



Course Code OGEE-521	Course Title Reservoir Engineering	ECTS Credits 7.5
Prerequisites OGEE-520	Department Engineering	Semester Fall, Spring
Type of Course Required	Field Oil, Gas and Energy Engineering	Language of Instruction English
Level of Course 2 nd Cycle	Lecturer(s) Dr Nicolas Kokkinos	Year of Study 1 st
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 principles and the role of reservoir engineering.
- Outline the basic concepts of reserve/resource categorization.
- Delineate the fundamentals of reservoir behaviour.
- Explain comprehensively the use of equation-of-states in reservoir engineering.
- Familiarise students with all aspects of reservoir classification.
- Present fluid flow in porous media under various conditions.
- Appreciate the changes in reservoir behaviour as reservoir pressure drops.
- Identify primary, secondary and tertiary recovery.
- Assess the development potential of oil and gas reservoirs.
- Underline the importance of improved and enhanced oil recovery methods.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Recognise reservoir behaviour and its properties.
2. Be aware of deterministic and probabilistic methods of hydrocarbon reserves estimation.
3. Illustrate the use of equation-of-states.
4. Carry out simple phase-equilibrium calculations.
5. Characterise and classify correctly an oil or gas reservoir.
6. Identify the principal drive mechanisms in a reservoir.
7. Determine the best overall recovery strategy for a reservoir.
8. Understand displacement processes.
9. Employ improved and enhanced oil recovery methods.

Course Contents:

- Introduction to reservoir engineering.
- Hydrocarbon reserves and resources estimation.
- Reservoir fluid behaviour and properties.
- Fundamentals of rock properties.
- Use of Cubic Equation of States (CEoS).
- PVT analysis.
- Classification of reservoirs.
- Development of material balance technique.
- Fluid flow in porous media under steady-state, semi-steady state and unsteady state conditions.
- Darcy's law and its applications.
- Determination of oil well/gas well performance.
- Description of drive mechanisms.
- Water Influx.
- Displacement of oil and gas.
- Basics on improved and enhanced oil recovery methods.

Learning Activities and Teaching Methods:

Lectures, projects, in-class discussion, work in the PC Lab.

Assessment Methods:

Homework, project assignments, midterm exam, final exam

Required Textbooks / Reading:

Title	Author(s)	Publisher	Year	ISBN
L. P. Dake	Fundamental of Reservoir Engineering, Vol. 8 (Developments in Petroleum Science)	Elsevier Science	1978	978-0444418302

Recommended Textbooks / Reading:

Title	Author(s)	Publisher	Year	ISBN
Applied Petroleum Reservoir Engineering	Revised by R. E. Terry and J. B. Rogers	Prentice Hall (Pearson Education Inc.)	2015	978-0133155587

Reservoir Engineering Handbook	Tarek Ahmed	Gulf Professional Publishing	2010	978-1-85617-803-7
The Practice of Reservoir Engineering (Revised Edition)	L. P. Dake	Elsevier Science	2001	978-0080574448