



# **OIL AND GAS MANAGEMENT**

INSTITUTE FOR PROFESSIONAL AND EXECUTIVE DEVELOPMENT

United Kingdom

## **UNIT SPECIFICATION**

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**Unit Title**

Oil and Gas Management

**Credit value**

The credit value for this unit is 30

30 credits equivalent to 300 hours of teaching and learning  
(10 hours is equivalent to 1 credit)

Guided learning hours (GLH) = 50 hours

GLH includes lectures, tutorials and supervised study. This may vary to suit the needs and requirements of the learner and/or the approved centre of study.

Directed learning = 50 hours: This includes advance reading and preparation, group study, and undertaking research tasks.

Self-managed learning = 200 hours: This includes completing assignments and working through the core and additional reading texts. It also includes personal research reading via other physical and/or electronic resources.

<b>Learning outcome</b> Learner will:	<b>Assessment criteria</b> Learner can:
<p>1.0 Understand the oil and gas value chain</p> <p>2.0 Understand the phenomenon of plate tectonics</p> <p>3.0 Understand the geologic timescale and important events in the earth's history</p> <p>4.0 Understand the nature of the earth's crust</p>	<p>1.1 Explain what is meant by the oil and gas value chain</p> <p>1.2 Describe the upstream, midstream and downstream parts of the value chain</p> <p>2.1 Explain the meaning of plate tectonics</p> <p>2.2 Describe the reshaping of the earth's continents from the movement of a single landmass (pangea) to the creation of today's continents (Permian, Triassic, Jurassic, Cretaceous, Present day)</p> <p>2.3 Give an account on the seafloor spreading theory</p> <p>3.1 Explain the meaning of geological timescale</p> <p>3.2 Analyse the geologic timescale:</p> <ul style="list-style-type: none"> <li>○ Phanerozoic (Paleozoic, Mesozoic, Cenozoic)</li> <li>○ Proterozoic</li> <li>○ Archean</li> </ul> <p>3.3 Discuss the 2 methods used for dating the formation of rocks and events</p> <ul style="list-style-type: none"> <li>○ Absolute age dating (radioactive age dating)</li> <li>○ Relative age dating</li> </ul> <p>4.1 Use an appropriate diagram to describe the earth's crust</p> <p>4.1.1 Describe the characteristics of the inner and outer cores, mantle, oceanic and continental crusts of the earth</p> <p>4.2 Examine the types of rocks that make up the earth's crust</p>

	<ul style="list-style-type: none"> <li>○ Igneous rocks (plutonic and volcanic)</li> <li>○ Sedimentary rocks (clastic sedimentary rocks, organic sedimentary rocks, chemical or crystalline sedimentary rocks) <ul style="list-style-type: none"> <li>- Examine the process of cementation and compaction of unconsolidated sediments</li> <li>- Examine the parts of a clastic sedimentary rock as viewed under a microscope (sediment grains, natural cement, pores)</li> </ul> </li> <li>○ Metamorphic rocks (foliated and non-foliated)</li> </ul>
<p>5.0 Understand the deformation of sedimentary rocks</p>	<p>5.1 Explain the cause of distortion(s) in the earth's structure</p> <p>5.2 Describe the characteristics of monoclines, anticlines, synclines and domes</p> <p>5.2.1 Explain why anticlines and domes are of greater interest to petroleum prospectors</p> <p>5.3 Examine the phenomenon of faulting and describe the various types of faults:</p> <ul style="list-style-type: none"> <li>○ Normal faults</li> <li>○ Reverse faults (thrust faults)</li> <li>○ Strike-slip faults</li> </ul> <p>5.4 Describe how an unconformity is formed</p> <p>5.4.1 Examine an angular unconformity and a disconformity</p> <p>5.5 Give an account on the evolution of a sedimentary basins</p>
<p>6.0 Understand the petroleum systems processes</p>	<p>6.1 Examine the conditions necessary for the accumulation of petroleum (presence of a source rock, reservoir rock, trap, overburden rock)</p>

	<p>6.2 Explain what is meant by a kerogen and examine the types (Type 1,2,3 and 4)</p> <p>6.3 Examine the following stages of petroleum maturation:</p> <ul style="list-style-type: none"> <li>○ Diagenesis</li> <li>○ Catagenesis</li> <li>○ Metagenesis</li> </ul> <p>6.4 Examine the essential features that a reservoir must possess for it to be effective</p> <p>6.5 Describe the characteristics of carbonate and sandstone (or clastic) reservoirs</p> <p>6.6 Give an account on primary and secondary migration of petroleum</p> <p>6.7 Give an account on how petroleum traps are formed</p> <p>6.8 Describe structural, stratigraphic, combination and hydrodynamic traps</p>
<p>7.0 Understand the contribution of geological surveys to petroleum prospecting</p>	<p>7.1 Examine the forms of remote sensing:</p> <ul style="list-style-type: none"> <li>○ Satellite imagery and</li> <li>○ Aerial photography</li> </ul> <p>7.1.1 Describe how satellite imagery and aerial photography have been used in petroleum prospecting</p> <p>7.2 Examine the useful information geological surveys present to petroleum prospectors</p>
<p>8.0 Understand how geochemistry is applied to petroleum prospecting</p>	<p>8.1 Explain what is meant by geochemistry</p> <p>8.2 Analyse the application of geochemistry to the petroleum prospecting</p> <p>8.2.1 Examine the use of the vitrinite reflectance methods in</p>

<p>9.0 Understand the geophysical techniques used in petroleum exploration</p>	<p>petroleum exploration</p> <p>9.1 Examine how gravity surveys are conducted</p> <p>9.1.1 Examine the equipment used in gravity surveys and the relevant unit(s) of measurement</p> <p>9.2 Examine the use of magnetic surveys in petroleum exploration</p> <p>9.2.1 Examine the equipment used in magnetic surveys and the relevant unit(s) of measurement</p> <p>9.3 Describe how seismic exploration is conducted both on sea and on land</p> <p>9.3.1 Describe the acquisition, processing, display and interpretation of data from a seismic reflection survey</p>
<p>10.0 Understand the nature of project management</p>	<p>10.1 Examine the different types of projects</p> <p>10.2 Analyse project life cycles and life histories</p> <p>10.3 Analyse the factors that can lead to project failure</p> <p>10.4 Examine the cost, performance and time objectives of a project</p> <p>10.5 Explore the impact stakeholders have on the likely outcome of a project</p>
<p>11.0 Understand the project task definition</p>	<p>11.1 Discuss the importance of initial project definition</p> <p>11.2 Analyse the feasibility studies that can be taken to improve early project definition</p> <p>Discuss the significance of defining the project scope</p> <p>11.3 Discuss how the project specification can be developed and documented</p>

<p>12.0 Understand the significance of financial appraisal in project management</p>	<p>12.1 Explore the importance of project feasibility analysis  12.2 Explore the relevance of project financial appraisal to a potential investor  12.3 Evaluate the various project financial appraisal methods (simple payback method, net present value, expected rate of return)  12.4 Discuss the relevance of sensitivity analysis and Monte Carlo analysis</p>
<p>13.0 Understand the principles of project risk management</p>	<p>13.1 Explain what is meant by project risk  13.2 Evaluate the importance of risk management  13.3 Give an account on the risk management process  13.4 Analyse the key considerations in selecting tools and techniques for risk management</p>
<p>14.0 Understand the nature of contracts and agreements used in drilling operations and petroleum production</p>	<p>14.1 Examine the following:</p> <ul style="list-style-type: none"> <li>○ Authority for Expenditure (AFE)</li> <li>○ Pooling</li> <li>○ Nonparticipation</li> <li>○ Nonconsent</li> <li>○ Unitization</li> <li>○ Perpetuation and termination of a lease</li> </ul> <p>14.2 Examine a drilling contract</p> <p>14.2.1 Describe the contents of a drilling contract</p> <p>14.2.2 Describe the common types of drilling contracts:</p> <ul style="list-style-type: none"> <li>○ Footage drilling contract</li> <li>○ Daywork contract</li> <li>○ Turnkey contract</li> </ul>

	<ul style="list-style-type: none"> <li>○ Combination contract</li> </ul> <p>14.4 Give an account on the following types of contracts that may exist between a multinational oil company and the government of a host country</p> <ul style="list-style-type: none"> <li>○ Concession agreement</li> <li>○ Production sharing agreement</li> <li>○ Service contract</li> <li>○ Production contract</li> </ul> <p>14.5 Explain what joint operating agreements and support agreements are</p>
<p>15.0 Understand the features and functions of the systems in a rotary drilling rig</p>	<p>15.1 Examine the parts of the hoisting system and their functions (derrick, crown block, travelling block, hook, swivel, draw work)</p> <p>15.2 Examine the parts of the rotating system and their functions (drillstring, swivel, kelly and kelly bushing, rotary table, master bushing)</p> <p>15.2.1 Explain the process of "making a connection"</p> <p>15.2.2 Describe how a worn out bit is changed in a process called "making a trip"</p> <p>15.3 Examine the features and functions of the powering system of a rotary rig</p> <p>15.4 Examine the features and functions of a circulating system</p>
<p>16.0 Understand the nature of offshore drilling</p>	<p>16.1 Examine the preliminary activities that are undertaken before an offshore rig is positioned</p> <p>16.2 Describe the platforms used for offshore drilling (such as submersible, jack up, semisubmersible, drillship)</p>



<p>17.0 Understand the nature of various well testing techniques</p> <p>18.0 Understand the nature of well completion</p> <p>19.0 Understand key issues in the management of health and safety risks in the oil and gas industry</p>	<p>16.3 Examine the factors that influence the choice of type(s) of mobile offshore drilling unit (MODU) used</p> <p>16.4 Examine the operation schedule and schedule of responsibilities of the offshore crew</p> <p>16.5 Describe the function of the top drives and automated tubular handling devices</p> <p>17.1 Explain what is meant by well testing</p> <p>17.2 Evaluate the significance of testing a well</p> <p>17.3 Examine different types of well testing techniques</p> <p>18.1 Describe how oil and gas wells are completed</p> <p>19.1 Examine chemical, physical, biological, ergonomic and psychological hazards associated with the oil and gas industry</p> <p>19.2 Analyse the principles that can be used in the management of occupational health issues</p> <p>19.3 Examine how workforce involvement and commitment contributes to the success of any health and safety programme</p>
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## Recommended learning resources

<b>Indicative reading</b>	Hydrocarbon exploration and production by Graham et al (2008). ISBN: 978-0444532367 <ul style="list-style-type: none"><li>• For a full list of textbooks and publications relevant to this unit, please contact IPED - UK.</li></ul>
<b>Learning Aid</b>	<ul style="list-style-type: none"><li>• A comprehensive IPED study material is available to aid in learning and research of this unit.</li><li>• We supply IPED course materials free of charge. Our study materials, which offer quick learning start, are comprehensive, use simple English, and are easy to read and understand. The contents are so sufficient and self-explanatory; that in majority of cases readers do not require further support; although support is always available when you need it.</li></ul>