UNIVERSITY of NICOSIA

Course Code	Course Title	ECTS Credits
OGEE-330	Petroleum Reservoir Engineering	8
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	GEOL-210, MENG-260, MENG-280
Type of Course	**Field**	**Language of Instruction**
Required	Oil & Gas Engineering	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	3rd	Dr Vasileios Drakonakis
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Familiarize students with the fundamental principles and governing laws associated with petroleum reservoir engineering
- Provide knowledge and expertise on contemporary practices and methodologies used in petroleum reservoir engineering
- Develop numerical models and techniques for the characterization of the flow of fluids in wellbores using available data on fluid and rock properties
- Discuss techniques of oil well testing
- Provide information and discussion on water drive and water drive performance

Learning Outcomes:

After completion of the course students will be able to:

- Perform calculations in regards to reservoir engineering using measured properties of reservoir fluids and rocks
- Explain and use governing laws associated with oil reservoirs
- Develop numerical models for the flow of fluids around wellbores and identify important factors that influence this flow
- Apply techniques to solve transient flow problems in oil reservoirs
- Demonstrate knowledge of water influx
- Demonstrate knowledge of how to properly use porosity, drive mechanisms, and traps
- Perform volumetric oil in place calculation and reserve estimation
- Use decline curve analysis techniques to analyze oil production data
- Distinguish between conventional approaches and modern numerical simulation methods for reservoir predictions

Course Contents:

- Introduction to reservoir engineering
- Appraisal of oil fields (sampling reservoir rocks and fluids, laboratory experiments, analysis and comparison of PVT data, etc.)
- Material balance applied to oil fields (derivation and solution of the cumulative material balance, comparison with numerical simulations, water influx calculations, etc.)
- Oil well testing (essentials, literature, purpose, radial flow equation, pressure buildup testing, problems and faults, well testing in developed fields, multi-rate flow testing, etc.)
- Water drive (planning a water flood, water drive engineering design, basic theory of water drive in 1-D, numerical simulations, water drive in heterogeneous sections, water drive performance, etc.)
- Declined curve analysis (exponential decline, harmonic decline, hyperbolic decline)
- Reservoir simulations (conventional approaches, numerical models, comparisons)

Learning Activities and Teaching Methods:

Lectures, in-class examples, exercises, software simulations, design project

Assessment Methods/Reading:

Homework, tests, final exam, simulation reports, project report

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
L. P. Dake	The practice of Reservoir Engineering (revised edition)	Elsevier Science	2001	978-0444506719

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
B. C. Craft, M. Hawkins, and R. E. Terry	Applied Petroleum Reservoir Engineering	Prentice Hall	1991	978-0130398840