**INTRODUCTION**

The increasing demand of oil by the global industry develops very good opportunity for more applications of current and advanced enhanced oil techniques in mature oil fields. This course is designed to provide attendants with comprehensive understanding of different design aspects, types, screening criteria, and field application of current, advanced, and emerging techniques of Enhanced Oil Recovery (EOR) processes.

The goal of this five-day course is to present basics, problems, advanced solutions, field applications of chemical, miscible, and thermal EOR methods, and emerging technologies of different EOR processes with actual field cases. Today, it is better to apply EOR in a secondary mode. Detailed advanced EOR methods of steam assisted gravity drainage (SAGD), Low Salinity (LSW), Vapor Extraction (VAPEX), microbial and enzyme, microwave, electric, and hybrid chemical-thermal-miscible methods will be discussed. All of these techniques suffer from several problems of accurate reservoir characterization, difficult screening actual severe heterogeneous reservoir, pilot design, and field implementations. The course is designed as an interactive learning environment of lecturing, industry videos, and solved field cases.

This course will feature:

- Rock and fluid properties for better reservoir characterization
- Classify and screen different EOR methods for current producing reservoirs
- Screen actual reservoir(s) to select the best EOR method for your reservoir
- Maximize oil recovery using chemical, miscible, and thermal EOR methods
- Know newly-developed EOR methods of chemical, thermal, miscible, hybrid EOR methods
- Understand Microbial, Low Salinity Water, SAGD, VAPEX, THAI, microwave, electric methods
- Understand different problems and proposed solutions of different EOR processes

**OBJECTIVES**

By the end of this course, participants will be able to:

- Describe different chemical, miscible, and thermal EOR processes
- Maximize oil recovery using Mobility Ratio and Capillary Number
- Apply reservoir characterization and screening actual fields for EOR
- Understand chemical, miscible, thermal, and hybrid EOR techniques
- Understand newly-developed EOR methods and compare with current ones

**TRAINING METHODOLOGY**

This course will utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. The course is designed as a blended environment of presentation, class exercises, field application/analysis and several industry videos showing all processes.

**WHO SHOULD ATTEND?**

This course is suitable to a wide range of professionals but will greatly benefit:

- Petroleum, Production & Reservoir Engineers
- Processing engineers & other discipline engineers
- Engineers who are new to the profession
- Other individuals who need to know about EOR technologies
**Seminar Outline**

**DAY 1**

**Different EOR Processes and Screening Criteria**
- Different enhanced oil recovery (EOR) methods
- Reservoir concepts, rock and fluid properties for EOR methods
- Screening criteria and mechanisms of different EOR methods
- Maximize oil recovery using Mobility Ratio and Capillary Number
- Limitations, challenges and problems of different EOR methods

**DAY 2**

**Reservoir Fluid Properties and Reservoir Characterization**
- Reservoir concepts, main rock and fluid properties for EOR
- Advanced reservoir characterization techniques for EOR methods
- Water flooding: design requirement, limitations, and displacement theory
- Polymer flooding: polymer types, properties, and types of degradation
- Polymer flooding: mobility ratio (M), slug design, and field application

**DAY 3**

**Current Chemical and Miscible EOR Techniques**
- Alkaline/polymer and ASP flooding: process and limitations
- Two actual field results: Daqing (China) and Kentucky (USA)
- Miscible gas EOR: CO2, HC, and Nitrogen injection methods
- Lab and numerical determination of minimum miscibility pressure
- Carbon dioxide miscible and immiscible flooding processes

**DAY 4**

**Current and Advanced Thermal EOR Processes**
- Thermal processes: cyclic and continuous steam injection
- Steam-Assisted-Gravity-Drainage (SAGD)
- In-situ combustion methods: forward and backward
- Toe-to-Heel Air Injection (THAI) and CAPRI processes
- Steam-CO2 hybrid EOR technique and field application

**DAY 5**

**Other Advanced EOR Processes**
- Microbial (MEOR) and Enzymes (EEOR) processes
- Low Salinity Water (LSW) and pulsed water processes
- Seismic, Electric, and Electromagnetic heating EOR methods
- Hybrid EOR applications, CO2-thermal and chemical-thermal methods
- Exercises Include:
  - Lab and field identifications of different types of reservoir fluids
  - Calculation of Capillary Number (Nc) and Mobility Ratio (M)
  - Maximization approaches of oil recovery using EOR concepts
  - Screening five-actual field cases worldwide

**OTHER RELATED COURSES**
- International Oil & Gas Business Management
- PVT (Pressure-Volume-Temperature) Properties of Reservoir Fluids
- Production Planning & Scheduling in Petroleum Refineries
- Fundamentals of Exploration & Production
- Essentials of Surface Well Test Design & Execution
Advanced and Emerging Technologies of Enhanced Oil Recovery (EOR) Processes

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CITY: _____________________________
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**PAYMENT DETAILS**

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**CERTIFICATION**

Successful participants will receive GLOMACS’ Certificate of Completion

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**TERMS AND CONDITIONS**

- Fees - Each fee is inclusive of Documentation, Lunch and refreshments served during the entire seminar.
- Mode of Payment - The delegate has the option to pay the course fee directly or request to send an invoice to his/her company/sponsor. Credit card and cheque payments are both acceptable.
- Cancellation / Substitution – Request for seminar cancellation must be made in writing & received three (3) weeks prior to the seminar date. A US$ 250.00 processing fee will be charged per delegate for each cancellation. Thereafter, we regret that we are unable to refund any fees due, although in such cases we would be happy to welcome a colleague who would substitute for you.
- Hotel Accommodation – is not included in the course fee. A reduced corporate rate and a limited number of rooms may be available for attendees wishing to stay at the hotel venue. Requests for hotel reservations should be made at least three (3) weeks prior to the commencement of the seminar. All hotel accommodation is strictly subject to availability and terms and conditions imposed by the hotel will apply.
- Attendance Certificate – a certificate of attendance will only be awarded to those delegates who successfully completed/attended the entire seminar including the awarding of applicable Continuing Professional Education Units/Hours.
- Force Majeure – any circumstances beyond the control of the Company may necessitate postponement, change of seminar venue or substitution of assigned Instructor. The Company reserves the right to exercise this clause and implement such amendments.
- Fair Access / Equal Opportunities – In the provision of its services as a world-class Training Provider, the Company is committed to provide fair access / equal opportunities throughout the delivery of its courses and assessment leading to the completion of training seminars, or 3rd party qualifications/certifications.

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