



University of Nicosia, Cyprus

<b>Course Code</b> OGEE-101	<b>Course Title</b> Introduction to Oil & Gas Engineering	<b>ECTS Credits</b> 8
<b>Department</b> Engineering	<b>Semester</b> Fall	<b>Prerequisites</b> None
<b>Type of Course</b> Required	<b>Field</b> Oil & Gas Engineering	<b>Language of Instruction</b> English
<b>Level of Course</b> 1 <sup>st</sup> Cycle	<b>Year of Study</b> 1 <sup>st</sup>	<b>Lecturer(s)</b> Dr Constantinos Hadjistassou
<b>Mode of Delivery</b> Face-to-face	<b>Work Placement</b> N/A	<b>Co-requisites</b> None

**Objectives of the Course:**

The main objectives of the course are to:

- Introduce the students to petroleum technology and its importance to society
- Familiarize students with a range of terminology used in petroleum engineering
- Familiarize students with the fundamental concepts of petroleum engineering- namely petroleum geology, reservoir engineering, drilling and production methods and resource evaluation
- Describe how wells are drilled and fluids extracted to the surface
- Discuss how production strategies can be designed to optimize recovery
- Discuss oil economics and distribution systems
- Introduce students to laboratory experiments and simulation tools

**Learning Outcomes:**

After completion of the course students will be able to:

- Demonstrate the competencies and skills acquired to function as a petroleum engineer
- Describe the principle phases of the petroleum engineering function
- Understand the structure and composition of the Earth and its impact on the development of petroleum systems
- Describe the latest techniques of exploration, drilling, reservoir engineering, production and refinery operations
- Be familiar with the principle types of subsurface geology, how data can be extracted and how they can be used to estimate hydrocarbon volumes
- Discuss how reservoir fluids and gasses flow in the subsurface and how recovery can be optimized
- Discuss petroleum production statistics, products and markets, oil economics, supply systems and product applications.
- Describe the unconventional sources of oil and gas resources
- Describe the chemical synthesis of oil, natural gas, biofuels, alternative fuels

### Course Contents:

- The nature of gas and oil
- The Earth's crust - where we find it
- Identification of common rocks and minerals
- Deformation of sedimentary rocks
- Ocean environment and plate tectonics
- Sedimentary rock distribution
- Mapping
- Source rocks, generation, migration, and accumulation of petroleum
- Reservoir rocks
- Petroleum traps
- Petroleum exploration – geological, geochemical and geophysical
- Drilling a well - the mechanics
- Drilling problems and techniques
- Testing and completing a well
- Surface treatment and storage
- Offshore
- Workover
- Reservoir mechanics
- Petroleum production
- Reserves
- Improved oil recovery
- Unconventional oil and gas

### Laboratory:

- a) Introduction to Instrumental Methods of Analysis
- b) Hyphanated analytical instrumentation
- c) Demonstrations
- d) Software simulation**

The course format is 3h lectures and 1h laboratory tutorial sessions per week.

### Learning Activities and Teaching Methods:

Lectures, in-class examples, exercises, Laboratory practical sessions

### Assessment Methods:

Homework, exams, final exam, Laboratory practical reports

### Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Norman J. Hyne	Nontechnical Guide to Petroleum Geology, Exploration, Drilling, and Production	Penn Well	2012	978-1-59370-269-4

**Recommended Textbooks/Reading:**

<b>Authors</b>	<b>Title</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Joseph Hilyard	The Oil & Gas Industry: A Nontechnical Guide	PennWell	2012	978-1-59370- 254-0