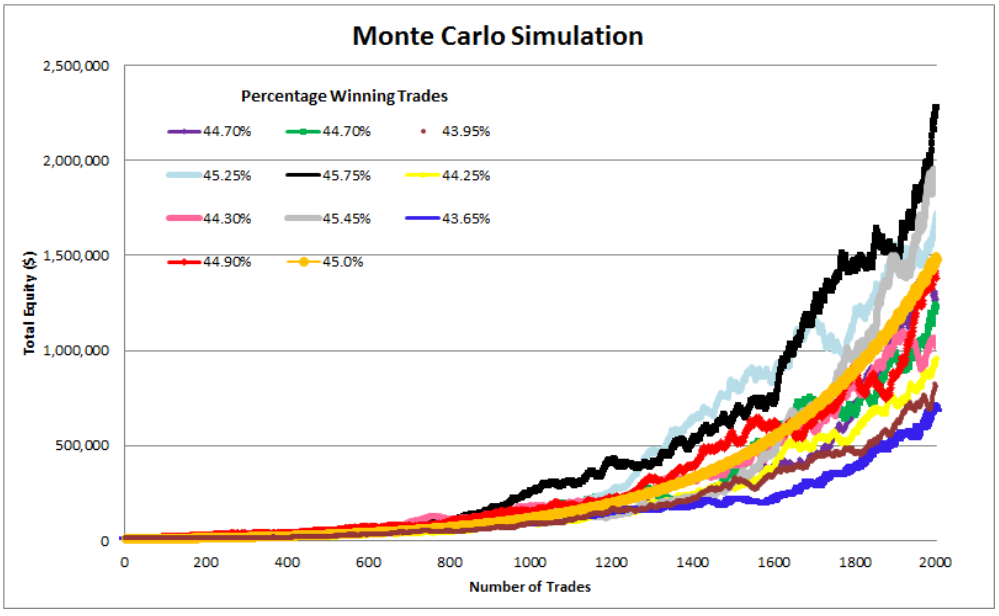
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the "Petrel Software", "COMPASS", "Monte Carlo", "KAPPA", "Interactive Petrophysics (IP)", "ECRIN", "PIPESIM", "Eclipse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



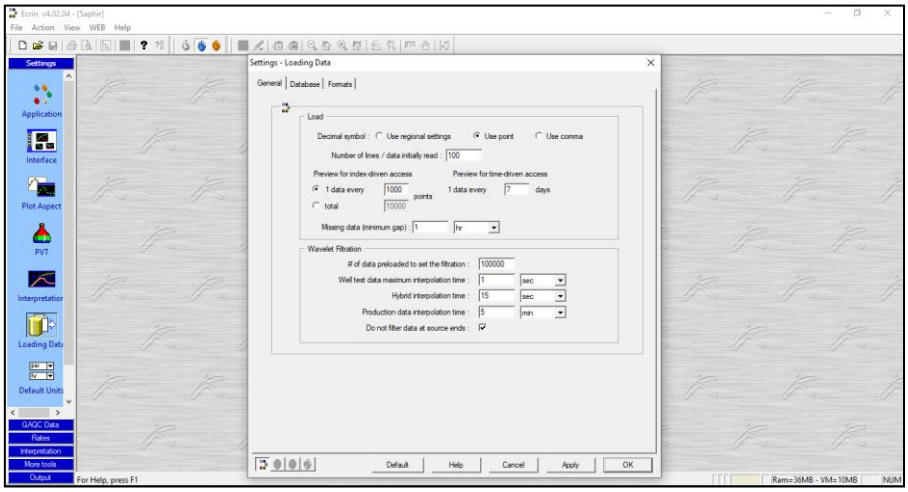
Petrel Software



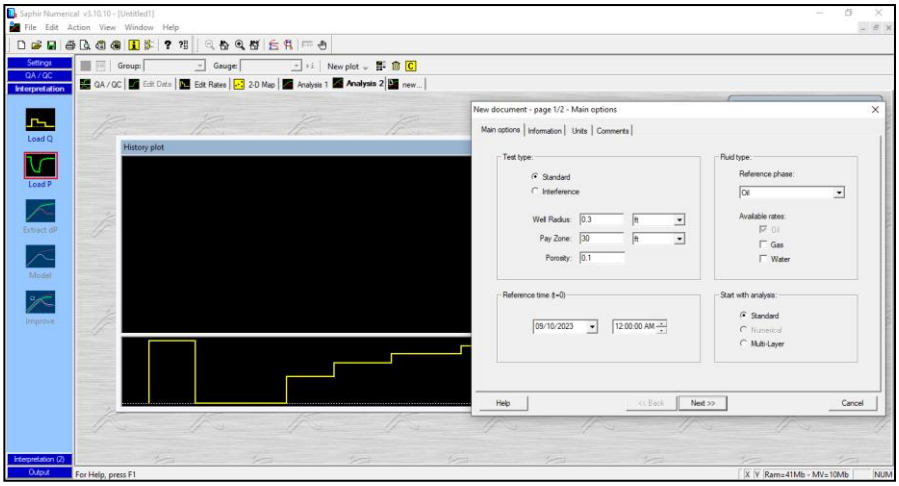
COMPASS



Monte Carlo Simulation



KAPPA Ecrin v4.02.04



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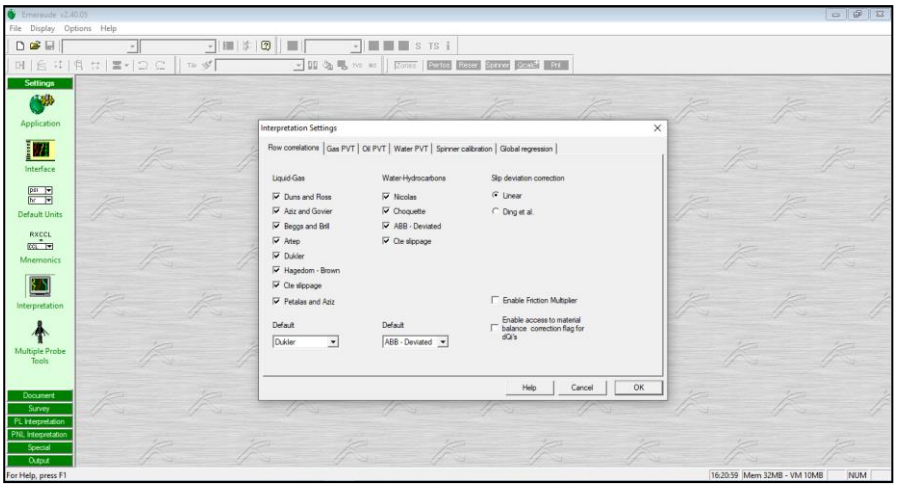
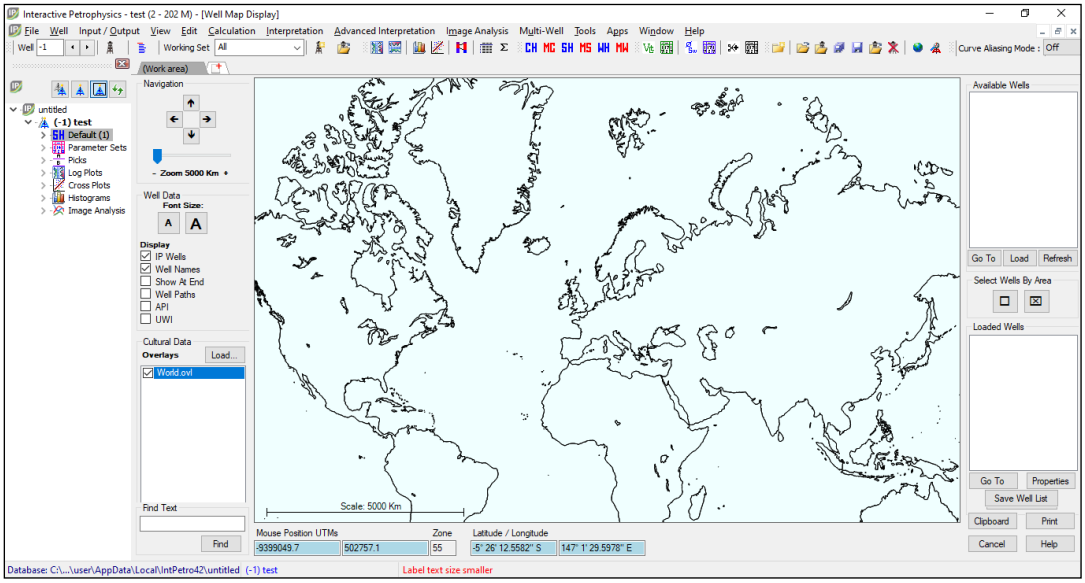
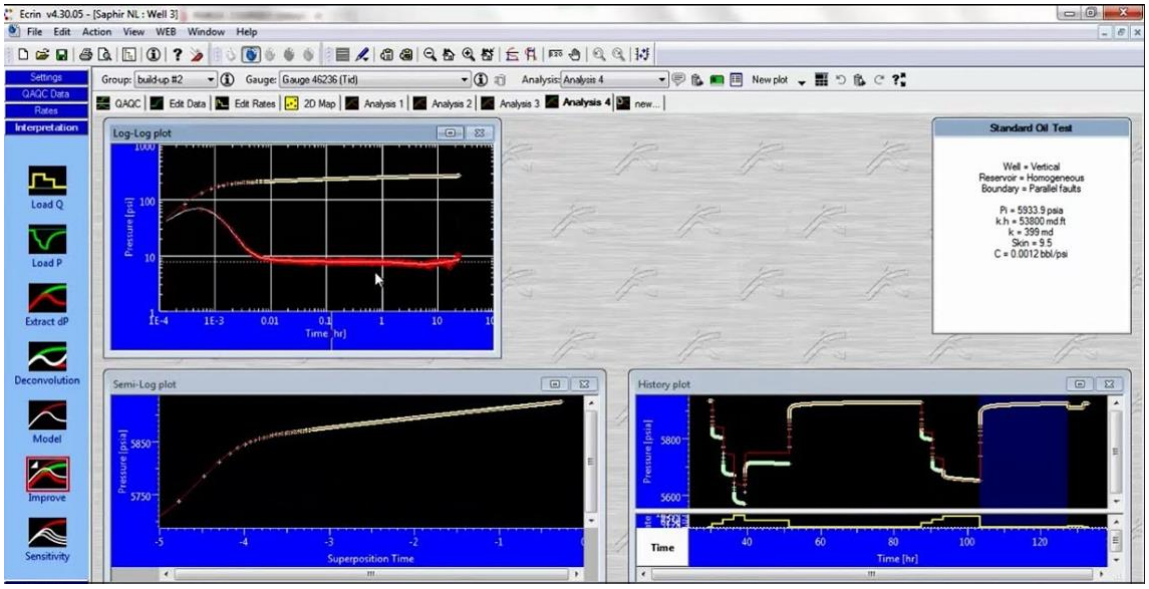


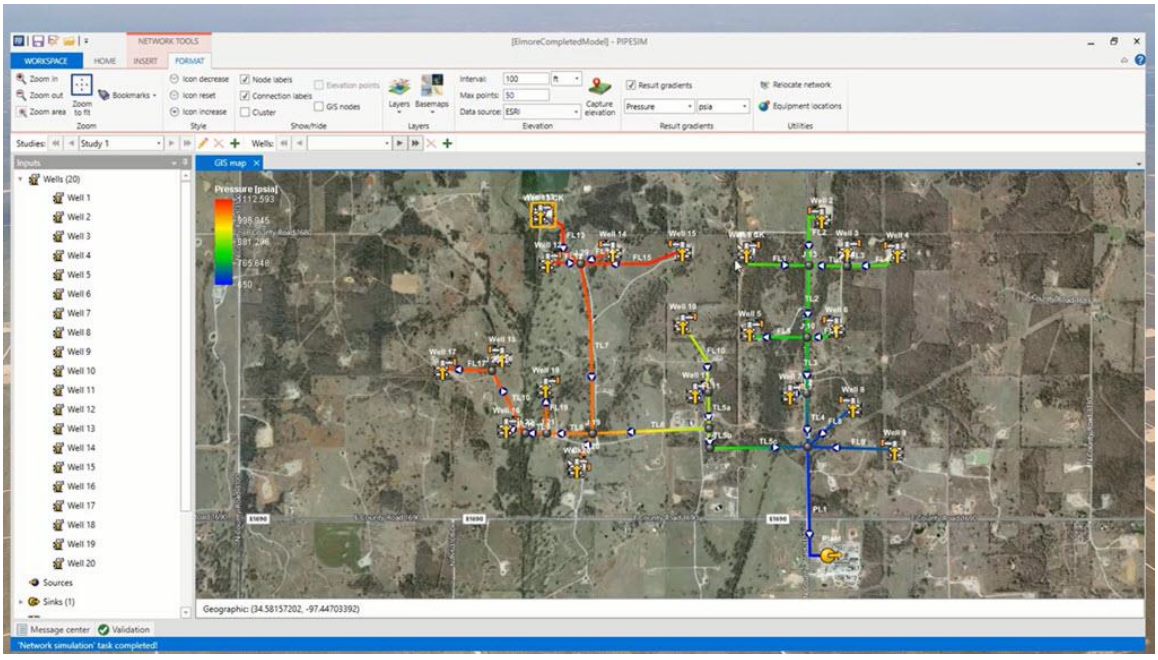
KAPPA Emeraude v2.40.05



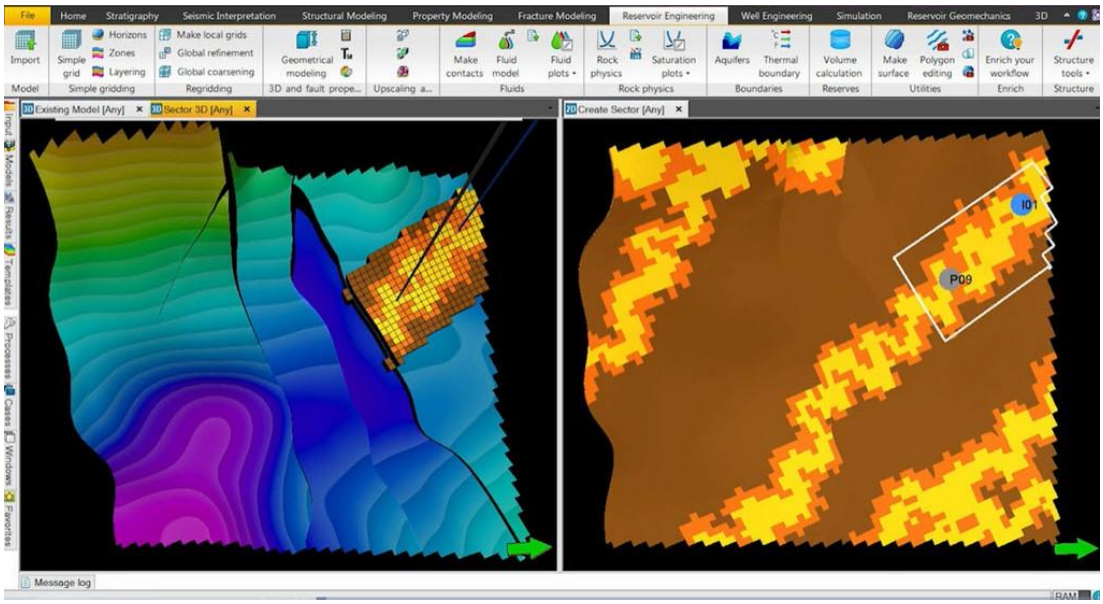
Interactive Petrophysics (IP) Software



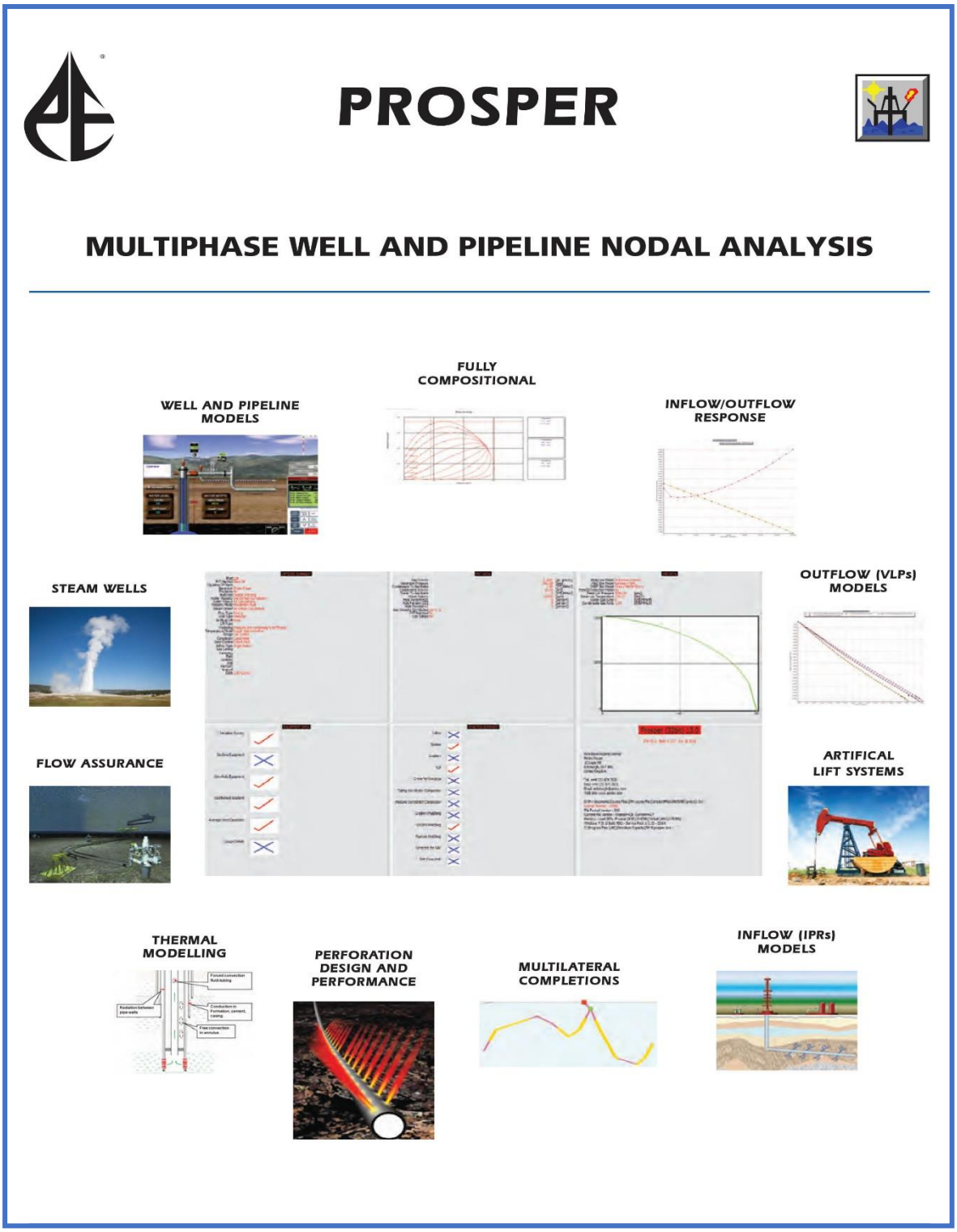
ECRIN Software



PIPESIM



Eclipse Software



Course Coordinator
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