FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

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 :

Understand the oil production process by different techniques.
Enrich students knowledge of the calculations of oil recovery from different reservoir types.

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 the required background related to the topics introduced.
2 -	Explain the properties of reservoir rock and fluid in oil and gas bearing formation
3 -	Recognize the importance of good reservoir engineering for optimum hydrocarbon recovery.
4 -	Define the level of uncertainty in reservoir engineering in problem.
b.Intellectual Skills: :	
1 -	Solve petroleum engineering problems related to petroleum reservoir.
2 -	Predict the basic reservoir engineering techniques and how they complement each other for primary and secondary recovery.
3 -	Evaluate the reservoir heterogeneity challenges.
4 -	Perform calculations related to Drive Mechanisms and their Characteristics.
c.Professional and Practical Skills: :	
1 -	Calculate the original oil in place by volumetric and MBE method
2 -	Use all the available data from the different scales of reservoir characterization to understand the fluid flow in the reservoir.
3 -	Analyze, design and conduct different reservoir engineering evaluation scenarios and applications.
4 -	Practice for the dynamic reservoir simulation.

d.General and Transferable Skills: :	
1 -	Collaborate effectively within multidisciplinary teams.
2 -	Learn how to work as a part of teamwork solve reservoir engineering related problems.
3 -	Use internet in research to follow the relations and indications of reservoir and aquifer data.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Review of the Basics of Reservoir Engineering	9	6	3
Reservoir Drive Mechanisms and their Characteristics	6	3	3
Classification of Oil and Gas Reservoirs.	9	6	3
Volumetric Calculations for the Oil in Place	9	6	3
Material Balance Equation (MBE) Calculation of Hydrocarbon Volumes	6	3	3
The Material Balance Equation	12	9	3
MBE for Gas Reservoirs	6	3	3
Predicting Oil Reservoir Performance Calculations	12	6	6
Relating Reservoir Performance To Time	6	3	3

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Problem Solving
Laboratory

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00		
Final Exam	40.00		
In Class Quizzes	5.00		
Mid-Term exams	40.00		
Participations	5.00		

Recommended books :

1- Tarek Ahmed and Nathan Meehan : ñAdvanced Reservoir Management and Engineeringò Gulf Professional Publishing; 2 edition (Sept. 28 2011)
2- Tarek Ahmed: Reservoir Engineering Handbook, 3rd Edition, Gulf Professional Publishing, 2006, ISBN 0-7506-7972-7.
3- 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.
4- L.P. Dake: Fundamentals of Reservoir Engineering, Elsevier Science B.V., 1998, ISBN 0-444-41830-X.