L&T EduTech

Hydrocarbon Exploration and Production

This course is part of **Petroleum Engineering with AI Applications Specialization**

Instructor: Subject Matter Expert

Enroll for free
Starts Dec 2

6,096 already enrolled

Included with coursera PLUS • Learn more

3 modules
Gain insight into a topic and learn the fundamentals.

4.7 ★
(62 reviews)

Beginner level
Recommended experience

7 hours to complete

Flexible schedule
Learn at your own pace

Skills you'll gain

Emerging Technologies | Environmental Regulations | Water Resources | Hydrology | Production Process | Engineering Analysis | Process Engineering | Petroleum Industry | Energy and Utilities | Oil and Gas | Geostatistics | Hydraulics | Environmental Engineering | Analytical Testing | Chemical Engineering | Automation | View less skills

Details to know

Shareable certificate
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Taught in English
6 languages available

Assessments
3 assignments

See how employees at top companies are mastering in-demand skills

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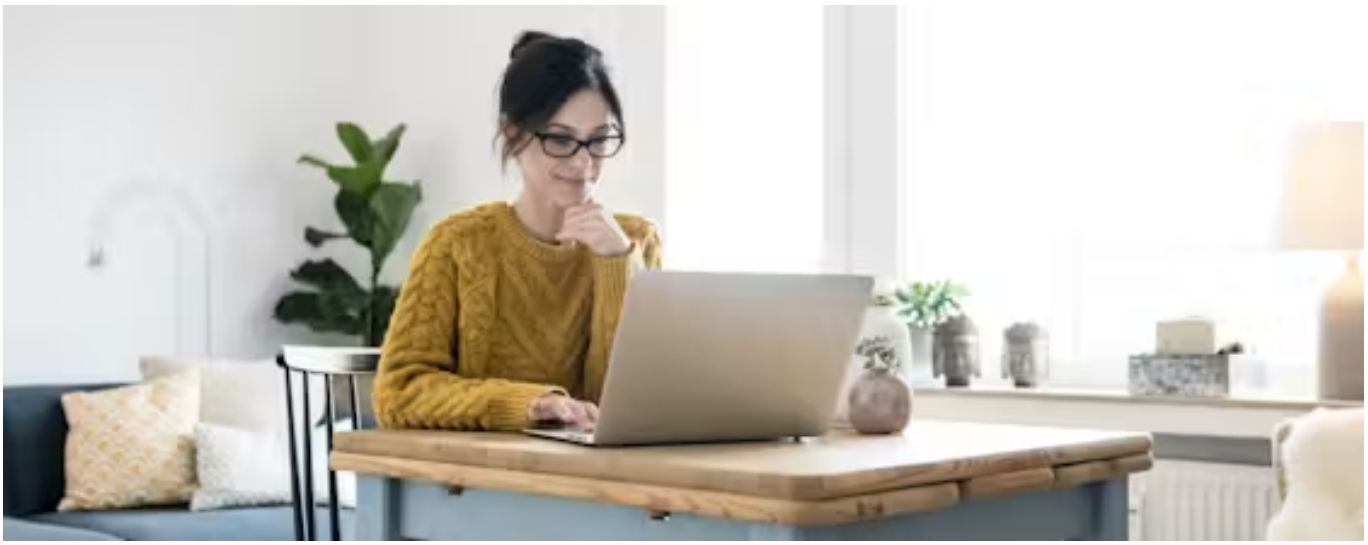

Build your subject-matter expertise

This course is part of the **Petroleum Engineering with AI Applications Specialization**
When you enroll in this course, you'll also be enrolled in this Specialization.

- Learn new concepts from industry experts
- Gain a foundational understanding of a subject or tool
- Develop job-relevant skills with hands-on projects
- Earn a shareable career certificate

There are 3 modules in this course

Hydrocarbon Exploration and Production is a comprehensive course that provides insight into the methods and techniques involved in the exploration, drilling and production of hydrocarbon resources. This course is designed to equip the learners with the necessary knowledge and skills to pursue a career in the oil and gas industry, specifically focusing on three key modules: Exploration Methods, Upstream Equipment and Platforms; Drilling Methods and Systems and Methods of Oil Recovery.

Exploration Methods delve into the various techniques and strategies employed to identify potential hydrocarbon reserves focusing on geological and geophysical surveys, seismic data interpretation and remote sensing technologies used to map subsurface structures to enable learners to make informed decisions regarding the economic viability of exploration projects.
Drilling Methods and Systems gives a comprehensive understanding of the equipment and technologies utilized in upstream operations, including drilling rigs, wellheads and production platforms. It explores different drilling techniques such as rotary drilling, directional drilling and offshore drilling, along with the associated systems for well control and safety. Additional topics, such as well completion, casing and cementing procedures ensure a solid foundation in the practical aspects of drilling operations.
Methods of Oil Recovery, emphasizes the techniques employed to maximize hydrocarbon extraction from reservoirs such as primary, secondary and tertiary recovery methods, including water flooding, gas injection and enhanced oil recovery (EOR) techniques. It explores the principles of reservoir engineering, reservoir characterization and well stimulation that are required to optimize oil recovery and production rates. Environmental considerations and sustainability practices in oil recovery will also be highlighted.
By the end of the course, the learners will be well-prepared to contribute effectively to the hydrocarbon industry, equipped with the knowledge and technical expertise necessary for successful exploration and production operations.

Target learners:
Students pursuing Diploma / UG / PG Programs in Chemical/ Petroleum/ Oil and Gas Engineering.
Faculties / Working Professionals in the above domain & other aspiring learners.

Prerequisite: Basic Chemical/ Petroleum/ Oil and Gas Engineering

Read less

Exploration Methods, Upstream Equipment and Platforms

Module 1 • 2 hours to complete

Module details

This module provides a fundamental understanding of the oil and gas industry, with a specific focus on exploration techniques and upstream operations. Learners will gain insight into the complete life cycle of oil and gas fields, starting from exploration to production. The module begins by introducing learners to the various exploration methods employed in the industry, highlighting their significance in identifying potential oil and gas reserves. Learners will delve into offshore seismic data acquisition and processing, learning how to interpret and analyze geological data to locate hydrocarbon reservoirs accurately. Furthermore, different types of reservoirs and their impact on production is covered. Learners will examine the characteristics of reservoirs and understand how these factors influence the extraction process. An in-depth study of upstream equipment and platforms is also included in this module. Learners will become familiar with the equipment used in upstream oil and gas production and gain a comprehensive understanding of subsea fabrication, installation and modular erection techniques. It also covers stimulation operations, water and other injection methods and compression systems. Moreover, this module

provides an overview of both onshore production processes and offshore platforms. Learners will gain valuable insights into the operational aspects and challenges associated with these production environments.

What's included

15 videos 1 assignment

Hide info about module content

15 videos • Total 143 minutes

About the Specialization
•
2 minutes

About the Course
•
1 minute

Introduction to Oil and Gas Field Life Cycle
•
8 minutes

Introduction to Oil and Gas Exploration Methods
•
10 minutes

Offshore Seismic Data Acquisition and Processing - Part 1
•
9 minutes

Offshore Seismic Data Acquisition and Processing - Part 2
•
8 minutes

Types of Reservoirs and their Effect on Production
•
12 minutes

Equipment in Upstream Oil and Gas Production
•
12 minutes

Subsea Fabrication, Installation and Modular Erection
•
11 minutes

Stimulation Operations
•
9 minutes

Water and other Injection methods
•
11 minutes

Compression System
•
12 minutes

Overview of Onshore Production Process
•
11 minutes

Overview of Offshore Platforms - Part 1
•
11 minutes

Overview of Offshore Platforms - Part 2
•
7 minutes

1 assignment • Total 30 minutes

Assignment on Exploration Methods, Upstream Equipment and Platforms
•
30 minutes

Drilling Methods and Systems

Module details

Module 2 • 2 hours to complete

Drilling Methods and Systems is a module designed to provide learners with a solid understanding of the oil and gas drilling process, along with the technological advancements and challenges associated with it. This course covers various aspects of drilling operations, from the initial site preparation to the analysis of reservoir pressure transients. This module begins with an introduction to the oil and gas drilling process, providing learners with an overview of the key steps involved. Learners will understand about the servicing structures, hoisting systems, rotary equipment and downhole motors used in drilling operations. Site preparation and drilling techniques are explored in detail, including computer-based analysis and design methods. It delves into important components of drilling operations, such as wellhead, Christmas tree, single and dual completion, and casing and cementing. Learners will understand about their functions, types and properties, along with the testing, change in characteristics and additives used in drilling fluids. Drilling mud hydraulics and the treatment of drilling mud are also extensively covered. Furthermore, the course includes a comprehensive study of pressure transient analysis of reservoirs. Learners will gain insights into the behavior of reservoir fluids under changing pressures and learn how to interpret pressure data for reservoir characterization. It explores the latest technological advances and challenges in oil and gas drilling. Learners will be exposed to cutting-edge drilling technologies, such as directional drilling, automation, and real-time monitoring systems and gain an understanding of the associated challenges and opportunities.

What's included

11 videos 1 assignment

Hide info about module content

11 videos • Total 112 minutes

Introduction to Oil and Gas Drilling Process.
•
5 minutes

Servicing Structures, Hoisting Systems, Rotary Equipment and Downhole Motors
•
11 minutes

Site Preparation and Drilling Techniques
•
9 minutes

Computer-based Analysis and Design Methods in Drilling
•
10 minutes

Wellhead, Christmas Tree, Single and Dual Completion, Casing and Cementing
•
8 minutes

Functions, Types and Properties of Drilling Fluids
•
12 minutes

Testing, Change in Characteristics and Additives of Drilling Fluids
•
8 minutes

Drilling Mud Hydraulics
•
13 minutes

Treatment of Drilling mud
•
10 minutes

Pressure Transient Analysis of Reservoirs
•
10 minutes

Technological Advances and Challenges for Oil and Gas Drilling
•
10 minutes

1 assignment • Total 30 minutes

Assignment on Drilling Methods and Systems
•
30 minutes

Methods of Oil Recovery

Module 3 • 2 hours to complete

Module details

Oil Recovery Methods is a comprehensive module that provides learners with a solid foundation in various techniques employed to recover oil from reservoirs. This module covers conventional methods of oil recovery, primary recovery, secondary recovery, enhanced oil recovery (EOR) and emerging technologies in the field. It begins with an introduction to oil recovery, highlighting the importance of efficient extraction methods in maximizing oil production. Learners will gain an understanding of the challenges and considerations involved in the recovery process. Conventional methods of oil recovery are explored, including primary recovery, which utilizes the natural reservoir energy to extract oil. Learners will understand the mechanisms involved in primary recovery and the factors that affect its efficiency. Secondary recovery techniques, such as increasing reservoir pressure and implementing mechanical lift systems, are extensively covered. Learners will gain insights into the methods used to enhance reservoir pressure and the various mechanical lift systems employed in the industry. It delves into enhanced oil recovery, which involves advanced techniques to further increase oil production. Chemical methods, including the use of complex polymers and surfactants, are discussed in detail. Thermal methods and acidizing techniques used in enhanced oil recovery are also explored. Learners will gain an understanding of the processes involved in thermal methods, such as steam injection, and the principles behind acidizing to improve reservoir permeability. Additionally, it also covers other emerging methods of enhanced oil recovery, including microbial techniques.

What's included

13 videos 1 assignment

Hide info about module content

13 videos • Total 127 minutes

Introduction to Oil Recovery
•
6 minutes

Oil Recovery Methods - Conventional Methods
•
13 minutes

Primary Recovery
•
11 minutes

Secondary Recovery
•
13 minutes

Enhanced Oil Recovery - Chemical Methods including Complex Polymers and Surfactants - Part 1
•
10 minutes

Enhanced Oil Recovery - Chemical Methods including Complex Polymers and Surfactants - Part 2
•
5 minutes

Enhanced Oil Recovery - Thermal Methods and Acidizing
•
16 minutes

Enhanced Oil Recovery - Other Methods including Microbial - Part 1
•
11 minutes

Enhanced Oil Recovery - Other Methods including Microbial - Part 2
•
7 minutes

Offshore Enhanced Oil Recovery - Part 1
•
8 minutes

Offshore Enhanced Oil Recovery - Part 2
•
6 minutes

Emerging Enhanced Oil Recovery Technologies - Part 1
•
3 minutes

Emerging Enhanced Oil Recovery Technologies - Part 2
•
12 minutes

1 assignment • Total 30 minutes

Assignment on Methods of Oil Recovery

•

30 minutes

Earn a career certificate

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Instructor

Instructor ratings 4.6 ★ (14 ratings)

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"To be able to take courses at my own pace and rhythm has been an amazing experience. I can learn whenever it fits my schedule and mood."

★ **4.7** 62 reviews

5 stars		80.64%
4 stars		12.90%
3 stars		4.83%
2 stars		0%
1 star		1.61%

PB

★ 5 · Reviewed on Feb 12, 2025

It is very informative and concise course on Basic Knowledge of Petroleum industry.

KS

★ 5 · Reviewed on Dec 28, 2024

Provides over view of the various process, equipment etc in simple comprehensive manner

View more reviews

Frequently asked questions

When will I have access to the lectures and assignments?

To access the course materials, assignments and to earn a Certificate, you will need to purchase the Certificate experience when you enroll in a course. You can try a Free Trial instead, or apply for Financial Aid. The course may offer 'Full Course, No Certificate' instead. This option lets you see all course materials, submit required assessments, and get a final grade. This also means that you will not be able to purchase a Certificate experience.

What will I get if I subscribe to this Specialization?

When you enroll in the course, you get access to all of the courses in the Specialization, and you earn a certificate when you complete the work. Your electronic Certificate will be added to your Accomplishments page - from there, you can print your Certificate or add it to your LinkedIn profile.

Is financial aid available?

Yes. In select learning programs, you can apply for financial aid or a scholarship if you can't afford the enrollment fee. If fin aid or scholarship is available for your learning program selection, you'll find a link to apply on the description page.

More questions

Visit the learner help center

Financial aid available, learn more

Skills

Artificial Intelligence (AI)
Cybersecurity
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Generative AI (GenAI)
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Microsoft Power BI
Project Management
Python

Certificates & Programs

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IBM Data Science Certificate
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