Training Course on AI in Reservoir Simulation and Production Forecasting

Professional Development Training Course Outline

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

Course Introduction

Artificial Intelligence (AI) is revolutionizing the oil and gas industry, particularly in reservoir simulation and production forecasting. With the exponential growth of data from field operations and the demand for improved decision-making, AI offers unparalleled capabilities to enhance reservoir modeling, optimize production strategies, and reduce uncertainties. Training Course on AI in Reservoir Simulation & Production Forecasting is designed to equip petroleum engineers, geoscientists, and data professionals with cutting-edge skills in integrating AI into traditional reservoir workflows using machine learning, data analytics, and predictive modeling tools.

This hands-on training will bridge the gap between petroleum engineering and AI technologies, empowering participants to apply neural networks, deep learning, and optimization algorithms to real-world reservoir challenges. By incorporating case studies, interactive coding sessions, and industry-based projects, this course will provide a practical and strategic perspective on deploying AI for dynamic reservoir performance prediction, production enhancement, and asset management.

Programme Curriculum

Training Course on AI in Reservoir Simulation & Production Forecasting

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Course Objectives

1. Understand the fundamentals of AI and machine learning in petroleum engineering.
2. Integrate AI-driven workflows into reservoir simulation models.
3. Apply data analytics for reservoir performance analysis.
4. Explore deep learning models for production forecasting.
5. Leverage predictive analytics for reservoir behavior prediction.
6. Automate reservoir model calibration using AI algorithms.
7. Evaluate the impact of big data in reservoir characterization.
8. Build AI models for decline curve analysis and forecasting.
9. Utilize Python and TensorFlow for subsurface data modeling.
10. Enhance decision-making through AI-based uncertainty quantification.
11. Design real-time production optimization models using AI.
12. Interpret AI-generated insights for strategic reservoir management.
13. Implement AI-powered digital twin frameworks for field development planning.

Target Audience

1. Petroleum Engineers
2. Reservoir Engineers
3. Geoscientists
4. Data Scientists in Energy
5. Drilling & Completion Engineers
6. Oilfield Project Managers
7. University Researchers & Academicians
8. Energy Sector Decision-Makers

Course Duration: 5 days

Course Modules

Module 1: Introduction to AI in Reservoir Engineering

- Overview of AI applications in oil & gas
- Evolution of reservoir simulation techniques
- Types of AI techniques (ML, DL, etc.)

- Data requirements for AI models
- Role of AI in reducing simulation time
- **Case Study: AI implementation in Middle East oil field**

Module 2: Machine Learning for Reservoir Data Processing

- Understanding structured and unstructured data
- Preprocessing and data cleaning techniques
- Supervised vs unsupervised learning
- Feature selection for reservoir datasets
- Tools: Python, Pandas, Scikit-learn
- **Case Study: ML-driven petrophysical data analysis**

Module 3: AI-Based Reservoir Simulation Modeling

- AI-supported dynamic simulation models
- Surrogate modeling techniques
- Sensitivity analysis using AI
- Integrating AI with traditional simulators
- Benefits of hybrid modeling frameworks
- **Case Study: Surrogate modeling for deepwater reservoir**

Module 4: Predictive Analytics for Production Forecasting

- Decline curve analysis using ML
- Time series models for production data
- Forecasting future oil & gas production
- Evaluating forecasting accuracy
- Production optimization via neural networks
- **Case Study: ML-based production forecast for tight oil**

Module 5: Deep Learning for Subsurface Characterization

- CNNs for seismic data interpretation
- LSTMs for temporal reservoir trends
- Transfer learning in reservoir analysis
- Generative models for synthetic data
- Integration with 3D geological models
- **Case Study: Deep learning for carbonate reservoir imaging**

Module 6: AI in History Matching and Model Calibration

- Challenges in traditional history matching
- AI-based automated calibration
- Optimization algorithms (GA, PSO)
- Real-time feedback modeling
- Reducing error margins with ML

- **Case Study: AI-aided history matching in a fractured field**

Module 7: Real-Time Monitoring and Production Optimization

- Real-time sensor integration with AI
- AI-enabled production control systems
- Predictive maintenance strategies
- Streamlining operational decisions
- Cost savings and performance boost
- **Case Study: AI-driven optimization in a shale gas operation**

Module 8: Building AI-Powered Digital Twins

- Concept and architecture of digital twins
- Data pipelines for twin development
- Real-time decision-making with twins
- Twin validation using AI models
- Field development planning
- **Case Study: Digital twin in a mature North Sea reservoir**

Training Methodology

- Instructor-led live sessions with real-time Q&A
- Hands-on coding labs using Python and ML libraries
- Group-based simulation exercises and peer review
- Industry case study analysis and problem-solving
- End-of-module quizzes and final project presentation

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
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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

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