

COURSE OVERVIEW DE0444
MICP & Deterministic Rock Typing

Course Title

MICP & Deterministic Rock Typing

Course Date/Venue

November 17-21, 2024/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

DE0444

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

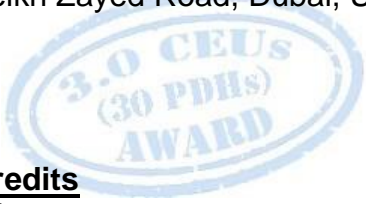
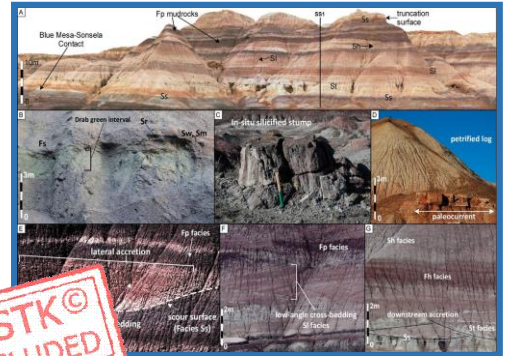
Course Description



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

This course is designed to provide participants with a detailed and up-to-date overview of MICP & Deterministic Rock Typing. It covers the basic principles of microbial induced carbonate precipitation and the importance of rock typing in reservoir characterization; the geological settings where MICP can be applied and the rock types involved; the microbial metabolic processes that lead to carbonate precipitation; and the fundamentals of petrophysics and the applications of MICP and rock typing.

Further, the course will also discuss the types of microorganisms involved including their selection and engineering; the detailed study of biochemical reactions leading to carbonate precipitation; the environmental factors affecting MICP covering pH, temperature and other environmental parameters that influence MICP; the techniques for cultivating microorganisms and inducing precipitation in lab settings; and monitoring and measuring MICP and the different deterministic rock typing methods.



During this interactive course, participants will learn the textural and compositional analysis, petrophysical classifications, petrographic microscopy techniques and statistical methods in rock typing; integrating rock typing with seismic and other geophysical data for enhanced reservoir characterization; the challenges and strategies in scaling MICP from lab to field; the computational models used to simulate MICP processes and predict outcomes; the engineering applications of MICP including bioreactor design, economic and sustainability considerations and current research and technological advances; the reservoir modeling using rock typing; the rock typing in carbonate and clastic reservoirs; and the advanced imaging techniques, future trends in rock typing technology and workflow integration and project management.

Course Objectives

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

- Apply and gain an in-depth knowledge on MICP and deterministic rock typing
- Discuss the basic principles of microbial induced carbonate precipitation and the importance of rock typing in reservoir characterization
- Explain the geological settings where MICP can be applied and rock types involved
- Describe the microbial metabolic processes that lead to carbonate precipitation
- Discuss the fundamentals of petrophysics and the applications of MICP and rock typing
- Identify the types of microorganisms involved, their selection and engineering and the detailed study of biochemical reactions leading to carbonate precipitation
- Recognize the environmental factors affecting MICP covering pH, temperature and other environmental parameters that influence MICP
- Carryout techniques for cultivating microorganisms and inducing precipitation in lab settings
- Monitor and measure MICP and explore different deterministic rock typing methods
- Apply textural and compositional analysis, petrophysical classifications, petrographic microscopy techniques and statistical methods in rock typing
- Integrate rock typing with seismic and other geophysical data for enhanced reservoir characterization
- Recognize the challenges and strategies in scaling MICP from lab to field as well as computational models used to simulate MICP processes and predict outcomes
- Determine engineering applications of MICP including bioreactor design, economic and sustainability considerations and current research and technological advances
- Illustrate reservoir modeling using rock typing and identify rock typing in carbonate and clastic reservoirs
- Carryout advanced imaging techniques, future trends in rock typing technology and workflow integration and project management

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, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of MICP and deterministic rock typing for senior production engineers, petroleum engineers, reservoir and field engineers and other technical staff.

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 + **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 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: -

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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.

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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.

Course Instructor

This course will be conducted by the following instructor. However, we have the right to change the course instructor 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 **Geology & Mineralogy, Microbial Processes in MICP, Rock Typing, Petrophysics & Rock Properties, Reserves & Resources, Reserves Estimation & Uncertainty, Reservoir Characterization, Unconventional Resource & Reserves Evaluation, Oil & Gas Reserves Estimation, Methods for Aggregation of Reserves & Resources, Fractured Reservoir Classification & Evaluation, Sequence Stratigraphy, 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 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 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: Sunday, 17th of November 2024

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Overview of MICP: Definition, Historical Context & Basic Principles of Microbial Induced Carbonate Precipitation
0930 – 0945	Break
0945 – 1030	Introduction to Rock Typing: What is Rock Typing? Importance in Reservoir Characterization
1030 – 1115	Basic Geology & Mineralogy: Understanding the Geological Settings Where MICP Can Be Applied & Rock Types Involved
1115 – 1230	Microbial Processes in MICP: Overview of the Microbial Metabolic Processes that Lead to Carbonate Precipitation
1230 – 1245	Break
1245 – 1330	Fundamentals of Petrophysics: Introduction to Petrophysical Properties Influencing Rock Typing
1330 – 1420	Applications of MICP & Rock Typing: An Initial Look at Practical Applications in Environmental Engineering & Reservoir Management
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Monday, 18th of November 2024

0730 – 0830	Microorganisms & MICP: Types of Microorganisms Involved, their Selection & Engineering
0830 – 0930	Biochemical Pathways in MICP: Detailed Study of Biochemical Reactions Leading to Carbonate Precipitation
0930 – 0945	Break
0945 – 1100	Environmental Factors Affecting MICP: pH, Temperature & Other Environmental Parameters that Influence MICP
1100 – 1230	Laboratory Methods for MICP: Techniques for Cultivating Microorganisms & Inducing Precipitation in Lab Settings
1230 – 1245	Break
1245 – 1330	Monitoring & Measuring MICP: Tools & Techniques for Monitoring MICP Processes & Outcomes
1330 – 1420	Case Studies of MICP Applications: Examples from Environmental Remediation & Geological Stabilization
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3: Tuesday, 19th of November 2024

0730 – 0830	Rock Typing Methodologies: Detailed Exploration of Different Deterministic Rock Typing Methods
0830 – 0930	Textural & Compositional Analysis: How Textures & Compositions Affect Rock Properties & Classification
0930 – 0945	Break

0945 – 1100	Petrophysical Classifications: Understanding how Petrophysical Properties are Used to Define Rock Types
1100 – 1230	Use of Petrographic Microscopy: Techniques in Thin Section Analysis for Rock Typing
1230 – 1245	Break
1245 – 1330	Statistical Methods in Rock Typing: Application of Statistical Analysis to Group & Classify Rock Data
1330 – 1420	Integration with Geophysical Data: How Rock Typing Data Is Integrated with Seismic & Other Geophysical Data for Enhanced Reservoir Characterization
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4: Wednesday, 20th of November 2024

0730 – 0830	Scale-Up of MICP: Challenges & Strategies in Scaling MICP from Lab to Field
0830 – 0930	Modeling MICP Reactions: Computational Models Used to Simulate MICP Processes & Predict Outcomes
0930 – 0945	Break
0945 – 1100	Engineering Applications of MICP: Use in Civil Engineering for Concrete Repair, Soil Stabilization etc.
1100 – 1230	Bioreactor Design for MICP: Design & Operation of Bioreactors for Efficient Carbonate Precipitation
1230 – 1245	Break
1245 – 1330	Economic & Sustainability Considerations in MICP: Analyzing the Cost-Effectiveness & Environmental Impact of MICP
1330 – 1420	Current Research & Technological Advances in MICP: Latest Developments & Future Directions in MICP Technology
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5: Thursday, 21st of November 2024

0730 – 0830	Reservoir Modeling Using Rock Typing: How Deterministic Rock Typing Informs Reservoir Modeling & Simulation
0830 – 0930	Rock Typing in Carbonate & Clastic Reservoirs: Specific Challenges & Strategies in Different Reservoir Types
0930 – 0945	Break
0945 – 1100	Advanced Imaging Techniques: Latest Advancements in Imaging for Rock Typing, including CT Scans & MRI
1100 – 1230	Future Trends in Rock Typing Technology: New Technologies & Approaches on the Horizon
1230 – 1245	Break
1245 – 1345	Workflow Integration & Project Management: Best Practices for Integrating Rock Typing into Broader Geological Studies & Projects
1345 – 1400	Course Conclusion
1400 – 1415	POST- TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Practical Sessions

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



Course Coordinator

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