

Faculty of Engineering & Technology
Advanced Petroleum Reservoir Engineering

Information :

Course Code : PE 403

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Department of Petroleum Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Omar Saad Ahmed Mahmoud	8
Teaching Assistant	Reham Shawket Mostafa Taha Khalaaf	2

Area Of Study :

- Acquire knowledge of basic reservoir engineering data and analysis.
- Apply advanced technologies of petroleum reservoir engineering.
- Integrate knowledge of different reservoir types and drive mechanisms.
- Evaluate reservoir volumes, hydrocarbons in place, and reserves.
- Create the future performance of different reservoir types and mechanisms.

Description :

Quantitative study of oil production by natural forces, gas cap, water influx, solution gas, etc.; material balance equations, study of gas, non-retrograde gas condensate, and black oil reservoirs. Predictive calculations of oil recovery from different reservoir types.

Course outcomes :

a. Knowledge and Understanding: :

1 -	Review mathematics to determine the reservoir volumes.
2 -	Describe reservoir properties for reservoir calculations and prediction.
3 -	Outline the methods of petroleum field development plans.
4 -	Utilize the methodologies of solving reservoir engineering problems
5 -	Develop the current Petroleum reservoir engineering technologies.

b. Intellectual Skills: :

1 -	Design case studies of reservoir volumes/reserves in oil and gas reservoirs
2 -	Select appropriate solutions for reservoir engineering problems.
3 -	Judge reservoir engineering decisions for prediction performance.
4 -	Design computer programs for petroleum reservoir engineering applications.

c. Professional and Practical Skills: :

1 -	Apply knowledge of mathematics of the original oil in place by MBE method
2 -	Employ the traditional methods and advanced technology to determine petroleum reserves.
3 -	Deal with the high level of uncertainty of reservoir engineering data

- 4 - Prepare technical petroleum reservoir reports.

d.General and Transferable Skills: :

- 1 - Collaborate effectively.
2 - Communicate effectively with teams.
3 - Effectively manage tasks, time, and resources.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Review of the Basics of Reservoir Engineering	9	6	3
Identify of reservoir Drive Mechanisms and their Characteristics	6	3	3
Study of depletion/solution gas reservoirs	9	6	3
Study of water drive reservoirs	9	6	3
Study of gas cap, gravity drainage and combination reservoirs	6	3	3
Study of dry, wet gas reservoirs	12	9	3
Study of gas condensate reservoirs	6	3	3
The prediction of Oil Reservoir Performance	12	6	6
The prediction of gas reservoir performance	6	3	3

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Problem-based Learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	15.00		
Final Exam	40.00		
Mid- Exam	25.00		
Participations	10.00		
Quizzes	10.00		

Recommended books :

Tarek Ahmed: Reservoir Engineering Handbook, 3rd Edition, Gulf Professional Publishing, 2006, ISBN 0-7506-7972-7.
B.C. Craft and M.F. Hawkins: Applied Petroleum Reservoir Engineering, 2nd Edition, Revised by R. Terry, Prentice Hall PTR, 1991, ISBN 0-13-039884-5.
L.P. Dake: Fundamentals of Reservoir Engineering, Elsevier Science B.V., 1998, ISBN 0-444-41830-X.

