



Overview

The proposal focuses on advancing enhanced oil recovery (EOR) techniques in shale and tight reservoirs, addressing challenges associated with low permeability and optimizing hydrocarbon extraction. Notable advances include the refinement of hydraulic fracturing technologies, employing nano-fluids and smart polymers, gas injection methods, and sophisticated chemical EOR approaches. These advancements aim to improve sweep efficiency, reduce viscosity, and enhance overall oil recovery from unconventional reservoirs.

The integration of data analytics and machine learning plays a pivotal role in reservoir modeling and production optimization, providing valuable insights into complex reservoir behaviors. Advanced reservoir monitoring, utilizing sensor technologies and real-time systems, facilitates informed decision-making. Opportunities lie in optimizing multi-stage fracturing, integrating various EOR technologies for synergies, and developing environmentally friendly methods. Economic viability remains a key focus, necessitating ongoing research into cost-effective EOR approaches.

However, challenges persist, particularly in heterogeneous reservoirs with complex geological characteristics. Water management, addressing geochemical and thermal constraints, and navigating regulatory and social acceptance issues pose significant hurdles. Long-term reservoir behavior, encompassing induced seismicity and potential well interference, requires careful consideration.

In summary, the proposal underscores the imperative of continued innovation and collaboration to overcome challenges in EOR for shale and tight reservoirs. Sustainable practices, regulatory compliance, and a balance between resource development and environmental/social concerns are central to the responsible exploitation of these unconventional energy resources.

Objectives

- Fundamentals of shale characterization.
- Geomechanics of Shale & tight Reservoirs and Resource analysis.
- Optimize Hydraulic Fracturing and Multi-Stage Fracturing.

- Address Environmental and Economic Challenges.
- Integrate Multi-Disciplinary EOR Approaches.
- Mitigate Long-Term Reservoir Challenges

The course will be offered as per the norms set by the GIAN Programme. Course participants will learn these topics through lectures and hands-on tutorials.

One Week GIAN Online Course on Advances in enhanced oil recovery in shale and tight reservoirs: Opportunities and Challenges (14th – 18th April, 2025) In Hybrid Mode

INTERNATIONAL FACULTY

Dr. James J. Sheng

Professor,
Department of Petroleum Engineering
Texas Tech University, USA

COURSE COORDINATOR

Dr. Ajay Mandal

Professor,
Department of Petroleum Engineering,
IIT(ISM) Dhanbad

Dr. Keka Ojha

Head & Professor
Department of Petroleum Engineering,
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Course Schedule	14 th – 18 th April, 2025
Modules	<ul style="list-style-type: none">• Prof. James Sheng (8 hrs lectures and 4 hrs tutorials) on Characterization and enhanced oil recovery in shale and tight reservoirs.• Prof. Ajay Mandal (4 hrs lectures and 4 hrs tutorials): Mechanisms of enhanced oil recovery from tight and shale reservoirs• Prof. Keka Ojha (2 hrs lectures and 2 hrs tutorials): Mechanisms of different stimulating methods for shale and tight reservoirs.
You should attend if...	<ul style="list-style-type: none">▪ You are UG/PG students of Petroleum Engineering/Chemical Engineering interested in the field of enhanced or improved oil and gas recovery.▪ You are geologist or geophysicist working in the field of petroleum exploration and production.▪ You are a faculty from academic institution interested in reservoir engineering.▪ You are a research scientists interested improved oil recovery from unconventional reservoir.

**Fees and
How to
Register**

The participation fees for taking the course are as follows:

Participants from abroad: US \$200
Industry/ Research Organizations: INR 4,000+GST (18%)
Academic Institutions: INR 2,000+GST (18%)
Students: INR 800+GST (18%).



The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hrs free internet facility. The participants will be provided with accommodation on payment basis.
Note: After Payment, send the receipt along with the Registration Form to: ajay@iitism.ac.in

The Faculty



Dr. James J. Sheng, a Professor at Texas Tech University, specializes in Enhanced Oil Recovery (EOR). He has published 180 journal papers, authored two books, holds four U.S. patents, and has mentored 21 Ph.D. and 33 Master's students. His impactful research and teaching shape advancements in petroleum engineering globally.



Dr. Ajay Mandal, a Professor at IIT(ISM), Dhanbad is an expert in Enhanced Oil Recovery (EOR) with more than 250 publications and 14,500 citations, leading 23 R&D and 20 consultancy projects. He so far guided 26 PhD STUDENTS Honored with the DAAD Fellowship, SPE Awards, and RSC Fellowship, he is Ranked#1 in Petroleum Engineering and Enhanced Oil Recovery worldwide by ScholarGPS by and featured in Stanford's top 2% scientists (2020–2024).



Dr. Keka Ojha, Head & Professor of the Department of Petroleum Engineering, Indian Institute of Technology (ISM), Dhanbad has about 20 years of research, and teaching experience in India and overseas. Her research area includes hydraulic fracturing, shale oil & gas and profile modifications. As the recognition of her work, she is the conferred SPE Distinguished Achievement Award

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**Advances in enhanced oil recovery in
shale and tight reservoirs Opportunities
and Challenges**

**Ref. No. GIAN/S-2425/181_rev_1
Date:30/12/2024**

**Registration Form
(Course ID: 2514001)**

Gian Registration/Application no. :

Name of the Candidate (Capital letters):

Address:

Mobile No.:

Qualification:

Place:

Date:

Signature of Applicant

Note: GST is not applicable for internal participants