

MODULE DESCRIPTOR

Module Title

Introduction to Oil and Gas Engineering

Reference	ENM502	Version	2
Created	August 2021	SCQF Level	SCQF 10
Approved	November 2020	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

To develop an understanding of the essential principles and knowledge of exploration and production operations. This module explores the applications of information technology (IT) in the Upstream Oil and Gas Sector.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Demonstrate detailed knowledge and application of operational and technical activities involved in exploration and production.
- 2 Apply geological concepts to critically understand processes of rock formation, and hydrocarbon formation and accumulation.
- 3 Critically apply the essential tools available for finding and characterising hydrocarbon accumulations using formation evaluation techniques.
- 4 Critically identify the key systems and components of drilling, completion, and production facilities.
- 5 Apply knowledge of information technology and oil and gas to propose appropriate solutions to oil and gas upstream operations.

Indicative Module Content

Introduction: Reservoir lifecycle and IT role. Exploration (geoscience: principles of geology, hydrocarbon formation, migration, trapping and accumulation. Geological methods and seismic principles). Appraisal: (reservoir engineering: petroleum reservoir types and estimation techniques, drive mechanisms and formation evaluation/logging types and interpretation, lithology determination, porosity and HIIP estimation). Drilling: (drilling overview: personnel and equipment, well construction process, drilling operations, fluids, cementing, and casing). Production operations: well stimulation and completion and production facilities.

Module Delivery

The module will be delivered by means of direct and online lectures, tutorials and self guided study. Extensive multimedia industry resources to support the topics delivery.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	50	50
Non-Contact Hours	100	100
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type: Coursework Weighting: 100% Outcomes Assessed: 1, 2, 3, 4, 5
 Description: Report.

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

Component 1 comprises 100% of the module grade. To pass the module, a D grade is required.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 AADNOY, B.S. 1997. Modern Well Design. Gulf Publishing Company.
- 2 ARCHER, J.S., WALL, C.G., Petroleum Engineering: Principles and Practice (Graham & Trotman, 1986, ISBN 0860106659).
- 3 BOURGOYNE et Al. 1984. Applied Drilling Engineering. SPE Publications.
- 4 ECONOMIDES, M J et Al. 1998. Petroleum Well Construction. John Wiley and Sons.
- 5 JAHN, F., COOK, M., GRAHAM, M., Hydrocarbon Exploration and Production (Elsevier, 1998, ISBN 0444829210).
- 6 STONELEY, R., Introduction to Petroleum Exploration for Non-Geologists (OUP, 1995, ISBN 0198548567).
- 7 DARLING, T., 2005. Well Logging and Formation Evaluation; Gulf Professional Publishing <https://doi.org/10.1016/B978-0-7506-7883-4.X5000-1>.