



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

**Course Objectives:**

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 Content:**

The Course focuses on the following topics:

- 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

**Learning Activities and Teaching Methods:**

The module is delivered in taught on-campus mode by a selection from: lectures, videos, PPT presentation, discussion, case study tutorials and directed self-study.

**Assessment Methods:**

Final-term exam, Mid-tem Exam, Open Book Test, Class Participation,

**Required Textbooks/Readings:**

Title	Author(s)	Publisher	Year	ISBN
Nontechnical Guide to Petroleum Geology, Exploration, Drilling, and Production	Hyne, N.	Penn Well	2012	9781593702694

**Required Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
The Oil & Gas Industry: A Nontechnical Guide	Hilyard, J.	Penn Well	2012	9781593702540
Introduction To Petroleum Exploration And Engineering	Clennel Palmer, A.	World Scientific Publishing	2016	9789813147805