COURSE BROCHURE

Petroleum Geology Fundamentals

A foundation course on how oil and gas are generated, migrate and accumulate in traps, and how geologists read rocks, maps and logs to decide where to explore and drill.

Code	HT-OGE-111
Category	Oil & Gas, Engineering & Maintenance
Duration	1 week
Level	Beginner
City	London

Introduction

Every exploration and development decision starts with an understanding of the subsurface, and people who cannot follow the geology struggle to judge the risk of a new well or to work with reservoir and drilling teams. That understanding matters more as operators in the region pursue deeper and more complex reservoirs.

Objectives

- Explain the elements and processes of a petroleum system from generation to entrapment
- Distinguish the main sedimentary rock types and their depositional environments
- Describe reservoir rock properties: porosity, permeability and fluid saturation
- Classify structural and stratigraphic traps and identify the risks of each
- Read contour maps, cross-sections and basic well logs

Who should attend

- New engineers in drilling, reservoir and production departments
- Field technicians and operators who want to understand the subsurface
- Planning, contracts and finance staff in oil and gas companies
- Recently graduated geologists and geophysicists

Skills you will develop

- Reading structure maps and geological cross-sections
- Describing rock samples and drill cuttings
- Recognizing basic well log responses
- Assessing the elements and risks of an exploration prospect

Learning Outcomes

- Sketch a simple petroleum system chart for a sedimentary basin and time its elements
- Tell reservoir rock from seal on gamma ray and resistivity logs
- Contour the top of a reservoir and mark the crest and closure of the structure
- Estimate oil initially in place with the simplified volumetric method

Course Outline

Day 1: The Earth and Sedimentary Basins

- Geological time, plate movement and how sedimentary basins form
- The rock cycle and the difference between igneous, metamorphic and sedimentary rocks
- Depositional settings: fluvial, deltaic, shallow marine and carbonate reefs

Day 2: The Petroleum System

- Source rocks, kerogen, thermal maturity and the oil and gas windows
- Primary and secondary migration and hydrocarbon pathways
- Shale, anhydrite and salt seals, and the petroleum system events chart

Day 3: Reservoir Rocks and Their Properties

- Sandstone and carbonate reservoirs and the effect of diagenesis on quality
- Porosity, permeability, saturation, capillary pressure and fluid contacts
- Natural fractures and unconventional reservoirs such as shale gas and tight sands

Day 4: Traps and Exploration Tools

- Anticlines, faults, salt domes and stratigraphic traps
- 2D and 3D seismic surveys and reading an interpreted seismic section
- Basic logs: gamma ray, resistivity, density, neutron and sonic

Day 5: From Map to Prospect

- Structure contour maps, isopach maps and well-to-well correlation
- Volumetric oil-in-place calculation and geological chance factors
- Applied workshop in which each team builds a prospect from a map and logs and defends it

Training methodology

Hands-on examination of rock samples and thin-section images of pore space
Paper exercises in contouring and log correlation
Illustrated talks using seismic sections and basin models from the region
Final team workshop evaluating an exploration prospect

Certification

Participants receive a Harbor Training Center certificate of attendance on completing the course.

Upcoming dates

City	Dates	Language	Fee
London	21 – 25 June 2027	EN	EUR 5,800

Fees are per participant.

Contact us

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To register and for details, scan the code or visit:

https://harbor4training.com/en/courses/petroleum-geology-fundamentals