Training Course on the Fundamentals of Reservoir Engineering

Professional Development Training Course Outline

Category	Development	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Reservoir engineering is a critical discipline in petroleum engineering, focusing on optimizing hydrocarbon recovery through a deep understanding of reservoir behavior and dynamics. Training Course on the Fundamentals of Reservoir Engineering is expertly designed to empower petroleum professionals with the knowledge and tools needed to evaluate, manage, and enhance oil and gas production. Leveraging real-world applications and case studies, participants will gain comprehensive insights into reservoir simulation, fluid properties, well testing, and enhanced oil recovery techniques.

In today’s energy sector, where data-driven decisions and sustainability are paramount, mastering the core principles of reservoir engineering offers a competitive edge. This course blends theoretical knowledge with practical application to address modern-day exploration and production challenges, making it ideal for engineers, geoscientists, and energy analysts looking to advance in the upstream oil and gas industry. The course is packed with trending concepts such as digital oilfields, machine learning in reservoir analysis, and integrated asset modeling.

Programme Curriculum

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Course Objectives

1. Understand the principles of reservoir rock and fluid properties.
2. Analyze porosity, permeability, and reservoir drive mechanisms.
3. Interpret pressure-volume-temperature (PVT) data for reservoir fluids.
4. Conduct and evaluate well testing and pressure transient analysis.
5. Apply material balance equations for volumetric calculations.
6. Explore reservoir simulation models using real field data.
7. Implement enhanced oil recovery (EOR) techniques.
8. Integrate geological and petrophysical data for reservoir characterization.
9. Utilize decline curve analysis and production forecasting methods.
10. Examine primary, secondary, and tertiary recovery methods.
11. Evaluate reservoir performance monitoring techniques.
12. Use AI and data analytics in reservoir engineering workflows.
13. Apply case-based learning for real-world field development planning.

Target Audience

1. Petroleum Engineers
2. Reservoir Engineers
3. Geologists
4. Geophysicists
5. Production Engineers
6. Field Development Planners
7. Data Scientists in Oil & Gas
8. Energy Policy Makers & Advisors

Course Duration: 5 days

Course Modules

Module 1: Reservoir Rock and Fluid Properties

- Basics of reservoir rocks: porosity, permeability, saturation
- Introduction to fluid properties: viscosity, compressibility
- Capillary pressure and relative permeability
- Classification of reservoirs: oil, gas, condensate
- Rock-fluid interactions and wettability
- **Case Study**: Characterizing a sandstone reservoir in the North Sea

Module 2: Reservoir Drive Mechanisms and Energy Balance

- Natural drive mechanisms: water drive, gas cap drive
- Understanding reservoir energy systems
- Fluid displacement and production behavior
- Introduction to volumetric analysis
- Performance prediction using energy balance
- **Case Study**: Water drive mechanism in a Middle East oil field

Module 3: PVT Analysis and Fluid Behavior

- Understanding pressure-volume-temperature (PVT) properties

- Laboratory experiments and equations of state (EOS)
- Flash calculations and phase diagrams
- Oil and gas formation volume factor (FVF)
- Correlation and regression analysis for PVT
- **Case Study**: EOS tuning for a volatile oil reservoir in Latin America

Module 4: Well Testing and Pressure Transient Analysis

- Fundamentals of pressure transient analysis (PTA)
- Flow regimes and wellbore storage effects
- Diagnostic plots: Horner, log-log, semi-log
- Introduction to well test interpretation software
- Interference and injectivity testing
- **Case Study**: Pressure build-up test in a tight gas reservoir

Module 5: Material Balance and Reservoir Volumetrics

- General material balance equation derivation
- Volumetric method for oil and gas reservoirs
- Fluid compressibility and formation volume factor impact
- Determining original hydrocarbon in place (OHIP)
- Incorporating drive indices in material balance
- **Case Study**: Estimating reserves in a depleted offshore field

Module 6: Decline Curve and Recovery Techniques

- Types of decline: exponential, harmonic, hyperbolic
- Curve fitting and production forecasting
- Recovery factor estimation and benchmarking
- Introduction to primary, secondary, and tertiary recovery
- Application of machine learning in decline analysis
- **Case Study**: Production optimization in a mature Venezuelan field

Module 7: Reservoir Simulation and Modeling

- Concepts of numerical reservoir simulation
- Grid systems and model initialization
- History matching and model calibration
- Dynamic simulation of production scenarios
- Introduction to commercial simulators (Eclipse, CMG)
- **Case Study**: Field-wide simulation for reservoir management in Alaska

Module 8: Integrated Asset Modeling and Digital Oilfields

- Role of integrated asset modeling (IAM)
- Linking subsurface, surface, and economic models
- Use of digital twins in real-time monitoring
- Data-driven reservoir surveillance and control
- AI-powered predictive analytics for reservoir performance
- **Case Study**: Digital transformation of a mature asset in the Permian Basin

Training Methodology

- Instructor-led presentations with real-time Q&A
- Interactive group discussions and technical workshops
- Hands-on exercises using industry-standard software

- Real-world case studies and scenario analysis
- Digital resource access including simulation templates
- Assessment quizzes and project-based evaluations

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Physical	$0

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com