



Course Code OGEE-430	Course Title Hydrocarbon Recovery Techniques	ECTS Credits 6
Department Engineering	Semester Fall, Spring	Prerequisites OGEE-350
Type of Course Required	Field Oil & Gas Engineering	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 4 th	Lecturer(s) Dr Nicolas Kokkinos
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- Introduce the students in hydrocarbon recovery
- Provide solid knowledge to primary & secondary recovery
- Provide solid knowledge to conventional & unconventional oil & gas resources
- Provide solid technical knowledge to improved recovery methods
- Provide solid technical knowledge to tertiary recovery.

Learning Outcomes:

After completion of the course students are expected to:

- Have an understanding of the fundamental concepts of hydrocarbon recovery.
- Demonstrate the ability to interpret primary & secondary recovery
- Demonstrate the ability to know the conventional & unconventional oil & gas resources
- Demonstrate the ability to study improved recovery methods
- Demonstrate the ability to study of tertiary recovery

Course Contents:

Overview of Hydrocarbon Recovery

- Reservoir Description and Volume
- Core Analysis
- Fluid Properties and Distribution
- Phase Behavior
- Recovery Fundamentals
- Modeling and Economics

Primary and Secondary Recovery

- Fluid Displacement
- Natural Depletion
- Water Flooding
- Gas Injection
- Well Productivity
- Reservoir Development and Management

Conventional Oil and Gas Resources

- Gas and Gas Condensate
- Solution Gas Drive
- Water Drive
- Combination Drive

Unconventional Oil and Gas Resources

- Tight Reservoirs
- Shale Formation
- Tar Sands
- Coal Bed Gas
- Gas Hydrates

Improved Recovery Methods

- Improved Gas Injection
- Nitrogen Substitution
- Water Alternating Gas Injection
- Advances in Development Drilling
- Well Completion and Hydraulic Fracturing

Tertiary Recovery

- Enhanced Oil Recovery Screening
- Polymer Flooding
- Surfactant Flooding
- Miscible Processes
- Thermal Processes
- Pilot Design

Learning Activities and Teaching Methods:

Lectures, projects, discussion

Assessment Methods:

Homework, project assignments, tests, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
M. Walsh & L.W. Lake	A generalized approach to primary hydrocarbon recovery	Elsevier Applied Science	2003	0444506837
M. Baviere	Basic Concepts in Enhanced Oil Recovery Processes	Elsevier Applied Science	2007	1851666176

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Carcoana Aurel	Applied Enhanced Oil Recovery	Prentice Hall	1992	0130442720