BAUERBERG KLEIN
TRAINING & CONSULTING

COURSE CATALOG

BAUERBERG KLEIN

At Bauerberg Klein, we offer a comprehensive catalog of specialized courses for professionals in the energy sector. Our programs combine field experience, a practical approach, and constant updates, available in online, in-person, and on-demand formats. Each course is designed to strengthen key competencies in exploration, production, maintenance, data science, and more. Discover the training that drives your professional growth.

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ABOUT US

At Bauerberg Klein, we provide specialized technical training in geology, geophysics, and petrophysics, focused on improving reservoir characterization and subsurface evaluation. Our approach integrates science, technology, and field experience to support key exploration and development decisions, aligned with world-class standards.

LEADING THE EVOLUTION OF THE INDUSTRY THROUGH KNOWLEDGE AND EXPERTISE

GENERAL INDEX

GEOSCIENCES

At Bauerberg Klein, we offer specialized technical training in geology, geophysics, and petrophysics, aimed at improving reservoir characterization and subsurface evaluation. Our approach combines science, technology, and field experience to support key decisions in exploration and development, aligned with world-class standards.

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Geology

Instructors:

Octavian Catuneanu - Henry Posamentier - Mia Van Streenwinkel - Evert Uitentuis - Felipe Rodriguez - Jan de Jager, Nick Harris - Ken Russell - Mark Bouman - Daniel Figueroa - Douglas Paton - Rafael Falcon - Antonello Lilliu - Luis Stinco - Larry Meckel - Francis Cordero - Claudio Larriestra Ines Lavayen - Daniel Perez - Edgar Chacin - Julian Moore.

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Geophysics

Instructors:

Satinder Chopra - Scott Mackay - Antonello Lilliu, Eduardo Corti - Shankar Mitra - Keith Holdaway - Jaap Mondt - Douglas Paton - Mario Profeta - Daniel Soubies - Francis Cordero.

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Petrophysics

Instructors:

Angel Meso - Luis Stinco - Eduardo Viro - Peter Kowalchuk - Alberto Ortiz - Ken Russell - Peter Betts.

Level	Geology	Geophysics	Petrophysics
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	Sequence Stratigraphy	Seismic Interpretation	
	Structural Styles		
	Trap and Seal Analysis		
Intermediate	Prospect, Risk and Volume Assessment	Seismic Attributes	Advanced Log Interpretation
	Exploration of Tight and Shale Reservoirs	Seismic Geomorphology and Seismic Stratigraphy	Integration of Logs, Cores and Capillarity
	Geological Characterization of Clastic and Carbonate Reservoirs	Structural Interpretation of Seismic Reflection	Geomechanics
	Sedimentary Basin Analysis	Time-to-Depth Conversion and Depth Imaging	
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Advanced	Naturally Fractured Reservoirs	AVO, Amplitude Vs. Offset and Seismic Inversion	Advanced Formation Evaluation
	Operations Geology	Seismic Inversion and Quantitative Analysis	Advanced Petrophysics
	Geochemistry for Exploration and Development	Rock Physics and Seismic Reservoir Characterization	Data Science and AI for Petrophysics with Python
	Geomechanics	Microseismic	
	Geonavigation for Conventional, Shale, and Tight Reservoirs	Passive Seismic Monitoring	
	Deepwater Environments and Tectonics	Data Science for Geophysics	
	Integrated Reservoir Analysis		
	Advanced Characterization of Carbonate Reservoirs		

Geology

1. Geological Mapping

Duration:
20 to 40 hours.

Introduction:
Geological mapping is a key tool in natural resource exploration. It enables the characterization of geological structures through field observations and cartographic analysis. This course provides methodologies for constructing sections, interpreting structures, and integrating geological data to support exploration decision-making.

Objectives:
To develop geological mapping skills to identify key structures and formations. The course covers the use of field tools, geological cartography, and structural interpretation techniques. Participants will apply practical methodologies to produce detailed maps and correlate geological data across various settings.

Target Audience:
Field geologists and geoscience professionals.

Course Program:
1. Basic principles of geological mapping
2. Use of field tools and equipment
3. Stratigraphic section construction
4. Interpretation of geological structures
5. Geological mapping and map development
6. Application of Geographic Information Systems (GIS)
7. Integration of field and lab data
8. Case studies and fieldwork practice

2. Sedimentological Depositional Systems

Duration:
20 to 40 hours.

Introduction:
Depositional systems control the formation and distribution of hydrocarbon reservoirs. This course explores various sedimentary environments and their impact on petroleum exploration. Participants will analyze depositional facies and sedimentation models applied to the industry.

Objectives:
To provide knowledge of the main depositional systems and their relevance to reservoir characterization. The course teaches how to interpret sedimentary environments, understand their evolution, and integrate them into geological models to optimize exploration.

Target Audience:
Geologists, geophysicists, and exploration professionals.

Course Program:
1. Introduction to depositional systems
2. Continental environments: fluvial, lacustrine, and desert
3. Transitional environments: deltaic, estuarine, and coastal
4. Marine environments: shelf, slope, and abyssal
5. Sedimentary processes and associated facies
6. Depositional system modeling
7. Implications for hydrocarbon exploration
8. Case studies and practical examples

3. Sequence Stratigraphy

Duration:
20 to 40 hours.

Introduction:
Sequence stratigraphy enables the analysis of sedimentary system evolution and the prediction of facies distribution. Through the study of seismic records and well data, participants will learn to identify depositional sequences, correlate stratigraphic units, and evaluate reservoirs in hydrocarbon exploration and production.

Objectives:
To provide tools for interpreting depositional systems and evaluating sedimentary sequences using seismic and well data. Participants will develop skills to model reservoir distribution and improve field characterization. Geological and geophysical methodologies will be integrated to enhance decision-making in exploration and field development.

Target Audience:
Geologists, geophysicists, and exploration professionals.

Course Program:
1. Fundamentals of sequence stratigraphy
2. Facies analysis and depositional environments
3. Seismic sequence interpretation
4. Depositional system modeling
5. Applications in hydrocarbon exploration
6. Practical case studies
7. Integration of geological and geophysical data
8. Advanced techniques in sequence stratigraphy

4. Structural Styles

Duration:
20 to 40 hours.

Introduction:
The analysis of structural styles in sedimentary basins is key to understanding crustal deformation and its impact on hydrocarbon accumulation. This course teaches how to interpret geological structures and their relationship with hydrocarbon traps to enhance field exploration and development.

Objectives:
To train participants in identifying and interpreting structural styles in sedimentary basins. Techniques for analyzing folds, faults, and structural traps will be covered, with integration of geophysical and seismic data for prospect evaluation.

Target Audience:
Structural geologists, geophysicists, and exploration engineers.

Course Program:
1. Fundamentals of tectonics and crustal deformation
2. Compressional structures: folds and reverse faults
3. Extensional structures: normal faults and grabens
4. Strike-slip structures: wrench faults
5. Structural traps and their role in hydrocarbon migration
6. Structural interpretation methods in seismic data
7. Applications in field exploration and development
8. Case studies and real-world examples

5. Trap and Seal Analysis

Duration:
20 to 40 hours.

Introduction:
Traps and seals are fundamental elements in hydrocarbon accumulation. Proper identification and assessment can enhance exploration and reservoir volume estimation. This course provides tools to analyze structural and stratigraphic traps as well as seal integrity.

Objectives:
To teach methodologies for identifying and evaluating hydrocarbon traps and seals. Participants will analyze seismic and geological data, model traps, and assess risk, applying advanced techniques to improve exploratory interpretation.

Target Audience:
Exploration geologists and geophysicists.

Course Program:
1. Types and classification of hydrocarbon traps
2. Trap identification methods in seismic data
3. Seal integrity assessment
4. Hydrocarbon column analysis
5. Trap and seal system modeling
6. Risks associated with traps and seals
7. Successful and failed case studies
8. Advanced trap analysis techniques

6. Prospect, Risk and Volume Assessment

Duration:
20 to 40 hours.

Introduction:
Prospect evaluation is a key process in hydrocarbon exploration. This course offers methodologies for resource estimation, risk analysis, and economic evaluation of exploration projects. It explores probabilistic approaches and digital tools to improve decision-making.

Objectives:
To provide tools for prospect evaluation, hydrocarbon volume estimation, and risk analysis. The course covers estimation methodologies, uncertainty management, and the use of specialized software to optimize strategic decisions in exploration projects.

Target Audience:
Geologists, petroleum engineers, and risk analysts.

Course Program:
1. E&P assets and their life cycle
2. Definitions of Prospect, Risk, and Uncertainty
3. Methodological frameworks for risk and uncertainty estimation
4. Risk Analysis I: General Elements
5. Risk Analysis II: Migration, Trap, Timing, and Preservation
6. Risk Analysis III: Bias and Additional Risks
7. Volumetrics: Deterministic Method I
8. Volumetrics: Deterministic Method II
9. Discrete and continuous probabilistic distributions
10. Probabilistic volumetric method: cumulative probabilities and Monte Carlo method
11. Building a Monte Carlo simulator
12. Multi-objective prospects: decision trees
13. Direct Hydrocarbon Indicators I
14. Direct Hydrocarbon Indicators II
15. Prospect documentation
16. Risk and Expected Monetary Value (EMV)

7. Exploration of Tight and Shale Reservoirs

Duration:

20 to 40 hours.

Introduction:

Unconventional reservoirs, such as tight and shale formations, require specialized techniques for exploration and evaluation. This course provides key tools for petrophysical characterization, hydraulic fracturing, and production analysis to optimize development strategies and maximize recovery from low-permeability systems.

Objectives:

To deliver advanced methodologies for the evaluation of tight and shale reservoirs, including characterization, drilling, and stimulation. The course covers production strategies and economic analysis to optimize unconventional projects. Through case studies, participants will learn innovative techniques to enhance the development of these resources.

Target Audience:

Geologists, petroleum engineers, and unconventional exploration professionals.

Course Program:

1. Characteristics of tight and shale reservoirs
2. Petrophysical evaluation of low-permeability formations
3. Hydraulic fracturing and stimulation techniques
4. Production analysis in unconventional reservoirs
5. Horizontal drilling and completion technologies
6. Economic evaluation of unconventional projects
7. Regulations and environmental considerations
8. Case studies and lessons learned from shale developments

8. Geological Characterization of Clastic and Carbonate Reservoirs

Duration:

20 to 40 hours.

Introduction:

Understanding the differences between clastic and carbonate reservoirs is essential for proper characterization. This course teaches core analysis techniques, log interpretation, and facies modeling, enabling participants to better evaluate and predict reservoir quality across sedimentary environments.

Objectives:

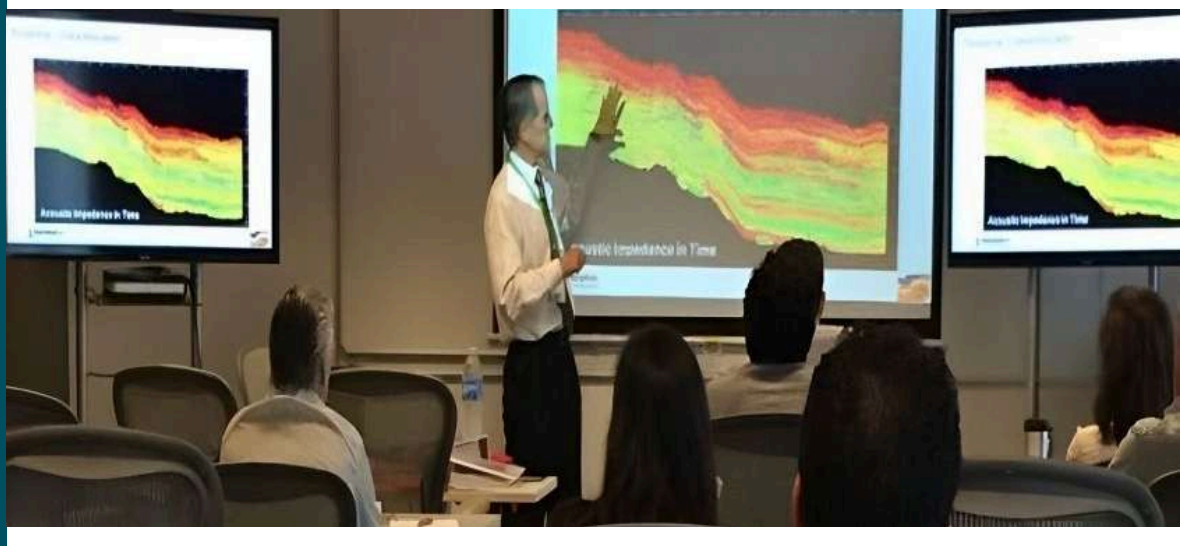
To provide tools for the characterization of clastic and carbonate reservoirs, focusing on heterogeneity, petrophysical properties, and modeling. Advanced methodologies will be explored to interpret geophysical logs, integrate data, and improve reservoir simulation and production optimization.

Target Audience:

Reservoir geologists, petrophysicists, and reservoir engineers.

Course Program:

1. Key differences between clastic and carbonate reservoirs
2. Core sampling and analysis techniques
3. Log interpretation in different lithologies
4. Facies modeling and petrophysical property distribution
5. Impact of diagenesis on reservoir quality
6. Integration of geological and engineering data
7. Applications in reservoir simulation
8. Case studies in clastic and carbonate fields



9. Sedimentary Basin Analysis

Duration:
20 to 40 hours.

Introduction:
Basin analysis allows for the understanding of geological and tectonic evolution in petroleum systems. This course teaches sedimentary characterization techniques, subsidence modeling, and hydrocarbon generation analysis to enhance prospect evaluation.

Objectives:
To train participants in reconstructing the tectono-sedimentary evolution of basins by integrating geological and geophysical data for optimized hydrocarbon exploration.

Target Audience:
Geologists, geophysicists, and exploration engineers.

Course Program:
1. Types and classification of sedimentary basins
2. Subsidence processes and sedimentary infill
3. Modeling tectono-sedimentary evolution
4. Facies analysis and stratigraphic correlation
5. Integration of seismic, core, and well log data
6. Petroleum systems and hydrocarbon migration
7. Evaluation of a basin's generative potential
8. Basin modeling software and tools
9. Case studies in petroleum exploration

10. Applied Structural Geology for Exploration and Development

Duration:
20 to 40 hours.

Introduction:
Structural geology is essential in hydrocarbon exploration and production. This course focuses on the interpretation of tectonic structures and their impact on hydrocarbon accumulation.

Objectives:
To teach advanced structural analysis techniques for reservoir exploration and development, integrating seismic data, well logs, and structural models.

Target Audience:
Structural geologists, geophysicists, and exploration engineers.

Course Program:
1. Principles of tectonics and crustal deformation
2. Identification of compressional, extensional, and strike-slip structures
3. Structural interpretation methods in seismic data
4. Structural modeling and prediction of hydrocarbon traps
5. Impact of geomechanics on structured reservoirs
6. Natural fracturing and its influence on productivity
7. Integration of well and seismic data into structural models
8. Case studies in various tectonic settings

11. Applied Geostatistics for Exploration

Duration:

20 to 40 hours.

Introduction:

Geostatistics enables modeling of geological variable distribution in exploration. This course introduces statistical techniques for analyzing spatial data, improving estimations, and reducing uncertainty in resource assessment. It also covers tools to interpret geological data with greater precision.

Objectives:

To train participants in using geostatistical techniques to model geological variables in exploration. Topics include data analysis, variogram construction, and the application of estimation and simulation methods, using specialized software to optimize resource evaluation.

Target Audience:

Geologists, reservoir engineers, and geoscience professionals.

Course Program:

1. Fundamentals of geostatistics
2. Statistical analysis of geological data
3. Variogram modeling
4. Kriging and spatial estimation techniques
5. Stochastic reservoir simulation
6. Applications in resource evaluation
7. Use of specialized geostatistical software
8. Case studies and practical exercises

12. Petroleum Systems Analysis and Modeling

Duration:

20 to 40 hours.

Introduction:

Petroleum systems analysis enables the evaluation of hydrocarbon generation, migration, and accumulation potential. This course provides knowledge on geological modeling, thermal maturity kinetics, and hydrocarbon charge, helping to optimize exploration strategies and reduce uncertainty in prospect identification.

Objectives:

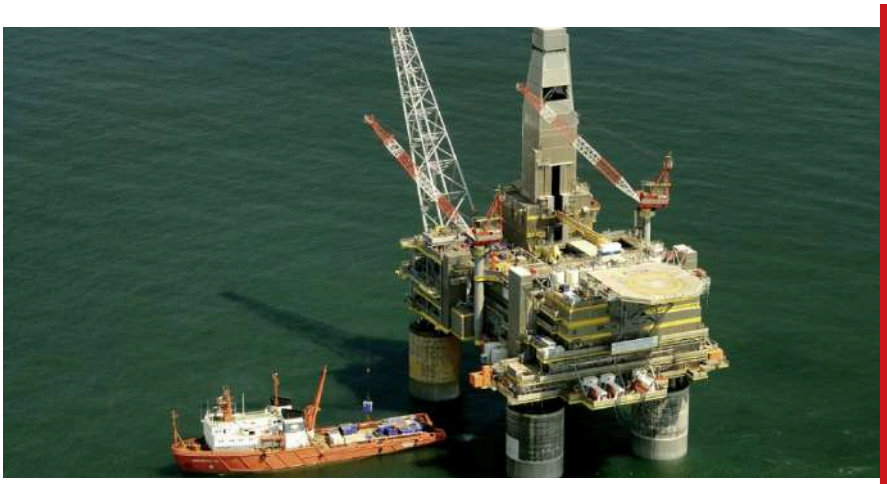
To train participants in petroleum system evaluation through advanced modeling. The course covers source rock characterization, hydrocarbon migration, and system efficiency. Geological data and simulations will be integrated to improve exploration and field development.

Target Audience:

Geologists and geophysicists involved in exploration and reservoir assessment.

Course Program:

1. Fundamentals of petroleum systems
2. Source rock evaluation and characterization
3. Thermal maturation kinetics and hydrocarbon generation
4. Burial history and heat flow modeling
5. Primary and secondary hydrocarbon migration
6. Hydrocarbon charge modeling and system efficiency
7. Traps and seals: impact on hydrocarbon accumulation
8. Use of specialized petroleum system modeling software
9. Uncertainty analysis and model validation
10. Case studies and applications in exploration and development



13. Development Geology

Duration:

20 to 40 hours.

Introduction:

Development geology is essential for maximizing production in oil and gas fields. This course provides tools for integrating geological and engineering data, optimizing drilling, and building geological models to improve reservoir management and enhance hydrocarbon recovery.

Objectives:

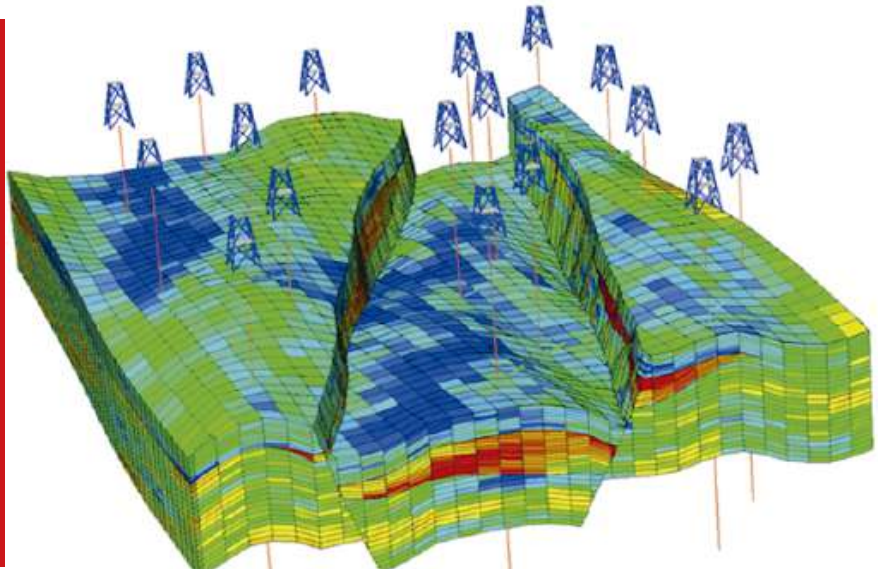
To teach development geology techniques for reservoir characterization and optimization. The course includes data integration, flow simulation, and drilling planning. Advanced production strategies and risk management in development projects will also be covered.

Target Audience:

Development geologists, reservoir engineers, and production professionals.

Course Program:

1. Principles of development geology and its role in production
2. Integration of seismic data, well logs, and core sampling
3. Detailed reservoir characterization and facies variability
4. Geological modeling and porous media flow simulation
5. Well placement planning and optimization
6. Reservoir monitoring and performance forecasting
7. Advanced production techniques and recovery optimization
8. Economic evaluation and risk management in development projects
9. Drilling strategies and efficient completion design
10. Case studies from developing fields and lessons learned



14. Naturally Fractured Reservoirs

Duration:

20 to 40 hours.

Introduction:

Naturally fractured reservoirs present unique challenges in their characterization and management. This course addresses detection techniques, modeling, and production optimization in such systems, enhancing hydrocarbon recovery through advanced drilling, completion, and secondary recovery strategies.

Objectives:

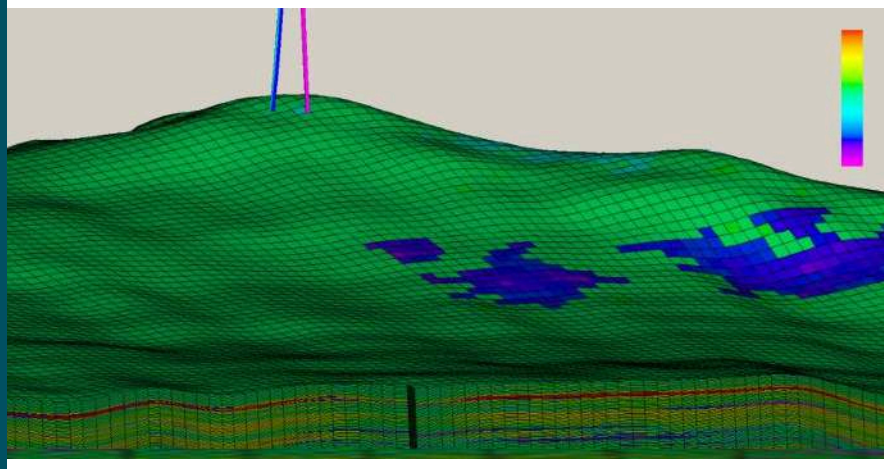
To provide tools for evaluating and modeling fractured reservoirs. The course covers detection methods, permeability analysis, and flow modeling in fractured media. Drilling and production strategies will also be explored to maximize recovery.

Target Audience:

Geologists, reservoir engineers, and production professionals.

Course Program:

1. Introduction to naturally fractured reservoirs and their significance
2. Fracture formation mechanisms and classification
3. Detection and interpretation methods using seismic and well data
4. Evaluation of permeability and porosity in fractured systems
5. Geological modeling and flow simulation in fractured reservoirs
6. Drilling and completion strategies in the presence of fractures
7. Water and gas management in fractured reservoirs
8. Secondary and enhanced recovery strategies
9. Uncertainty analysis and model validation
10. Case studies and best practices in fractured reservoir development



15. Operations Geology

Duration:

20 to 40 hours.

Introduction:

Operations geology plays a critical role in real-time decision-making during drilling activities. This course provides tools for on-site supervision and management of geological activities, ensuring proper acquisition and interpretation of geological and geophysical data.

Objectives:

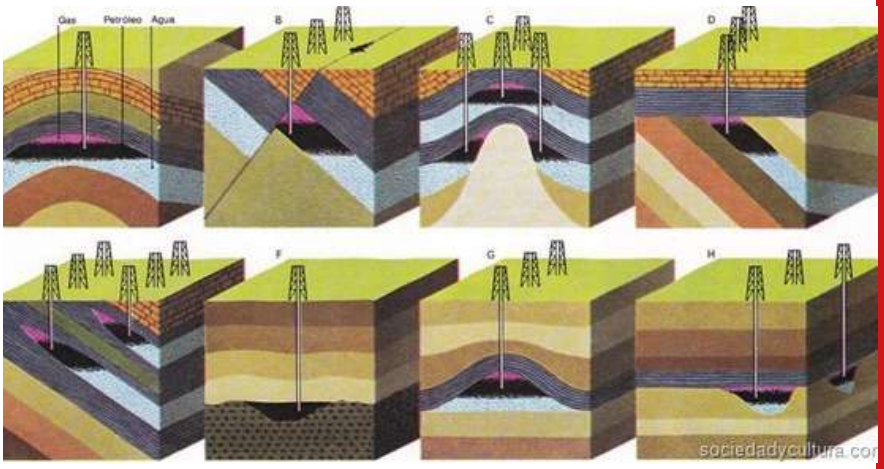
To train participants in the supervision and control of geological activities during drilling. The course covers sample and log interpretation, communication with drilling teams, and the use of specialized software.

Target Audience:

Operations geologists, drilling engineers, and related technical personnel.

Course Program:

1. Introduction to operations geology and its importance
2. Roles and responsibilities of the wellsite geologist
3. Description of cuttings and core samples
4. Interpretation of mud logs and drilling parameters
5. Gas monitoring and geological interpretation
6. Effective communication with the drilling team
7. Handling geological problems and deviations
8. Use of software and technological tools
9. Safety procedures and environmental management
10. Case studies and lessons learned



16. Geonavigation for Conventional, Shale, and Tight Reservoirs

Duration:

20 to 40 hours.

Introduction:

This course presents the principles and techniques of geonavigation applied to both conventional and unconventional reservoirs, such as shale and tight formations. Participants will learn how to interpret geological and petrophysical data in real time to optimize well placement and trajectory during drilling operations.

Objectives:

Provide knowledge on geonavigation techniques in different types of reservoirs. Train participants in the use of real-time data to guide wellbore positioning and maximize reservoir contact.

Target Audience:

Geologists, geophysicists, drilling engineers, and reservoir engineers involved in horizontal or directional drilling.

Course Program:

1. Introduction to Geonavigation: Concepts and relevance in today's industry.
2. Reservoir Characterization: Geological and petrophysical interpretation for well placement.
3. Directional Drilling Fundamentals
4. Real-Time Data Acquisition: LWD/MWD data and surface measurements.
5. Data Integration
6. Geosteering Techniques
7. Conventional vs Unconventional
8. Software Tools: Overview of tools used for geonavigation and real-time interpretation.
9. Case Studies
10. Operational Challenges
11. Best Practices: Planning, execution, and post-drilling evaluation.

17. Geomechanics

Duration:

20 to 40 hours.

Introduction:

This course introduces the fundamental principles of geomechanics and their application in the oil and gas industry. Participants will learn to evaluate in-situ stresses, rock mechanics properties, and wellbore stability in both conventional and unconventional reservoir.

Objectives:

Teach the geomechanical concepts relevant to drilling, completion, and reservoir management. Provide tools to analyze stress regimes, pore pressure, and mechanical rock behavior to prevent operational issues and optimize performance.

Target Audience:

Geologists, geophysicists, drilling and reservoir engineers, and professionals involved in well planning and operations.

Course Program:

1. Introduction to Geomechanics: Scope and importance in petroleum engineering.
2. In-Situ Stresses
3. Rock Mechanical Properties
4. Pore Pressure Estimation:Fracture Gradients: Impact on mud weight and casing programs.
5. Wellbore Stability
6. Sand Production and Compaction: Mechanical causes and prevention.
7. Hydraulic Fracturing and Geomechanics: Design considerations.
8. Geomechanics in Unconventionals
9. Geomechanical Modeling: 1D and 3D model construction.
10. Field Cases
11. Software Overview: Tools used in geomechanical analysis.

18. Geochemistry for Exploration and Development

Duration:

20 to 40 hours.

Introduction:

Geochemistry is a vital tool in hydrocarbon exploration and production. This course provides knowledge on the analysis of rocks, fluids, and isotopes, enabling prospect evaluation and production optimization through advanced geochemical approaches.

Objectives:

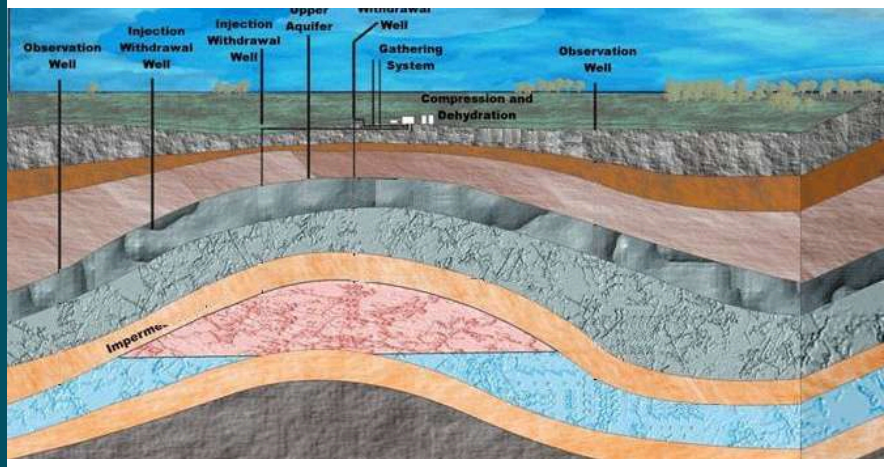
To teach geochemical techniques applied to hydrocarbon exploration and production. The course includes source rock characterization, gas and oil analysis, and their integration into exploration models.

Target Audience:

Geologists, geochemists, and professionals in exploration and production.

Course Program:

1. Fundamentals of petroleum geochemistry
2. Sampling and analysis methods for rocks, soils, and fluids
3. Interpretation of geochemical data in exploration
4. Oil correlation and hydrocarbon family identification
5. Application of isotopes in migration and biodegradation studies
6. Gas geochemistry and detection of subsurface accumulations
7. Geochemical monitoring in production and development
8. Integration of geochemical and geological data
9. Case studies and successful applications
10. Current trends in petroleum geochemistry



19. Deepwater Environments and Tectonics

Duration:

20 to 40 hours.

Introduction:

Deepwater environments present unique challenges for hydrocarbon exploration and production. This course covers the geology and tectonics of deep basins, including turbidite systems, gravitational processes, and associated tectonic structures. It provides key tools for reservoir interpretation and evaluation in these settings.

Objectives:

To train participants in the geological and tectonic characterization of deepwater environments. The course explores sedimentary processes, tectonic structures, and their impact on hydrocarbon accumulation, integrating geophysical and seismic data in prospect evaluation.

Target Audience:

Geologists, geophysicists, and exploration and production engineers.

Course Program:

1. Geological features of deepwater basins
2. Turbidite systems and sedimentary processes in deep marine settings
3. Tectonic influence on sediment deposition and deformation
4. Gravitational processes: submarine slides and related structures
5. Formation of structural and stratigraphic traps in deepwater
6. Seismic interpretation methods for deep basin exploration
7. Geomechanics and its impact on deepwater reservoir development
8. Geological and geotechnical risk assessment in deepwater drilling
9. Case studies in deepwater exploration and production
10. Application of specialized software for tectonic modeling and analysis

20. Integrated Reservoir Analysis

Duration:
20 to 40 hours.

Introduction:
Integrated reservoir analysis combines geology, geophysics, petrophysics, and engineering to optimize hydrocarbon recovery. This course teaches advanced methodologies for reservoir characterization and modeling, reducing uncertainty in development strategies.

Objectives:
To train participants in integrating multidisciplinary data to build more accurate reservoir models. The course covers structural, petrophysical, and dynamic characterization to support production optimization.

Target Audience:
Reservoir engineers, geologists, geophysicists, and petrophysicists.

Course Program:
1. Basic principles of integrated reservoir analysis
2. Collection and validation of multidisciplinary data
3. Geological characterization and structural modeling
4. Petrophysical evaluation and reservoir property determination
5. Seismic interpretation and extraction of relevant attributes
6. Construction of static and dynamic models
7. Numerical fluid flow simulation in the reservoir
8. Uncertainty analysis and risk management
9. Optimization of enhanced recovery strategies
10. Case studies and industrial applications

21. Advanced Carbonate Reservoir Characterization

Duration:
20 to 40 hours.

Introduction:
Carbonate reservoirs present specific challenges due to their heterogeneity and diagenesis. This course provides in-depth training in carbonate characterization, porosity modeling, and fluid flow behavior in these systems.

Objectives:
To deliver advanced techniques for the characterization of carbonate reservoirs, integrating geological, petrophysical, and geophysical data to improve modeling and production performance.

Target Audience:
Geologists, petrophysicists, and reservoir engineers.

Course Program:
1. Formation and classification of carbonates
2. Diagenetic processes and their impact on reservoir quality
3. Porosity modeling in carbonates
4. Petrophysical evaluation of carbonates
5. Seismic methods for carbonate characterization
6. Core and well log analysis techniques
7. Fluid flow and fracturing in carbonate systems
8. Impact of dolomitization and karstification
9. Case studies of productive carbonate fields

Geofísica

22. 2D and 3D Seismic Data Acquisition

Duration:

20 to 40 hours.

Introduction:

Seismic methods are essential in hydrocarbon exploration and production, enabling subsurface visualization to identify traps, delineate reservoirs, and assess reserves. This course offers a conceptual framework to design and supervise seismic surveys, covering 2D and 3D data acquisition on land, at sea, and in wells, with a practical and instructional approach.

Objectives:

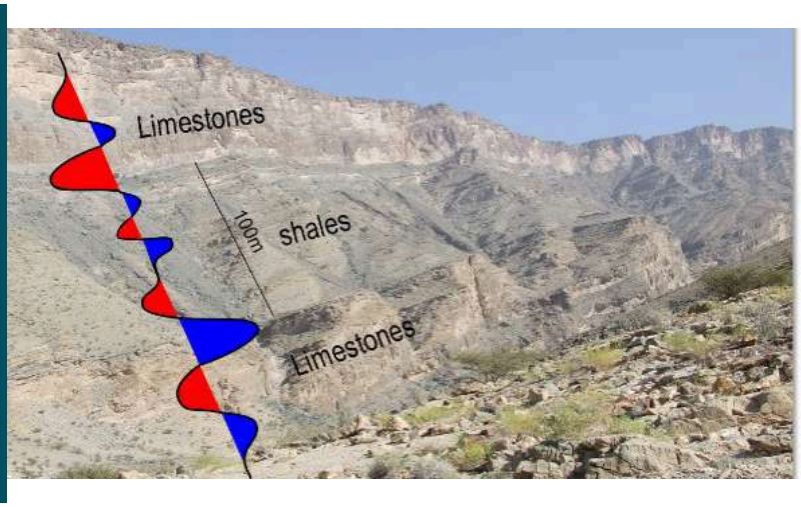
To understand wave propagation phenomena, apply the general workflow for seismic acquisition projects, and calculate basic acquisition parameters on surface and in wells. The course includes the preliminary design of 2D and 3D surveys in different environments and highlights the importance of acquiring high-quality seismic images for efficient exploration and production.

Target Audience:

Geophysicists, geologists, geodesists, reservoir engineers, environmental engineers, and managers involved in exploration, characterization, and monitoring of reservoirs.

Course Program:

1. Introduction and business context
2. General workflow of geophysical operations
3. Fundamental parameters
4. Sources and receivers in land seismic
5. Operational aspects of land seismic
6. 3D land seismic: acquisition parameters and geometries
7. Sources and receivers in marine seismic
8. Operational aspects of marine seismic
9. 3D marine seismic: acquisition parameters and geometries
10. Sources and receivers in transition zone seismic
11. Operational aspects in transition zones
12. Sources, receivers, and acquisition geometries in borehole seismic
13. Applications of check shots, VSP, sonic and CBL logs



23. Seismic Mapping

Duration:

20 to 40 hours.

Introduction:

Mapping is essential across all phases of the exploration and production cycle, directly impacting economic and risk assessments. This course provides techniques for accurate map generation, emphasizing uncertainty in data and geological validation. Through practical exercises, participants will enhance their interpretation and mapping skills.

Objectives:

To provide tools for interpreting and constructing geological and geophysical maps, integrating seismic and well data. The course covers contouring, depth conversion, and structural modeling for exploration and development decisions.

Target Audience:

Geologists, geophysicists, reservoir engineers, and exploration and production professionals.

Course Program:

1. Importance of mapping in exploration and production
2. Petroleum systems and reservoir distribution across tectonic settings
3. Contouring techniques and their economic impact on volume estimates
4. Regional seismic interpretation in areas without well control
5. Well data integration for 2D interpretation strategies
6. Mapping pre-, syn-, and post-depositional reservoirs and their GDE impact
7. Cross-section construction and structural restoration
8. Fault models in mapping and basin analysis
9. Isopach map development and its role in reservoir evaluation
10. Impact of seismic data, imaging, and depth conversion in mapping
11. 3D interpretation strategies and auto-picking techniques
12. Mapping sub-seismic structures in field development and production
13. Use of statistical techniques and attributes in reservoir mapping
14. Fault seal analysis in exploration and production
15. Application of critical stress concepts in structural mapping

24. Seismic Interpretation

Duration:
20 to 40 hours.

Introduction:
Seismic interpretation is fundamental to reservoir exploration and characterization. This course teaches methodologies to identify geological structures and facies using seismic data, integrating seismic attributes and well logs for improved prospect evaluation.

Objectives:
To train participants in interpreting seismic reflection data to identify geological and stratigraphic structures favorable for hydrocarbon accumulation. Structural techniques, attribute analysis, and prospect evaluation using specialized software will be explored.

Target Audience:
Geophysicists, geologists, and professionals involved in seismic exploration.

Course Program:
1. Fundamentals of seismic data acquisition and processing
2. Basic principles of seismic reflection
3. Structural interpretation: identification of faults and folds
4. Stratigraphic analysis using reflector patterns
5. Use of seismic attributes in reservoir characterization
6. Integration of seismic data with well logs
7. Horizon mapping and structural section generation
8. Prospect evaluation using seismic data
9. Application of seismic interpretation software
10. Case studies and practical exercises

25. Seismic Attributes

Duration:
20 to 40 hours.

Introduction:
Seismic attributes enhance geological interpretation and reduce uncertainty in reservoir characterization. This course teaches techniques to extract key information about facies, fractures, and petrophysical properties from seismic data.

Objectives:
To teach the use of seismic attributes for reservoir characterization and to improve stratigraphic and structural interpretation. Advanced multivariable analysis techniques and integration with well data will also be covered.

Target Audience:
Geophysicists, geologists, and petrophysicists.

Course Program:
1. Introduction to seismic attributes and their classification
2. Amplitude, frequency, and phase attributes
3. Applications in stratigraphic interpretation
4. Detection of fractures and faults using seismic attributes
5. Extraction of petrophysical properties
6. Advanced multivariable analysis techniques
7. Integration of attributes with well data
8. Software and computational tools
9. Prospect evaluation using seismic attributes
10. Case studies in various geological settings

26. Seismic Geomorphology and Seismic Stratigraphy

Duration:
20 to 40 hours.

Introduction:
Seismic geomorphology and seismic stratigraphy support the interpretation of depositional environments and key geological structures. This course focuses on using 2D and 3D seismic data to characterize facies and integrate them with well data.

Objectives:
To teach seismic interpretation techniques for geomorphology and stratigraphy, enabling participants to identify depositional patterns and assess reservoir quality in various sedimentary settings.

Target Audience:
Geologists, geophysicists, and professionals in the oil and gas industry.

Course Program:
1. Introduction to seismic geomorphology and stratigraphy
2. Seismic interpretation applied to geomorphology
3. Seismic facies analysis and depositional environment relationships
4. Identification of geomorphological patterns in seismic data
5. Use of seismic attributes in geological characterization
6. Integration of seismic data with well logs
7. Case studies in different depositional settings
8. Specialized software for seismic interpretation
9. Practical workshops with real datasets
10. Challenges and solutions in seismic interpretation

27. Structural Interpretation of Seismic Reflection

Duration:
20 to 40 hours.

Introduction:
Structural seismic interpretation is key in hydrocarbon exploration and production. This course teaches advanced techniques to identify geological structures in seismic data, integrating seismic attributes and well data to improve trap and reservoir evaluation.

Objectives:
To train participants in identifying and analyzing geological structures in seismic data. The course explores mapping techniques, seismic coherence, and structural validation to optimize tectonic interpretation and trap identification.

Target Audience:
Geologists, geophysicists, and petroleum industry professionals.

Course Program:
1. Fundamentals of seismic reflection and geological structures
2. Identification of faults, folds, and tectonic features
3. Structural mapping and cross-section construction
4. Use of seismic attributes for discontinuity detection
5. Integration of seismic and well data
6. Tectonic evaluation and trap formation
7. Specialized software for structural interpretation
8. Quality control and interpretation validation
9. Case studies in diverse tectonic settings
10. Practical workshops and applied exercises

28. Conversión de tiempo a profundidad y la imagen sísmica en profundidad

Duration:
Entre 20 a 40 horas.

Introduction:
La conversión de tiempo a profundidad y la imagen sísmica en profundidad son esenciales en exploración y desarrollo. Este curso enseña métodos avanzados para mejorar la precisión en la interpretación geofísica y reducir incertidumbre en modelos estructurales.

Objectives:
Capacitar en técnicas de conversión de tiempo a profundidad y migración sísmica para mejorar la calidad de la imagen sísmica. Se abordará el control de calidad y la calibración con datos de pozos.

Target Audience:
Geocientíficos involucrados en interpretación sísmica y conversión de tiempo a profundidad.

Course Program:
1. Introducción a la conversión de tiempo a profundidad
2. Fuentes y tipos de datos de velocidad
3. Métodos básicos y avanzados de conversión
4. Análisis de incertidumbre en conversión de tiempo a profundidad
5. Teoría y práctica de la migración en profundidad pre-apilado
6. Control de calidad en imagen sísmica en profundidad
7. Introducción a la anisotropía y su impacto en migración
8. Calibración de volúmenes migrados con datos de pozos
9. Aplicación de software especializado
10. Estudios de casos y ejercicios prácticos

29. Geofísica No Sísmica

Duration:
30 horas.

Introduction:
Las técnicas geofísicas no sísmicas complementan la exploración de hidrocarburos en regiones donde la sísmica convencional tiene limitaciones. Métodos como la gravimetría, magnetometría y electromagnetismo permiten identificar estructuras y caracterizar reservorios de manera efectiva.

Objectives:
Brindar conocimientos sobre métodos geofísicos alternativos a la sísmica para la exploración de hidrocarburos y minerales. Se abordarán técnicas gravimétricas, magnetométricas y electromagnéticas, así como su integración con datos geológicos.

Target Audience:
Geofísicos, geólogos y profesionales en exploración de hidrocarburos y minerales.

Course Program:
1. Introducción a la geofísica no sísmica y su aplicación
2. Fundamentos de gravimetría y su uso en exploración
3. Magnetometría aplicada a la identificación de estructuras geológicas
4. Métodos electromagnéticos y su integración en exploración
5. Técnicas de prospección geofísica en aguas profundas
6. Interpretación de anomalías gravimétricas y magnéticas
7. Uso de tecnología aerotransportada en exploración geofísica
8. Integración de métodos geofísicos con modelos geológicos
9. Software especializado para análisis de datos geofísicos
10. Estudios de casos en exploración de hidrocarburos y minerales

30. Gravity and Magnetotellurics

Duration:
30 hours.

Introduction:
Magnetotellurics is a geophysical method used to investigate deep subsurface structures by measuring natural variations in the Earth's electromagnetic fields. It is a key technique in hydrocarbon and geothermal exploration, helping identify deep structures and characterize reservoirs.

Objectives:
To train participants in the theory, acquisition, and interpretation of magnetotelluric data for geophysical exploration of hydrocarbons, geothermal resources, and minerals. The course covers data processing methodologies and electromagnetic subsurface modeling.

Target Audience:
Geophysicists, geologists, and specialists in natural resource exploration.

Course Program:
1. Basic principles of magnetotellurics
2. Natural sources of Earth's electromagnetic fields
3. Magnetotelluric data acquisition and processing
4. Inversion and electromagnetic modeling methods
5. Applications in hydrocarbon and geothermal exploration
6. Integration with seismic and gravity methods
7. Factors affecting magnetotelluric data quality
8. Software for magnetotelluric interpretation
9. Case studies in various geological settings
10. Challenges and trends in magnetotelluric exploration

31. AVO (Amplitude vs. Offset) and Seismic Inversio

Duration:
20 to 40 hours.

Introduction:
AVO analysis and seismic inversion are key tools for hydrocarbon detection. This course provides methodologies to estimate subsurface elastic properties, evaluate reservoirs, and reduce exploration uncertainty.

Objectives:
To provide advanced knowledge of AVO analysis and seismic inversion for reservoir characterization. The course covers integration of seismic and well data in geophysical interpretation.

Target Audience:
Geophysicists, petrophysicists, and exploration geologists.

Course Program:
1. Fundamentals of AVO and elastic wave physics
2. AVO response modeling
3. AVO classes and hydrocarbon interpretation
4. Seismic data preconditioning techniques
5. Concepts of seismic inversion and impedance retrieval
6. Pre-stack and post-stack seismic inversion methods
7. Estimation of elastic properties in the reservoir
8. Integration of AVO data with well logs
9. Reducing uncertainty through AVO analysis
10. Case studies in AVO and seismic inversion analysis

32. Seismic Inversion and Quantitative Interpretation

Duration:

20 to 40 hours.

Introduction:

Seismic inversion transforms seismic data into detailed models of subsurface properties. This course explores advanced inversion methods and their application to quantitative reservoir interpretation.

Objectives:

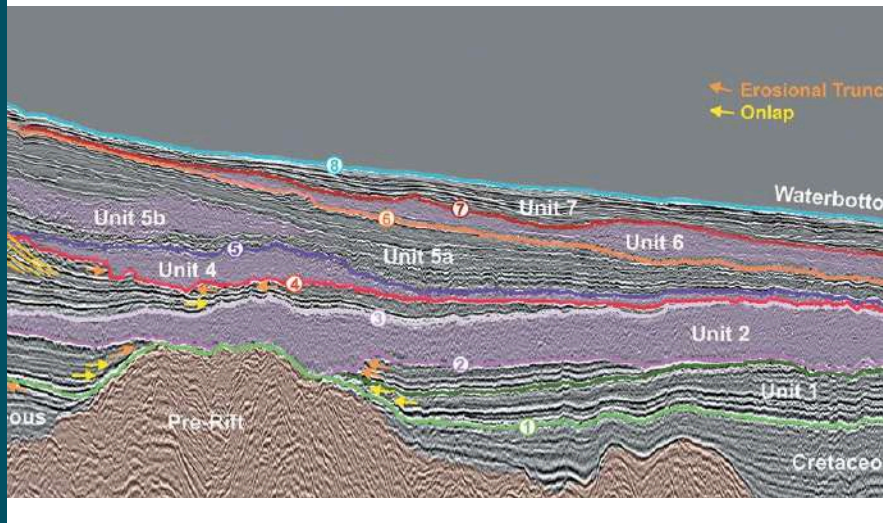
To provide advanced knowledge in seismic inversion and quantitative analysis techniques to improve reservoir characterization and reduce exploration and production uncertainty.

Target Audience:

Geophysicists, petrophysicists, and reservoir engineers seeking to enhance seismic interpretation and reservoir evaluation.

Course Program:

1. Principles of post-stack and pre-stack seismic inversion
2. Time and depth domain inversion methods
3. Acoustic and elastic impedance evaluation
4. Reservoir property estimation from seismic inversion
5. Integration of well logs with inverted seismic data
6. Application of seismic attributes in quantitative interpretation
7. Inversion for lithology and fluid characterization
8. Uncertainty reduction through quantitative techniques
9. Software applications in inversion and reservoir modeling
10. Case studies and practical exercises in exploration and development



33. Rock Physics and Seismic Reservoir Characterization

Duration:

30 hours.

Introduction:

Rock physics links petrophysical and seismic properties, improving reservoir characterization and reducing uncertainty in exploration and production. This course teaches how to model the seismic response of different lithologies and fluids.

Objectives:

To train participants in applying rock physics for seismic and petrophysical data interpretation, optimizing reservoir characterization and behavior prediction.

Target Audience:

Geophysicists, petrophysicists, reservoir engineers, and reservoir characterization specialists.

Course Program:

1. Fundamentals of rock physics and seismic wave propagation
2. Relationships between petrophysical and seismic properties
3. Elastic and anisotropic modeling in porous media
4. Calibration of seismic models with well data
5. Seismic inversion integrated with rock physics
6. Evaluation of porosity, fluid saturation, and pore pressure
7. Applications in reservoir exploration and monitoring
8. Integration of seismic, petrophysical, and geomechanical data
9. Case studies and specialized software applications

34. Microseismic

Duration:
30 hours.

Introduction:
Microseismic monitoring is a key tool for reservoir monitoring and hydraulic fracturing. It enables detection and analysis of low-magnitude seismic events, enhancing fracture characterization and operational efficiency in both conventional and unconventional reservoirs.

Objectives:
To train participants in the acquisition, processing, and interpretation of microseismic data for evaluating fractures and optimizing drilling and production operations. Advanced methods for event detection and location will be addressed.

Target Audience:
Geophysicists, reservoir engineers, and seismic monitoring professionals.

Course Program:
1. Fundamentals of microseismicity and wave propagation
2. Microseismic data acquisition methods
3. Monitoring network design and optimization
4. Microseismic signal processing and analysis
5. Event location and characterization
6. Applications in hydraulic fracturing and reservoir monitoring
7. Interpretation of microseismicity in oil fields
8. Integration of microseismic data with geomechanical models
9. Use of specialized microseismic analysis software
10. Industry case studies and applications

35. Passive Seismic Monitoring

Duration:
30 hours.

Introduction:
Passive seismic monitoring enables the detection and location of both natural and induced seismic events. It is a vital tool for reservoir management, hydraulic fracturing, and mitigation of geomechanical risks.

Objectives:
To teach advanced techniques for acquiring, processing, and interpreting passive seismic data, with applications in exploration, production, and stability control of reservoirs.

Target Audience:
Geophysicists, reservoir engineers, and seismic monitoring specialists.

Course Program:
1. Fundamentals of passive seismic monitoring
2. Acquisition methods and sensor network configurations
3. Processing of low-magnitude seismic signals
4. Event location and microseismic characterization
5. Applications in hydraulic fracturing and injection monitoring
6. Detection and mitigation of induced seismicity
7. Integration of microseismic data with geomechanical models
8. Software tools for passive seismic data analysis
9. Case studies in oilfield and geothermal monitoring
10. Applications in geomechanical risk mitigation

36. Data Science for Geophysics

Duration:

30 hours.

Introduction:

Machine learning is transforming geophysics by enabling the accurate analysis of large data volumes. This course teaches machine learning techniques applied to seismic interpretation, anomaly detection, and subsurface property prediction.

Objectives:

To introduce machine learning methods in geophysics, covering both supervised and unsupervised models. The course explores algorithms for facies characterization, property prediction, and workflow optimization in geophysical applications.

Target Audience:

Geoscientists, engineers, and data analysts.

Course Program:

1. Introduction to machine learning in geophysics
2. Python programming for geophysical analysis
3. Exploratory analysis of seismic data
4. Regression and classification applied to geophysics
5. Clustering and dimensionality reduction for facies data
6. Neural networks for subsurface property prediction
7. Machine learning models for anomaly detection
8. Evaluation and validation of predictive models
9. Integration with geophysical workflows
10. Case studies and oil & gas applications

Petrophysics

37. Basic Log Interpretation

Duration:
20 to 40 hours.

Introduction:
Well logs are essential for formation evaluation. This course introduces methodologies for analyzing geophysical logs to identify lithologies and subsurface properties, optimizing exploration and production.

Objectives:
To train participants in the interpretation of basic geophysical logs, including acquisition and analysis of resistivity, porosity, and density data, and their integration into geological and seismic models.

Target Audience:
Geologists, petroleum engineers, and professionals in formation evaluation.

Course Program:
1. Types of geophysical logs and their applications
2. Principles of well log acquisition
3. Analysis of resistivity, porosity, and density logs
4. Lithology identification and log correlation
5. Fluid contact determination and saturation analysis
6. Evaluation of mechanical properties of formations
7. Integration of log data with geological models
8. Use of software for basic log interpretation
9. Practical log interpretation exercises
10. Common mistakes and best practices

38. Log Data Quality Control

Duration:
20 to 40 hours.

Introduction:
Quality control in log data is essential to ensure accuracy in petrophysical evaluation. This course addresses standards, calibrations, and technological tools to supervise and validate log data in hydrocarbon exploration and production.

Objectives:
To train participants in procedures for quality control during log acquisition and interpretation. The course covers calibration methods, anomaly detection, and digital tools to improve the reliability of petrophysical data.

Target Audience:
Log engineers, petrophysicists, and well log data supervisors.

Course Program:
1. Importance of quality control in well logs
2. Standards and regulations for log acquisition
3. Calibration procedures and tool verification
4. Detection and correction of anomalies in log data
5. Evaluation of well conditions affecting logs
6. Quality control documentation and reporting
7. Real-time monitoring and software use
8. Integration of QC in petrophysical interpretation
9. Case studies highlighting decision-making impact
10. Trends and challenges in log data quality control

39. Advanced Log Interpretation

Duration:
20 to 40 hours.

Introduction:
Advanced well log analysis allows for more precise formation characterization. This course teaches advanced techniques for interpreting borehole image logs, gamma-ray spectroscopy, and NMR logs.

Objectives:
To train participants in advanced well log evaluation, integrating petrophysical, seismic, and geological model data. The course includes quantitative techniques and computational tools to optimize reservoir characterization.

Target Audience:
Professionals with experience in log interpretation.

Course Program:
1. Analysis of advanced logs: borehole images and NMR
2. Evaluation of fractured formations and fracture characterization
3. Advanced determination of petrophysical properties
4. Integration of log data with geological and seismic models
5. Machine learning applied to log interpretation
6. Multivariate analysis for productive zone identification
7. Case studies in advanced log interpretation
8. Practical workshops using specialized software
9. Trends in geophysical log interpretation

40. Integration of Logs, Cores and Capillarity

Duration:
20 to 40 hours.

Introduction:
Integrating well logs, core analysis, and capillary pressure studies enhances reservoir evaluation. This course provides methodologies for data correlation and optimization of productive formation characterization.

Objectives:
To teach advanced techniques for integrating petrophysical data, combining log interpretation, core analysis, and capillary pressure studies. The course applies these methods to assess saturation, permeability, and porous system modeling.

Target Audience:
Petrophysicists, geologists, and reservoir engineers.

Course Program:
1. Introduction to well logging and acquisition principles
2. Core analysis: sampling and petrophysical measurement
3. Capillary pressure studies and fluid saturation
4. Correlation of log and core data
5. Modeling of porous systems and pore size distribution
6. Data integration for permeability and effective porosity estimation
7. Use of specialized software for petrophysical integration
8. Case studies in various reservoir types
9. Practical workshops with real data

41. Geomechanics

Duration:
20 to 40 hours.

Introduction:
Geomechanics is essential for wellbore stability, hydraulic fracturing, and risk management in reservoirs. This course provides tools to model in-situ stress and evaluate the mechanical behavior of rocks.

Objectives:
To train participants in applying geomechanics in exploration and production. The course covers wellbore stability models, fracture simulations, and risk mitigation in conventional and unconventional reservoirs.

Target Audience:
Petroleum engineers, geologists, and geophysicists.

Course Program:
1. Fundamentals of geomechanics and in-situ stress
2. 1D, 2D, and 3D geomechanical modeling
3. Applications in wellbore stability and hydraulic fracturing
4. Subsidence and reservoir deformation analysis
5. Impact of production on reservoir integrity
6. Monitoring and mitigation of geomechanical risks
7. Integration of geophysical and well log data
8. Use of specialized geomechanical simulation software
9. Case studies in different reservoir types
10. Practical workshops and problem-solving

42. Advanced Formation Evaluation

Duration:
30 hours.

Introduction:
Advanced formation evaluation is essential for accurate reservoir characterization. This course delves into well log interpretation, borehole image analysis, and advanced techniques for assessing petrophysical and productive subsurface properties.

Objectives:
To train participants in advanced methodologies for formation evaluation by integrating well logs, lab data, and geological models. Techniques for identifying productive zones and assessing reservoir quality will be explored.

Target Audience:
Petrophysicists, geologists, and reservoir engineers.

Course Program:
1. Advanced Fundamentals of Formation Evaluation
2. Analysis of High-Resolution Electrical and Acoustic Logs
3. Interpretation of Borehole Wall Images
4. Evaluation of Fractured and Anisotropic Formations
5. Advanced Characterization of Permeability and Effective Porosity
6. Integration of Well Logs with Core and Laboratory Data
7. Identification and Evaluation of Fluid Contacts
8. Advanced NMR Log Interpretation Techniques
9. Machine Learning Applications in Formation Evaluation
10. Case Studies and Best Practices in Advanced Formation Evaluation

43. Advanced Petrophysics

Duration:

30 hours.

Introduction:

Advanced petrophysics enables detailed reservoir characterization by integrating logs, core analysis, and petrophysical modeling. This course explores modern techniques to optimize interpretation and reduce uncertainty in reserve estimation.

Objectives:

To teach advanced petrophysical methodologies for comprehensive reservoir characterization. Topics include saturation models, core-log correlation, and the use of artificial intelligence in petrophysical workflows.

Target Audience:

Petrophysicists, geologists, reservoir engineers, and reservoir characterization specialists.

Course Program:

1. Advanced fluid saturation modeling
2. Effective porosity and pore connectivity evaluation
3. Core-log correlation techniques
4. Applications of machine learning in petrophysical analysis
5. Integration of lab data with well logs
6. Evaluation of anisotropy and laminated formations
7. Analysis of low-porosity and low-permeability reservoirs
8. Petrophysical simulations for reserve estimation
9. Applications of advanced petrophysics in production and enhanced recovery
10. Case studies in advanced reservoir characterization

44. Data Science and AI for Petrophysics with Python

Duration:

20 to 40 hours.

Introduction:

Data analysis using Python is transforming petrophysics by automating workflows and improving well log interpretation. This course teaches tools for advanced modeling and analysis of petrophysical data.

Objectives:

To train participants in using Python for petrophysical data manipulation and analysis. The course includes machine learning techniques, clustering, and visualization to optimize reservoir characterization.

Target Audience:

Petrophysicists, geologists, and data science professionals in petrophysical applications.

Course Program:

1. Fundamentals of data analysis in petrophysics
2. Introduction to Python and scientific libraries
3. Processing and cleaning well log data
4. Modeling petrophysical properties using machine learning
5. Clustering and pattern recognition in petrophysical datasets
6. Advanced visualization of petrophysical data
7. Workflow automation with Python
8. Hands-on exercises with real datasets
9. Challenges and opportunities in petrophysical data analysis

RESERVOIR ENGINEERING

At Bauerberg Klein, we provide high-level technical training and specialized consulting in reservoir engineering. Our approach covers everything from static and dynamic characterization to modeling, simulation, and reservoir optimization —supporting strategic decision-making, operational efficiency, and comprehensive subsurface resource management.

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4. Introduction to Fluid Analysis
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29. Advanced Petroleum Economics
30. Digital Twin and Industry 4.0 Technologies in Reservoirs

1. Basic Reservoir Engineering

Duration:
30 hours.

Introduction:
This course presents the fundamental principles of reservoir engineering, covering the formation, classification, and exploitation of hydrocarbon reservoirs. Through theory and practical examples, participants will gain a solid understanding of the processes that support the management of petroleum reservoirs.

Objectives:
Provide basic knowledge of reservoir dynamics and properties. Train participants to identify key parameters for the evaluation and early development of oil fields.

Target Audience:
Recently graduated engineers and petroleum technicians.

Course Program:
1. Reservoir Formation
2. Fluid Classification
3. Reservoir Rock Properties
4. Fundamental Permeability
5. Primary Recovery Mechanisms
6. Reservoir Lifecycle.
7. Darcy's Law
8. Hydrocarbon Estimation
9. Pressure Dynamics
10. Introduction to Software
11. Case Study
12. Initial Diagnosis

2. Basic Petrophysics

Duration:
25 hours.

Introduction:
This course introduces the fundamentals of petrophysics, analyzing the physical properties of reservoir rocks and their interaction with fluids. Participants will learn to interpret logs and basic data to characterize reservoirs at an introductory level.

Objectives:
Teach the basic principles of petrophysics applied to reservoirs. Develop skills to determine porosity, permeability, and saturation in preliminary evaluations.

Target Audience:
Entry-level engineers and geologists in the petroleum industry.

Course Program:
1. Definition of Petrophysics
2. Rock Porosity
3. Essential Permeability
4. Fluid Saturation
5. Geophysical Logs
6. Porosity Evaluation
7. Relative Permeability
8. Capillary Pressure
9. Core Analysis
10. Data Integration
11. Practical Exercise
12. Initial Limitations

3. PVT - EOS

Duration:
20 hours.

Introduction:
This course examines the PVT (pressure, volume, temperature) properties of reservoir fluids and their modeling through equations of state (EOS). It provides a foundation for understanding hydrocarbon behavior in reservoirs.

Objectives:
Introduce PVT analysis and its applications in reservoirs. Train participants in using equations of state to predict fluid properties.

Target Audience:
Engineers and technicians new to reservoir studies.

Course Program:
1. PVT Concepts
2. Fluid States
3. Reservoir Conditions
4. Data Collection
5. Equations of State
6. Common Models
7. Results Interpretation
8. Gas Compressibility
9. Liquid Properties
10. Practical Applications
11. Digital Tools
12. Case Study

4. Introduction to Fluid Analysis

Duration:
25 hours.

Introduction:
This course addresses the collection, analysis, and interpretation of reservoir fluids—ranging from hydrocarbons to water. Participants will learn how these properties affect production and the basic design of petroleum systems.

Objectives:
Provide basic knowledge of fluid analysis. Teach participants to interpret fluid properties for preliminary well and reservoir evaluations.

Target Audience:
Engineers and technicians beginning in the petroleum industry.

Course Program:
1. Fluid Importance
2. Fluid Types
3. Effective Sampling
4. Physical Properties
5. Laboratory Analysis
6. Chemical Composition
7. PVT Relationship
8. Data Interpretation
9. Quality Control
10. Operational Impact
11. Basic Software
12. Practical Exercise

5. Resource and Reserve Estimation

Duration:

30 hours.

Introduction:

This course presents basic methods for estimating hydrocarbon resources and reserves, from volumetric calculations to probabilistic approaches. It is essential for assessing the economic potential of reservoirs at early stages.

Objectives:

Teach fundamental techniques for resource and reserve estimation. Train participants in classifying and reporting volumes according to basic standards.

Target Audience:

Entry-level engineers and geologists.

Course Program:

1. Key Definitions
2. Reserve Categories
3. Volumetric Method
4. Recovery Factors
5. Required Data
6. Initial Uncertainty
7. Probabilistic Approach
8. Basic Decline
9. Standard Reporting
10. SPE-PRMS Guidelines
11. Case Study
12. Calculation Validation

6. Data Science for Reservoir Engineers - Basic

Duration:

25 hours

Introduction:

This course introduces data science applied to reservoir engineering, focusing on data analysis and visualization. Participants will learn to use basic tools to transform data into operational decisions.

Objectives:

Provide data science fundamentals for reservoir engineers. Teach basic analysis and visualization techniques to optimize petroleum processes.

Target Audience:

Engineers new to data analysis.

Course Program:

1. Role of Data Science
2. Types of Data
3. Basic Statistics
4. Data Visualization
5. Initial Tools
6. Data Preparation
7. Exploratory Analysis
8. Simple Correlation
9. Basic Automation
10. Practical Exercise
11. Common Errors
12. Results Presentation

7. Introduction to Well Stimulation

Duration:
20 hours.

Introduction:
This course explores basic well stimulation techniques such as acidizing and hydraulic fracturing to enhance productivity. Participants will learn the fundamentals of these operations in oil and gas reservoirs.

Objectives:
Introduce the principles of petroleum well stimulation. Train participants in applying basic techniques to increase initial production.

Target Audience:
Engineers and technicians new to production.

Course Program:
1. Stimulation Concept
2. Main Methods
3. Formation Damage
4. Acidizing Technique
5. Hydraulic Fracturing
6. Materials Used
7. Initial Design
8. Operational Execution
9. Results Evaluation
10. Basic Safety
11. Case Study
12. Limitations

8. Basic Reservoir Geology

Duration:
25 hours.

Introduction:
This course presents the essential geological concepts needed to understand reservoirs, including rock types and structures. It provides a foundation for integrating geology into early petroleum engineering.

Objectives:
Teach geological fundamentals applied to reservoirs. Train participants to identify structures and rocks for basic reservoir evaluation.

Target Audience:
Entry-level engineers and geologists.

Course Program:
1. Petroleum Geology
2. Sedimentary Rocks
3. Geological Structures
4. Origin of Porosity
5. Seal Rocks
6. Depositional Environments
7. Geological Maps
8. Well Correlation
9. Core Analysis
10. Initial Logs
11. Practical Example
12. Integration

9. Well Test Interpretation

Duration:
35 hours.

Introduction:
This course delves into the interpretation of well tests to evaluate reservoirs through pressure and flow data. Participants will learn to analyze results and optimize reservoir management.

Objectives:
Develop skills in well test interpretation. Teach participants to diagnose reservoir properties and improve production strategies.

Target Audience:
Reservoir engineers with basic experience.

Course Program:
1. Test Objectives
2. Test Types
3. Instrumentation
4. Data Acquisition
5. Analytical Models
6. Key Parameters
7. Specialized Software
8. Anomaly Diagnosis
9. Case Study
10. Uncertainty Management
11. Operational Applications
12. Technical Report

10. PTA - RTA - Production Data Analysis

Duration:
30 hours.

Introduction:
This course combines pressure transient analysis (PTA), rate transient analysis (RTA), and production data analysis to assess reservoir performance. Participants will learn to interpret operational information to optimize fields.

Objectives:
Teach PTA, RTA, and production data analysis techniques. Train participants in performance evaluation and reserve prediction.

Target Audience:
Engineers with basic well knowledge.

Course Program:
1. Fundamentals
2. Data Collection
3. PTA Analysis
4. RTA Analysis
5. Flow Models
6. Operational Diagnosis
7. Digital Tools
8. Type Curves
9. Reserve Estimation
10. Optimization
11. Practical Exercise
12. Limitations

11. Water Injection Management and Optimization

Duration:
35 horas.

Introduction:
Este curso aborda el diseño y manejo de proyectos de inyección de agua para mejorar la recuperación. Los participantes aprenderán a optimizar sistemas usando datos históricos y monitoreo continuo.

Objectives:
Enseñar la gestión efectiva de inyección de agua. Desarrollar habilidades para optimizar recuperación mediante análisis y ajustes operativos.

Target Audience:
Ingenieros de reservorios intermedios.

Course Program:

1. Principios de Waterflooding
2. Diseño de Patrones
3. Datos Históricos
4. Monitoreo Continuo
5. Optimización Operativa
6. Evaluación de Inyectividad
7. Simulación Básica
8. Problemas Comunes
9. Caso de Estudio
10. Análisis Económico
11. Sostenibilidad
12. Planificación Estratégica

12. Water Shut Off and Conformance

Duration:
25 horas.

Introduction:
Este curso explora técnicas para controlar la producción de agua y mejorar el barrido en reservorios. Los participantes aprenderán métodos prácticos para reducir agua y aumentar la eficiencia de extracción.

Objectives:
Enseñar técnicas de control de agua y conformidad. Capacitar en la reducción de agua producida y mejora de recuperación.

Target Audience:
Ingenieros intermedios en producción.

Course Program:

1. Producción de Agua
2. Diagnóstico
3. Métodos Mecánicos: Uso de tapones y sellos físicos.
4. Soluciones Químicas: Aplicación de geles y polímeros.
5. Mejora de Conformidad: Optimización del barrido de crudo.
6. Diseño de Tratamiento: Planificación de intervenciones específicas.
7. Ejecución en Campo: Procedimientos operativos clave.
8. Evaluación Post-Tratamiento: Medición de resultados obtenidos.
9. Caso Práctico: Aplicación en un pozo real.
10. Limitaciones Técnicas: Factores que afectan el éxito.
11. Análisis de Costos: Viabilidad económica de intervenciones.
12. Estrategias Futuras: Prevención de problemas recurrentes.

13. Enhanced Oil Recovery (EOR) Methods

Duration:
30 hours.

Introduction:
This course examines enhanced oil recovery (EOR) methods—thermal, chemical, and gas injection—to improve extraction in mature reservoirs. Participants will learn to select and apply these techniques.

Objectives:
Introduce the main EOR methods and their uses. Teach how to design strategies to maximize recovery in complex reservoirs.

Target Audience:
Intermediate-level reservoir engineers.

Course Program:
1. EOR Definition
2. Classification
3. Thermal Recovery
4. Gas Injection
5. Chemical Methods
6. Selection Criteria
7. Project Design
8. Initial Simulation
9. Operational Monitoring
10. Case Study
11. Economic Evaluation
12. Challenges

14. Chemical EOR

Duration:
25 hours.

Introduction:
This course focuses on chemical enhanced oil recovery methods such as polymers and surfactants to improve extraction. Participants will learn to design and implement these solutions in reservoirs.

Objectives:
Teach the use of chemical agents in EOR. Train participants in planning and executing effective chemical treatments.

Target Audience:
Intermediate-level EOR engineers.

Course Program:
1. Chemical Fundamentals
2. Polymers
3. Surfactants
4. Alkalis
5. Chemical Displacement
6. Agent Selection
7. Laboratory Testing
8. Injection Strategy
9. Results Monitoring
10. Case Study
11. Compatibility
12. Optimization

15. Reservoir Simulation

Duration:
40 hours.

Introduction:
This course covers reservoir simulation to predict behavior under different scenarios. Participants will learn to build models, interpret data, and optimize strategies using specialized software.

Objectives:
Teach reservoir model construction and analysis. Develop competencies to forecast production and optimize complex reservoirs.

Target Audience:
Intermediate-level reservoir engineers.

Course Program:
1. Reservoir Simulation Fundamentals
2. Static Reservoir Modeling
3. Dynamic Modeling and Production Data
4. Mathematical Flow Equations
5. Grid Model Discretization
6. Integration of PVT and Petrophysical Data
7. Advanced Simulation Tools (Eclipse and others)
8. History Matching of Production Data
9. Forecasting Future Production Scenarios
10. Field Development Optimization
11. Sensitivity Analysis of Parameters
12. Reservoir Simulation Case Study
13. Model Validation and Calibration
14. Technical Report Documentation

16. Material Balance in Hydrocarbon Reservoirs

Duration:
30 hours.

Introduction:
This course uses material balance analysis to evaluate reservoir performance and estimate reserves. Participants will learn to apply this technique to oil and gas fields.

Objectives:
Teach the use of material balance in reservoirs. Train participants in reserve estimation and drive mechanism diagnosis.

Target Audience:
Intermediate-level reservoir engineers.

Course Program:
1. Main Equation: Pressure vs. Production
2. Required Data for Analysis (Pressure and Volume)
3. Application in Dry and Wet Gas Reservoirs
4. Application in Saturated Oil Reservoirs
5. Identification of Reservoir Drive Mechanisms
6. Graphical Analysis: P/Z and Havlena-Odeh Methods
7. Uncertainty and Error Assessment
8. Specialized Software for Material Balance
9. Case Study in a Real Reservoir
10. Comparison with Other Evaluation Methods
11. Application of Material Balance in Production Planning

17. Decline Curve Analysis

Duration:
25 hours.

Introduction:
This course teaches how to analyze decline curves to forecast production and estimate reserves. Participants will apply practical models to real well production data.

Objectives:
Teach production decline analysis techniques. Train participants to predict reserves and adjust operations based on decline curves.

Target Audience:
Intermediate-level production engineers.

Course Program:
1. Fundamentals of Decline Curve Analysis
2. Types of Decline Curves: Exponential, Hyperbolic, and Harmonic
3. Preparation and Organization of Historical Production Data
4. Criteria for Selecting the Appropriate Decline Model
5. Manual Curve Fitting Using Graphical Methods
6. Application of Software (Excel and Others) for Decline Analysis
7. Calculation of Recoverable Reserves Using Decline Methods
8. Diagnosis of Irregular Production Behaviors
9. Forecasting Future Production Using Decline Models
10. Case Study: Decline Analysis in a Real Well
11. Factors Limiting the Accuracy of the Analysis
12. Preparation of Technical Reports with Decline Results

18. Recovery Optimization in Mature Fields

Duration:
30 hours.

Introduction:
This course explores strategies to revitalize mature fields and increase recovery. Participants will learn how to apply operational techniques and EOR methods to extend reservoir life.

Objectives:
Teach methods for improved recovery in mature fields. Train participants in implementing strategies to optimize declining reservoirs.

Target Audience:
Intermediate-level reservoir engineers.

Course Program:
1. Identification and Characteristics of Mature Fields
2. Evaluation of Production and Pressure in Late-Life Stages
3. Optimization of Operations in Existing Wells
4. Water Injection in Declining Reservoirs
5. Basic Enhanced Oil Recovery (EOR) Methods
6. Reperforation and Utilization of Remaining Zones
7. Monitoring of Results and Operational Performance
8. Simulation of Secondary Recovery Strategies
9. Economic Analysis of Revitalization Projects
10. Case Study
11. Strategies to Minimize Environmental Impact
12. Long-Term Recovery Planning

19. Shale and Tight Gas Reservoirs - Productivity

Duration:
35 hours.

Introduction:
This course analyzes productivity in unconventional reservoirs like shale and tight gas, focusing on hydraulic fracturing. Participants will learn to optimize these unique reservoirs.

Objectives:
Teach evaluation and enhancement of shale and tight gas. Train participants in fracture design and unconventional production analysis.

Target Audience:
Intermediate-level unconventional reservoir engineers.

Course Program:
1. Introduction to Unconventional Reservoirs (Shale and Tight Gas)
2. Geology and Properties of Low-Permeability Rocks
3. Fundamentals of Hydraulic Fracturing
4. Multistage Hydraulic Fracture Design
5. Selection of Fluids and Proppants
6. Production Behavior in Fractured Wells
7. Decline Curve Analysis in Unconventional Reservoirs
8. Fracture Simulation and Production Modeling
9. Optimization Strategies to Increase Recovery
10. Case Study: Evaluation of a Shale Well
11. Profitability Analysis in Unconventional Operations
12. Key Technical and Environmental Challenges

20. Gas Reservoir Engineering

Duration:
30 hours.

Introduction:
This course covers gas reservoir engineering, from characterization to production. Participants will learn to evaluate and optimize gas fields using technical approaches.

Objectives:
Teach natural gas reservoir management. Train participants to evaluate and design systems to maximize gas production.

Target Audience:
Intermediate-level gas reservoir engineers.

Course Program:
1. Properties of Natural Gas Reservoirs
2. PVT Behavior and Compressibility Factors
3. Natural Production Mechanisms in Gas Reservoirs
4. Well Test Interpretation in Gas Reservoirs
5. Reserve Estimation in Gas Reservoirs
6. Design of Production Systems for Gas
7. Decline Curve Analysis in Gas Production
8. Numerical Simulation of Gas Reservoirs
9. Gas Production Optimization Strategies
10. Case Study: Gas Field Development
11. Economic Evaluation of Gas Projects
12. Technological Advances in Gas Engineering

21. Introduction to Machine Learning in Reservoirs

Duration:
25 hours.

Introduction:
This course introduces machine learning applied to reservoirs, teaching how to use algorithms to analyze data. Participants will learn how to predict production and optimize operations using basic techniques.

Objectives:
Teach the fundamentals of machine learning in reservoir engineering. Train participants to apply algorithms to enhance technical decision-making.

Target Audience:
Intermediate-level engineers in data science.

Course Program:
1. Fundamentals of Machine Learning Applied to Petroleum
2. Use of Operational Data (Pressure and Rates) in ML Models
3. Regression Models for Predicting Continuous Variables
4. Data Preparation and Cleaning for Training
5. Introduction to Python and Machine Learning Tools
6. Development of Simple Predictive Models
7. Classification Techniques for Pattern Recognition
8. Validation and Evaluation of ML Models
9. ML Applications in Well Production Optimization
10. Case Study: Prediction Using Real Field Data
11. Main Limitations and Errors in Basic ML
12. Future Perspectives of ML in Reservoir Engineering

22. Advanced Well Test Interpretation

Duration:
40 hours.

Introduction:
This course explores the interpretation of complex well tests, including multiphase flow and fractured reservoirs. Participants will learn to accurately diagnose advanced reservoir systems.

Objectives:
Teach advanced well test interpretation. Train participants in analyzing complex reservoirs to optimize operational strategies.

Target Audience:
Senior reservoir engineers.

Course Program:
1. Advanced Review of Well Testing
2. Multiphase Flow Analysis (Gas-Liquid)
3. Test Interpretation in Naturally Fractured Reservoirs
4. Application of High-Resolution Sensor Data
5. Use of Specialized Software for Advanced Evaluation
6. Diagnosis of Critical Anomalies in Complex Tests
7. Uncertainty Management in High-Precision Testing
8. Integration of Geological, Dynamic, and Production Data
9. Strategic Optimization Based on Test Results
10. Case Study: Evaluation of a Well
11. Validation of Results with Advanced Simulation Models
12. Technical Report Development for Professional Evaluation
13. Technological Innovations in Advanced Well Testing

23. Integrated Reservoir Analysis

Duration:
35 hours.

Introduction:
This course integrates geology, petrophysics, and production for a holistic reservoir analysis. Participants will learn to develop optimized strategies based on multidisciplinary data.

Objectives:
Teach integrated analysis of complex reservoirs. Train participants in recovery optimization using multidisciplinary approaches.

Target Audience:
Senior engineers and managers.

Course Program:
1. Multidisciplinary Integrated Approach in Reservoir Evaluation
2. Integration of Static Data from Advanced Geology
3. Detailed Petrophysical Correlation with Flow Dynamics
4. Advanced Analysis of Operational Production Data
5. Integrated 3D Simulation of Reservoir Behavior
6. Identification of Underexploited Zones and New Opportunities
7. Use of Advanced Software for Data Integration
8. Holistic Strategies for Reservoir Optimization
9. Joint Evaluation of Uncertainties and Risk Management
10. Case Study: Integrated Analysis of a Real Field
11. Economic Impact of Multidisciplinary Integration
12. Long-Term Strategic Planning for Development

24. Evaluation and Modeling of Gas Condensate Fields

Duration:
35 hours.

Introduction:
This course focuses on gas condensate fields, emphasizing their complex behavior and optimization. Participants will learn to model and maximize production of gas and liquids.

Objectives:
Teach the evaluation of gas condensate fields. Train participants in advanced multiphase modeling and production optimization.

Target Audience:
Senior gas reservoir engineers.

Course Program:
1. PVT Behavior and Liquid Retrograde Condensation
2. Flow Mechanisms in Gas-Liquid Reservoirs
3. Specific Well Testing for Gas Condensate Reservoirs
4. Advanced Simulation of Gas Condensate Reservoirs
5. Use of Specialized Software for Gas Condensate Modeling
6. Optimal Production Strategies for Liquids and Gas
7. Optimization Techniques to Improve Recovery
8. Uncertainty Management in Gas Condensate Reservoirs
9. Case Study: Modeling of a Gas Condensate Field
10. Economic Evaluation of Gas and Condensate Projects
11. Emerging Trends and Innovations in Gas Condensate Engineering

25. Project Evaluation - Risk and Uncertainty

Duration:
30 hours.

Introduction:
This course addresses the evaluation of oil and gas projects considering risk and uncertainty. Participants will learn to analyze economic and technical decisions under variable scenarios.

Objectives:
Teach project evaluation with a risk-based approach. Train participants to quantify uncertainty for strategic decision-making.

Target Audience:
Managers and senior engineers.

Course Program:
1. Identification of Critical and Uncertain Variables
2. Application of Probabilistic Methods (Monte Carlo)
3. Financial Analysis: NPV and IRR under Uncertainty
4. Scenario Development for Risk Evaluation
5. Use of Specialized Software in Risk Analysis
6. Assessment of Fiscal Impact on Profitability
7. Modeling of Crude Oil Price Volatility
8. Decision Trees for Strategic Decision-Making
9. Case Study: Risk Analysis in a Real Project
10. Verification and Validation of Risk Results
11. Preparation of Strategic Reports for Senior Management

26. Advanced Reservoir Engineering

Duration:
40 hours.

Introduction:
This course explores advanced reservoir engineering techniques, addressing complex challenges such as fractures and EOR. Participants will learn to optimize difficult reservoirs using sophisticated approaches.

Objectives:
Teach advanced engineering for complex reservoirs. Train participants in solving problems and optimizing challenging recoveries.

Target Audience:
Senior reservoir engineers.

Course Program:
1. Multiphase Flow: Detailed Modeling
2. Advanced Production Simulation
3. Innovative EOR: New Techniques
4. Natural Fractures: Flow Analysis
5. State-of-the-Art Software
6. Reservoir Value Optimization
7. Complex Risks: Uncertainty Management
8. Integration of Multidisciplinary Data
9. Case Study: Complex Reservoir
10. Trends in Reservoir Engineering
11. Advanced Technical Report
12. Validation with Real Data

27. Reservoir Management

Duration:
35 hours.

Introduction:
This course teaches strategic reservoir management by integrating technical and economic data. Participants will learn to lead teams and optimize reservoirs over the long term.

Objectives:
Teach comprehensive management of complex reservoirs. Train participants in strategic planning to maximize value and recovery.

Target Audience:
Senior engineers and managers.

Course Program:
1. Advanced characterization through multidisciplinary data integration
2. Continuous monitoring based on key performance indicators
3. Strategic simulation for long-term decision-making
4. Global optimization focused on maximizing total recovery
5. Application of advanced EOR techniques
6. Use of integrated tools for technical reservoir management
7. Economic analysis to assess reservoir value
8. Risk management strategies under complex uncertainty
9. Case study on efficient mature field management
10. Sustainable approach balancing production and environment
11. Structured planning for long-term strategies

28. Naturally Fractured Reservoirs

Duration:
35 hours.

Introduction:
This course analyzes naturally fractured reservoirs, focusing on their characterization and management. Participants will learn to model and optimize production in heterogeneous and complex fields.

Objectives:
Teach evaluation of fractured reservoirs. Train participants to optimize production in advanced dual-porosity systems.

Target Audience:
Senior reservoir engineers.

Course Program:
1. Geological identification of fractured systems
2. Petrophysical properties in dual-porosity media
3. Flow analysis in naturally fractured reservoirs
4. Well testing in fractured formations
5. Simulation of complex fractured systems
6. Use of software for fracture analysis
7. Production optimization in heterogeneous reservoirs
8. Uncertainty management in fractured media
9. Case study of a fractured reservoir
10. Economic evaluation of projects with natural fractures
11. Challenges in predicting heterogeneous behavior

29. Advanced Petroleum Economics

Duration:
30 hours.

Introduction:
This course explores advanced petroleum economics, focusing on evaluating complex projects under risk. Participants will learn to analyze investments and optimize financial decisions in the oil and gas industry.

Objectives:
Teach advanced economic evaluation of petroleum projects. Train participants in risk and profitability analysis under uncertainty.

Target Audience:
Managers and senior engineers.

Course Program:
1. NPV and IRR analysis in risky projects
2. Economic evaluation of complex investments
3. Quantification of financial risk in oil and gas projects
4. Scenario modeling for future projections
5. Use of software for economic analysis
6. Evaluation of fiscal impact on project profitability
7. Dynamic forecasting of prices and costs
8. Financial analysis for strategic decision-making
9. Case study: Economic evaluation of a project
10. Consideration of environmental costs for sustainability
11. Preparation of advanced financial reports

30. Digital Twin and Industry 4.0 Technologies in Reservoirs

Duration:
35 hours.

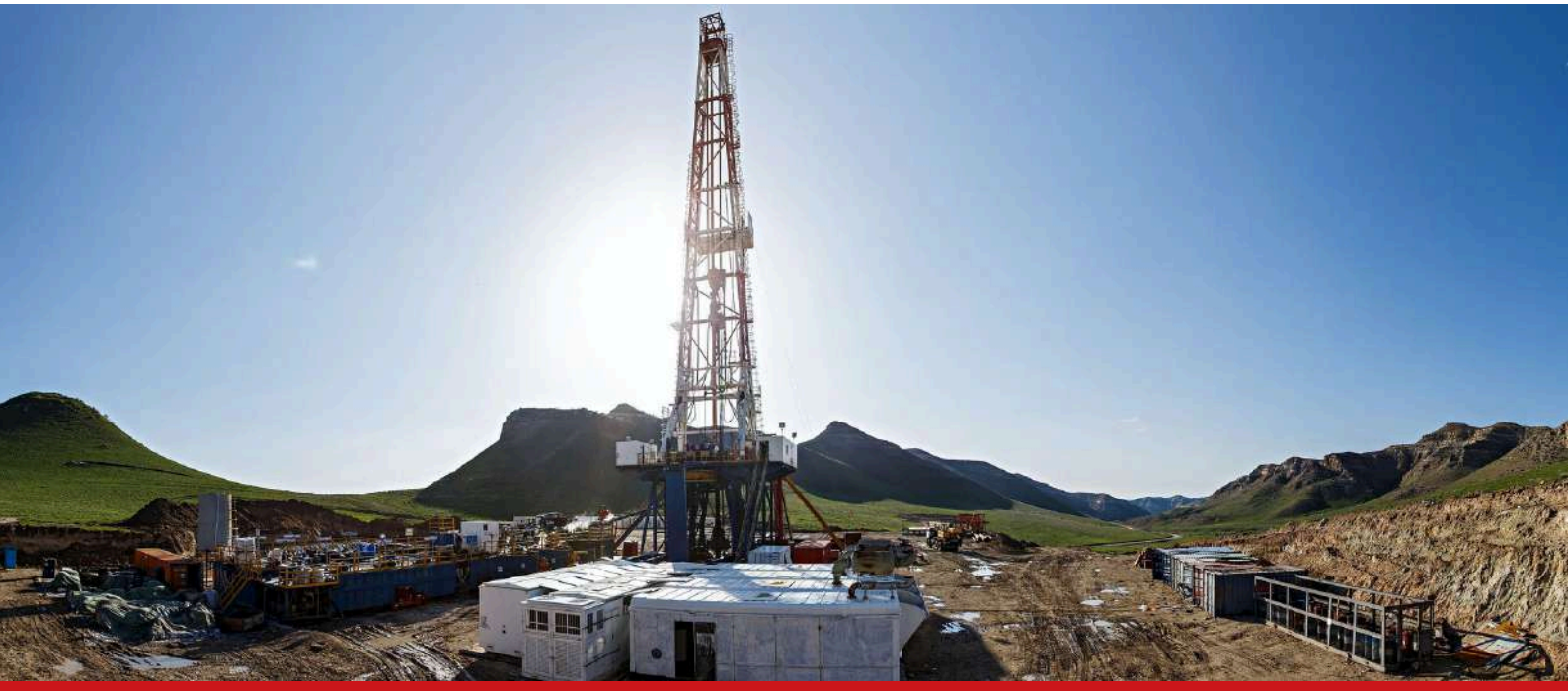
Introduction:
This course introduces digital twins and Industry 4.0 technologies for real-time reservoir management. Participants will learn to use digital solutions to monitor and optimize complex oil and gas fields.

Objectives:
Teach the application of digital twins in reservoir management. Train participants in the use of Industry 4.0 tools to enhance oilfield operations.

Target Audience:
Senior engineers in digital transformation.

Course Program:
1. Applications of digital twins in reservoirs
2. Real-time data acquisition and processing
3. Development of models for digital twin creation
4. Integrated simulation with physical reservoirs
5. Digital monitoring through operational indicators
6. Platforms and software for digital twins
7. Continuous optimization based on operational data
8. Application of artificial intelligence in digital twins
9. Case study: Field implementation of digitalization
10. Technical and economic challenges of digitalization
11. Future trends in digital reservoir management

DRILLING & WORKOVER



At Bauerberg Klein, we provide high-level technical training and specialized consulting in drilling operations. Our approach covers everything from well planning to the safe and optimized execution of each stage, promoting efficiency, risk reduction, and compliance with the highest standards of the energy industry.

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Instructors

Kevin Gray - Juan Carlos Beltran - Peter Aird - Cees Stapel - Saad Saleh - Ricardo Meli - Carlos Neveu - Fluidos Juan Manuel - Inspeccion Juan Manuel - Jairo Molero - Nicola Lamontanara - Sergio Alvarez - Daniel Ghidina - Ken Russel - Dick Hennan - Catalin Teodoriu - Felix Carrizo - Alpar Cseley - Agustin Blanc - Jorge Vazquez - Carlos Albarracin - Raul Inciarte - Fernando España - Walter Calderon - Juan Tovar - Williams Hernández - Renan Ugarte - Sergio Vacicek - Alberto Lopez Manriquez - Roman Shor - Peter Hoving

Levels

Basic (Drilling Fundamentals)

- 1. Introduction to Drilling Safety and Well Control
- 2. Basic Drilling
- 3. Drilling Fluids
- 4. Drilling Hydraulics
- 5. Casing Design
- 6. Primary Cementing
- 7. Well Planning and Rig Equipment Selection
- 8. Introduction to Company Man

Intermediate (Technical and Operational Skills)

- 9. Pipe Sticking
- 10. Drill String Design
- 11. Directional and Horizontal Drilling
- 12. Extended Reach Drilling (ERD)
- 13. HPHT – Planning, Well Design and Engineering
- 14. Managed Pressure Drilling (MPD)
- 15. Underbalanced Drilling
- 16. Deep Water Drilling
- 17. Geothermal Drilling
- 18. Drilling in Unconventional Reservoirs (Shale, Tight Oil & Gas)
- 19. Drilling Geomechanics
- 20. Pore Pressure and Borehole Stability
- 21.Real-Time Well Evaluation
- 22. Drilling AFE

Advanced (Management, Optimization, and Innovation)

- 23. Drilling Practices - Advanced
- 24. Special Problems in Drilling
- 25. Well Design and Engineering (Workshop-Based Course)
- 26. Well Site Operation Management
- 27. Drilling Project Management
- 28. Cost Optimization in Drilling Projects
- 29. Managed Lost Time Workshop
- 30. Latent Cause Analysis: Learning from Drilling Failures
- 31. Strategic Planning and Decision-Making in Drilling
- 32. Drilling Automation
- 33. Artificial Intelligence and Big Data Applied to Drilling
- 34. Mentoring for Drilling Teams

1. Introduction to Drilling Safety and Well Control

Duration:
24 hours.

Introduction:
This course introduces the essential principles of safety in drilling operations and well control, focusing on risk prevention and effective emergency response. Designed for new personnel, it aims to ensure safe and reliable field operations through immediately applicable, basic and practical knowledge.

Objectives:
To teach key safety fundamentals, accurate risk identification, and essential well control techniques, fostering a strong culture of prevention and effective response to critical drilling incidents.

Target Audience:
Entry-level drilling personnel

Course Program:
1. Safety Standards
2. Common Risks
3. Protective Equipment
4. Well Control
5. Well Pressure
6. Emergency Response
7. Basic Drill
8. Safety Culture
9. Prevention Tools
10. Incident Reporting
11. Safety Roles
12. Local Regulations

2. Basic Drilling

Duration:
32 hours.

Introduction:
This foundational course explores the basic principles of well drilling, covering equipment and key operational processes. Designed for beginners, it provides a solid base for understanding and actively participating in drilling activities, with a practical and accessible focus for real environments.

Objectives:
To train participants in essential drilling principles, proper equipment usage, and main operational stages, preparing them to support basic field tasks with confidence and technical competence.

Target Audience:
New operators and technicians.

Course Program:
1. History of Drilling
2. Types of Wells
3. Drilling Equipment
4. Drill String
5. Drill Bit
6. Drilling Process
7. Basic Safety
8. Terminology
9. Basic Fluids
10. Maintenance
11. Introductory Geology
12. Basic Simulation
13. Operational Roles

3. Drilling Fluids

Duration:
28 horas.

Introduction:
This course covers the fundamentals of drilling fluids, including their design and practical application in oil wells. It explains how they affect performance and stability, providing key skills for their efficient handling in basic operations, ideal for entry-level technicians.

Objectives:
To understand critical properties and functions of drilling fluids, training participants to select and monitor them effectively in basic operations, ensuring well stability and optimal performance.

Target Audience:
Technicians and operators.

Course Program:
1. Introduction to Fluids
2. Basic Properties
3. Types of Fluids
4. Fluid Design
5. Solids Control
6. Field Monitoring
7. Fluid Safety
8. Case Studies
9. Mixing Equipment
10. Environmental Impact
11. Initial Testing
12. Recycling

4. Drilling Hydraulics

Duration:
26 hours.

Introduction:
This course covers drilling hydraulics, essential for optimizing well performance in the field. It analyzes fluid flow and its operational impact from the bit to the surface, with a practical approach for beginners in the industry.

Objectives:
To teach the principles of hydraulics, calculation of key parameters, and operational adjustments to improve efficiency and safety in basic oil well drilling processes.

Target Audience:
Technicians and operators.

Course Program:
1. Basic Concepts
2. Fluid Flow
3. Pressure Loss
4. Optimization
5. Hydraulic Equipment
6. Key Parameters
7. Hydraulic Problems
8. Case Studies
9. Fluids & Hydraulics
10. Operational Safety
11. Manual Calculations
12. Basic Simulation

5. Casing Design

Duration:
30 hours.

Introduction:
This course teaches the principles of casing design, vital for the structural integrity of the well. It covers material selection and sizing to ensure stability and operational safety, providing practical knowledge for effective basic drilling applications.

Objectives:
To train participants in accurate casing design and selection, ensuring strength and well protection against pressures and adverse conditions, optimizing safety during initial drilling.

Target Audience:
Entry-level engineers and technicians.

Course Program:
1. Casing Functions
2. Types of Casing
3. Materials
4. Basic Calculations
5. Specifications
6. Installation
7. Initial Testing
8. Common Issues
9. Intro to Cementing
10. Installation Tools
11. Material Cost
12. Depth-Based Design
13. Installation Safety

6. Primary Cementing

Duration:
28 hours.

Introduction:
This course addresses the fundamentals of primary cementing in oil wells, essential to ensure well integrity and formation isolation. It explores techniques, materials, and operational processes, providing practical knowledge for basic-level personnel seeking to secure well stability during and after drilling.

Objectives:
To train in the design and execution of primary cementing, teaching material selection and operational techniques for effective formation isolation, ensuring structural integrity and safety in drilled wells.

Target Audience:
Entry-level technicians and operators.

Course Program:
1. Cementing Role
2. Basic Materials
3. Slurry Design
4. Cementing Equipment
5. Cementing Process
6. Quality Control
7. Common Issues
8. Operational Safety
9. Cement Properties
10. Well Preparation
11. Basic Calculations
12. Environmental Impact
13. Post-Cementing Tests

7. Well Planning and Rig Equipment Selection

Duration:
32 hours.

Introduction:
This course teaches the fundamentals of well planning and appropriate selection of drilling equipment. It covers the process from initial design to equipment choice, preparing participants to contribute to efficient and safe operations in basic oilfield settings.

Objectives:
To train participants in basic well planning and equipment selection, teaching technical and operational criteria to optimize resources, ensure safety, and meet drilling goals in early-stage industry projects.

Target Audience:
New technicians and planners.

Course Program:
1. Well Design
2. Operational Objectives
3. Types of Rigs
4. Equipment Selection
5. Basic Logistics
6. Initial Costs
7. Planning Safety
8. Case Studies
9. Applied Geology
10. Scheduling
11. Regulations
12. Simulation
13. Plan Review

8. Introduction to Company Man

Duration:
20 hours.

Introduction:
Introductory course for those aspiring to become Company Men, focusing on basic supervision of drilling operations. It covers key responsibilities, safety, and field coordination, preparing participants to lead teams and ensure operational objectives are met in the field.

Objectives:
To provide training in initial drilling supervision, covering roles, safety, and basic decision-making, enabling participants to coordinate teams and operations efficiently while ensuring standards are met in oilfield projects.

Target Audience:
Aspiring Company Men.

Course Program:
1. Company Man Role
2. Field Safety
3. Team Coordination
4. Initial Planning
5. Basic Reporting
6. Problem Solving
7. Operational Standards
8. Effective Communication
9. Risk Management
10. Cost Control
11. Contractor Relations
12. Supervision Simulation

9. Pipe Sticking

Duration:
24 hours.

Introduction:
This course addresses stuck pipe, a common operational issue in drilling, analyzing causes and practical solutions. It prepares participants to identify, prevent, and resolve this complication in wells, improving continuity and efficiency in intermediate field operations.

Objectives:
Teach techniques to prevent and manage stuck pipe incidents, training participants to diagnose causes, apply effective solutions, and maintain smooth well operations, optimizing performance and reducing downtime.

Target Audience:
Intermediate-level operators and engineers.

Course Program:
1. Stuck Pipe Concepts
2. Main Causes
3. Basic Prevention
4. Field Diagnostics
5. Pipe Freeing Methods
6. Support Fluids
7. Real Case Studies
8. Operational Safety
9. Monitoring
10. Tools
11. Economic Impact
12. Simulation

10. Drill String Design

Duration:
30 hours.

Introduction:
This course explores the technical design of drill strings, essential for safe and efficient well operations. It covers component selection, calculations, and optimization, preparing participants to face intermediate operational challenges in real-world oilfield drilling.

Objectives:
Train in advanced drill string design, teaching calculations and component selection to ensure strength, efficiency, and safety in intermediate-level operations, optimizing performance in complex wells.

Target Audience:
Intermediate-level engineers and technicians.

Course Program:
1. String Functions
2. Key Components
3. Design Calculations
4. Material Selection
5. Optimization
6. Common Failures
7. Basic Simulation
8. Maintenance
9. Torque and Drag
10. Extreme Conditions
11. Testing
12. Cost Analysis

11. Directional and Horizontal Drilling

Duration:
36 hours.

Introduction:
This course explores advanced directional and horizontal drilling techniques, essential for accessing complex reservoirs. It covers tools, planning, and execution, preparing participants to optimize well trajectories and increase productivity in intermediate oilfield operations with technical challenges.

Objectives:
Teach design and execution of directional and horizontal drilling, training participants to use specialized tools, plan precise trajectories, and solve operational problems, improving efficiency and access to reserves in complex wells.

Target Audience:
Intermediate-level engineers and operators.

Course Program:
1. Basic Concepts
2. Directional Tools
3. Trajectory Planning
4. Measurement While Drilling
5. Trajectory Calculations
6. Common Issues
7. Optimization
8. Case Studies
9. Directional Fluids
10. Safety
11. Advanced Equipment
12. Simulation
13. Applied Geology

12. Extended Reach Drilling (ERD)

Duration:
34 hours.

Introduction:
Specialized course in Extended Reach Drilling (ERD), focused on wells with extended trajectories from fixed platforms. It addresses technical challenges and operational solutions, preparing participants to execute complex field projects and optimize access to distant reserves in intermediate operations.

Objectives:
Train in the design and execution of ERD wells, teaching techniques to overcome technical limitations, manage torque, and optimize resources, ensuring success in extended reach drilling in advanced oilfield projects.

Target Audience:
Intermediate-level engineers and technicians.

Course Program:
1. Introduction to ERD
2. Technical Challenges
3. Well Design
4. ERD Tools
5. Torque Management
6. Optimized Fluids
7. Simulation
8. Success Stories
9. Advanced Calculations
10. ERD Safety
11. Maintenance
12. Geology
13. Optimization

13. HPHT - Planning, Well Design and Engineering

Duration:
38 hours.

Introduction:
This course covers the planning and design of wells in High Pressure, High Temperature (HPHT) conditions. It explores equipment, materials, and operational strategies, preparing participants to face extreme drilling environments while ensuring safety and efficiency in intermediate oilfield operations.

Objectives:
Train in the planning and design of HPHT wells, teaching equipment selection, risk management, and advanced techniques to ensure safe and effective operations under extreme drilling conditions.

Target Audience:
Intermediate engineers and specialists.

Course Program:
1. HPHT Concepts
2. Associated Risks
3. Well Design
4. HPHT Materials
5. Special Fluids
6. Advanced Equipment
7. Well Control
8. Simulations
9. Specific Calculations
10. Operational Safety
11. Testing
12. HPHT Geology
13. Real-World Cases

14. Managed Pressure Drilling (MPD)

Duration:
32 hours.

Introduction:
Course on Managed Pressure Drilling (MPD), an advanced technique for pressure control in complex wells. It covers equipment, procedures, and applications, preparing participants to optimize intermediate field operations, reduce risks, and improve drilling stability.

Objectives:
Teach MPD principles and applications, training participants to use specialized equipment, control pressure precisely, and solve operational problems, ensuring efficient and safe drilling in wells of intermediate complexity.

Target Audience:
Intermediate engineers and operators.

Course Program:
1. Introduction to MPD
2. MPD Benefits
3. MPD Equipment
4. Pressure Control
5. Operational Design
6. Problem Solving
7. Real-World Cases
8. Safety
9. MPD Fluids
10. Monitoring
11. Simulation
12. Basic Calculations
13. Maintenance

15. Underbalanced Drilling

Duration:
30 hours.

Introduction:
This course explores Underbalanced Drilling (UBD), a technique to improve productivity in sensitive reservoirs. It analyzes principles, equipment, and applications, preparing participants to operate in intermediate wells, minimizing formation damage and optimizing recovery in complex oilfields.

Objectives:
Train in the design and execution of underbalanced drilling, teaching techniques to reduce pressure, use specialized equipment, and enhance recovery, ensuring effective operations in sensitive intermediate reservoirs.

Target Audience:
Intermediate engineers and technicians.

Course Program:
1. Basic Concepts
2. Benefits
3. UBD Equipment
4. Pressure Control
5. UBD Fluids
6. Associated Risks
7. Applications
8. Simulation
9. Operational Safety
10. Monitoring
11. Well Design
12. Case Studies

16. Deep Water Drilling

Duration:
20 to 40 hours.

Introduction:
This course covers the principles and challenges of deepwater drilling, addressing advanced techniques for safe planning and execution.

Objectives:
Train participants in strategies for deepwater drilling, including risk management, equipment selection, and operational optimization.

Target Audience:
Drilling engineers, offshore operations supervisors, deepwater specialists

Course Program:
1. Fundamentals of deepwater drilling
2. Planning and equipment selection
3. Managing extreme offshore well conditions
4. Pressure control in deepwater environments
5. Cost and time optimization strategies
6. Fluid selection and cementing for deepwater wells
7. Advanced directional and horizontal drilling techniques
8. Well stability and safety evaluation
9. Technological innovations in offshore drilling
10. Deepwater project case studies

17. Geothermal Drilling

Duration:
20 to 40 hours.

Introduction:
This course introduces key concepts of geothermal drilling, exploring the unique challenges of drilling in high-temperature and high-pressure environments.

Objectives:
Provide participants with tools to design and execute geothermal wells, ensuring efficiency and sustainability in geothermal energy production.

Target Audience:
Drilling engineers, exploration geologists, geothermal specialists.

Course Program:
1. Introduction to geothermal drilling
2. Characteristics of geothermal reservoirs
3. Selection of geothermal drilling equipment and tools
4. Impact of geomechanics on geothermal drilling
5. Pressure control and risk mitigation
6. Well stability and safety evaluation
7. Drilling fluid design for high-temperature conditions
8. Cost and time optimization strategies
9. Technological innovations in geothermal drilling
10. Case studies in geothermal projects

18. Drilling in Unconventional Reservoirs (Shale, Tight Oil & Gas)

Duration:
20 to 40 hours.

Introduction:
This course provides a comprehensive approach to advanced drilling techniques in unconventional reservoirs, addressing the specific challenges of shale gas, tight oil, and gas formations.

Objectives:
Equip participants with knowledge on drilling in low-permeability formations, covering hydraulic fracturing, fluid selection, and optimization of completions in shale and tight formations.

Target Audience:
Drilling engineers, unconventional resources specialists, operations supervisors.

Course Program:
1. Introduction to unconventional reservoirs
2. Characteristics of shale gas, tight oil, and gas
3. Drilling techniques for low-permeability formations
4. Selection of drilling fluids for shale
5. Hydraulic fracturing and its impact on drilling
6. Drilling optimization in shale and tight oil
7. Strategies for mitigating geomechanical issues
8. Production evaluation in unconventional wells
9. Integration of real-time data for optimization
10. Case studies in shale and tight oil drilling

19. Drilling Geomechanics

Duration:
34 hours.

Introduction:
This course explores the principles of geomechanics applied to drilling, addressing wellbore stability, pressure control, and the mitigation of formation-related issues.

Objectives:
Provide participants with advanced geomechanical knowledge to optimize well design, minimize risks, and improve drilling efficiency.

Target Audience:
Drilling engineers, geomechanics specialists, and operations geologists.

Course Program:
1. Fundamentals of geomechanics applied to drilling
2. In-situ stress evaluation in formations
3. Impact of geomechanics on well design
4. Prediction and control of wellbore instability
5. Techniques for preventing collapse and structural failures
6. Modeling and simulation of geomechanical conditions
7. Influence of geomechanics on fluid selection
8. Optimization of casing and cementing based on geomechanical data
9. Real-time monitoring and geomechanical analysis
10. Case studies in various operational environments

20. Pore Pressure and Borehole Stability

Duration:
32 hours.

Introduction:
This course addresses pore pressure and borehole stability, both fundamental for safe operations in intermediate-level drilling. It explores prediction, monitoring, and solutions to instabilities, preparing participants to optimize well design and execution in complex formations.

Objectives:
Train in the prediction and management of pore pressure and borehole stability, teaching techniques to prevent collapses, optimize fluid programs, and ensure safety in complex intermediate drilling operations.

Target Audience:
Intermediate engineers and geologists.

Course Program:
1. Fundamental concepts of pore pressure
2. Formation pressure prediction methods
3. Impact of wellbore stability on drilling operations
4. Evaluation of fracture and collapse gradients
5. Factors affecting wellbore stability
6. Techniques for mitigating instabilities
7. Drilling fluid design for optimal stability
8. Wellbore stability simulation and modeling
9. Real-time monitoring and predictive analysis
10. Case studies and best practices

21. Real-Time Well Evaluation

Duration:
20 to 40 hours.

Introduction:
This course provides a comprehensive approach to monitoring and evaluating real-time drilling data to optimize operational decision-making.

Objectives:
Train participants in interpreting real-time data, monitoring operational parameters, and applying strategies to improve drilling efficiency.

Target Audience:
Drilling engineers, operations supervisors, drilling data analysts.

Course Program:
1. Fundamentals of real-time evaluation
2. Types of data collected during drilling
3. Integration of monitoring systems and sensors
4. Data analysis and visualization methods
5. Application of Machine Learning in drilling
6. Monitoring torque, WOB, and ROP
7. Alarms and early problem detection systems
8. Operational parameter optimization
9. Software and digital evaluation tools
10. Case studies and continuous improvement strategies

22. Drilling AFE

Duration:
26 hours.

Introduction:
This course covers the process of cost estimation and control in drilling through the AFE (Authorization for Expenditure), providing strategies for effective budget planning and investment optimization.

Objectives:
Train participants in structuring AFEs for drilling projects, ensuring efficient cost management aligned with financial and operational objectives.

Target Audience:
Drilling engineers, financial managers, cost supervisors.

Course Program:
1. AFE fundamentals in drilling
2. Structure and components of an AFE
3. Cost evaluation and budget estimation
4. Key factors in financial planning for drilling
5. CAPEX and OPEX cost analysis
6. Cost optimization methods in drilling
7. Budget control and monitoring
8. AFE impact on strategic decision-making
9. Budget deviation analysis and mitigation
10. Case studies and best practices in cost management

23. Drilling Practices - Advanced

Duration:
40 hours.

Introduction:
This advanced course delves into high-level drilling practices, integrating modern techniques and strategies. It prepares participants to lead complex operations, optimize processes, and solve critical wellsite challenges, enhancing efficiency in advanced oilfield projects.

Objectives:
Equip participants with the skills to implement best practices in advanced drilling, maximizing operational efficiency and reducing risks.

Target Audience:
Advanced engineers and supervisors.

Course Program:
1. Performance evaluation in advanced drilling
2. Techniques for time and cost optimization
3. Use of emerging technologies in drilling
4. Control and mitigation of operational issues
5. Impact of hydraulics on drilling efficiency
6. Reduction of mechanical failures in drill strings and bits
7. Real-time monitoring strategies
8. Application of software for drilling optimization
9. Safety and best practices in complex operations
10. Case studies of advanced drilling projects

24. Special Problems in Drilling

Duration:
36 horas.

Introduction:
This course addresses special drilling problems, such as critical failures and extreme conditions in complex wells. It prepares participants to diagnose, prevent, and solve advanced operational challenges, ensuring continuity and safety in technically demanding oilfield projects.

Objectives:
Train participants in the management of special drilling problems by teaching advanced diagnosis, prevention, and solutions to ensure effective failure resolution and operational optimization in high-level complex wells within the industry.

Target Audience:
Advanced engineers and specialists.

Course Program:
1. Analysis of common drilling problems
2. Stuck pipe: diagnosis and solutions
3. Lost circulation control
4. Management of overpressure and kicks
5. Drilling fluid optimization for failure prevention
6. Methods to reduce drill string wear
7. Evaluation of mechanical issues in drill bits
8. Impact of geomechanical conditions on drilling
9. Failure analysis in cementing and casing
10. Case studies and mitigation strategies

25. Well Design and Engineering (Workshop-Based Course)

Duration:
38 hours.

Introduction:
This course offers a practical approach based on specific case studies for well design and engineering, with an intensive workshop focused on optimizing the planning and execution of complex drilling operations.

Objectives:
Provide participants with advanced knowledge in well design, integrating simulation tools and data analysis for planning and executing high-complexity drilling projects.

Target Audience:
Drilling engineers, well planners, operations managers.

Course Program:
1. Principles of well design
2. Subsurface conditions evaluation
3. Material and casing selection
4. Stress analysis in the well
5. Trajectory optimization and directional drilling
6. Cost evaluation and budget planning
7. Risk management in well design
8. Application of simulation software
9. Case-based well design and execution workshop
10. Performance evaluation and continuous improvement

26. Well Site Operation Management

Duration:
20 to 40 hours.

Introduction:
This course provides a comprehensive approach to well site operations management, ensuring efficiency, safety, and regulatory compliance.

Objectives:
Train participants in planning, supervising, and optimizing wellsite operations, minimizing risks and maximizing productivity.

Target Audience:
Drilling supervisors, operations managers, field superintendents.

Course Program:
1. Fundamentals of well site operations management
2. Supervision and control of drilling activities
3. Resource management and crew coordination
4. Safety and regulatory compliance
5. Cost and time optimization in operations
6. Emergency response and crisis management
7. Performance analysis and continuous improvement
8. Technology integration in wellsite operations
9. Environmental impact evaluation and sustainability
10. Case studies and best practices in operational management

27. Drilling Project Management

Duration:
20 to 40 hours.

Introduction:
This course provides essential tools for managing drilling projects, covering planning, execution, and control within the oil and gas industry.

Objectives:
Train participants in effective drilling project management—from initial planning through execution and closure—ensuring achievement of operational and financial goals.

Target Audience:
Drilling managers, project engineers, drilling supervisors.

Course Program:
1. Fundamentals of project management in drilling
2. Phases and lifecycle of a drilling project
3. Risk assessment and strategic planning
4. Cost estimation and budget control
5. Contractor and supplier management
6. Resource optimization and equipment planning
7. Time control and milestone tracking
8. Implementation of project management software tools
9. Performance evaluation and key project metrics
10. Case studies on successful drilling project management

28. Cost Optimization in Drilling Projects

Duration:
32 hours.

Introduction:
This course focuses on cost optimization in drilling projects, emphasizing economic efficiency without compromising quality. It prepares participants to analyze expenses, implement savings strategies, and maximize profitability in complex operations, enhancing financial management in advanced oilfield projects.

Objectives:
Train participants in advanced cost optimization for drilling, enabling them to analyze expenditures, reduce waste, and increase profitability, ensuring both economic and operational viability in high-level projects within the oil and gas industry.

Target Audience:
Advanced managers and financial professionals.

Course Program:
1. Cost analysis
2. Operational optimization
3. Financial tools
4. Waste reduction
5. Negotiation strategies
6. Time control
7. Practical workshop
8. Real-world case studies
9. Risk management
10. Key performance indicators
11. Economic sustainability
12. Financial reporting

29. Managed Lost Time Workshop

Duration:
30 hours.

Introduction:
This practical workshop focuses on the management of non-productive time (NPT) in drilling, identifying root causes and advanced solutions. It prepares participants to minimize disruptions, optimize schedules, and increase productivity in complex projects, enhancing operational efficiency in advanced oilfield environments.

Objectives:
Provide strategies to minimize non-productive time in drilling, optimizing operational efficiency and reducing costs.

Target Audience:
Drilling engineers, operations supervisors, and project managers.

Course Program:
1. Concept and classification of lost time
2. Identification of common causes of non-productive time
3. Methods for data collection and operational analysis
4. Implementation of optimization strategies
5. Reducing connection times and equipment handling delays
6. Impact of lost time on well cost and performance
7. Application of real-time monitoring technologies
8. Case study analysis on reducing lost time
9. Planning and continuous improvement in drilling operations
10. Practical workshop: designing optimization strategies

30. Latent Cause Analysis: Learning from Drilling Failures

Duration:
34 hours.

Introduction:
This course explores an evidence-based approach to latent cause analysis in drilling failures, aiming to prevent recurring issues and improve operational decision-making.

Objectives:
Train participants in identifying and analyzing root causes of drilling problems, fostering a culture of continuous improvement driven by data.

Target Audience:
Drilling engineers, safety managers, operations supervisors.

Course Program:
1. Introduction to latent cause analysis in drilling
2. Identification of patterns and risk factors
3. Evaluation of historical data and operational evidence
4. Drilling failure investigation methods
5. Implementation of corrective and preventive strategies
6. Integration of cause analysis into risk management
7. Use of digital tools in failure analysis
8. Case studies on critical failures and resolutions
9. Development of evidence-based action plans
10. Practical workshop: real case simulations and operational solutions

31. Strategic Planning and Decision-Making in Drilling

Duration:
20 to 40 hours.

Introduction:
This course focuses on strategic planning for drilling projects, introducing data-driven decision-making tools and risk management techniques to ensure operational success.

Objectives:
Train participants in the strategic planning and execution of drilling projects, ensuring optimal risk and resource management to maximize operational outcomes.

Target Audience:
Drilling managers, operations directors, well planning specialists.

Course Program:
1. Fundamentals of strategic planning in drilling
2. Risk assessment and mitigation in decision-making
3. Technical and economic feasibility analysis
4. Prioritization of drilling projects
5. Simulation and modeling tools for planning
6. Time and resource optimization in projects
7. Application of project management methodologies
8. Planning under uncertainty scenarios
9. Case studies in strategic planning
10. Development of strategies for project optimization

32. Drilling Automation

Duration:
20 to 40 hours.

Introduction:
This course explores emerging technologies in drilling automation, from the use of digital systems to the integration of artificial intelligence in operations.

Objectives:
Provide knowledge on advancements in automated drilling, AI-driven operational optimization, and reduction of operational costs.

Target Audience:
Drilling engineers, automation specialists, drilling technology managers.

Course Program:
1. Introduction to drilling automation
2. Robotics and autonomous systems on rigs
3. Use of artificial intelligence in decision-making
4. ROP optimization through automation
5. Software integration and remote operation control
6. Reducing connection times and equipment handling
7. Early fault detection technologies
8. Safety and monitoring in automated drilling
9. Case studies in high-automation drilling
10. Implementation of solutions in operational fields

33. Artificial Intelligence and Big Data Applied to Drilling

Duration:
20 to 40 hours.

Introduction:
This course explores the application of artificial intelligence and big data in drilling operations, addressing digital tools, predictive models, and advanced analytics for process optimization.

Objectives:
Train participants in the use of AI and big data to optimize drilling, enhancing decision-making through predictive analytics and real-time data.

Target Audience:
Drilling engineers, data analysts, process optimization specialists.

Course Program:
1. Fundamentals of artificial intelligence and big data
2. Machine learning applications in drilling
3. Use of predictive models for fault detection
4. Analysis of large volumes of operational data
5. Sensor integration and real-time monitoring
6. Implementation of optimization algorithms
7. Operational efficiency assessment through AI
8. Process automation in drilling
9. Big data applications in geomechanics and drilling fluids
10. Case studies of AI applied to drilling

34. Mentoring for Drilling Teams

Duration:
20 to 40 hours.

Introduction:
This course is designed to strengthen leadership and teamwork skills in drilling operations, ensuring a collaborative and effective environment for operational decision-making.

Objectives:
Provide tools and strategies to improve communication, leadership, and decision-making in multidisciplinary drilling teams.

Target Audience:
Drilling supervisors, team leaders, operations managers.

Course Program:
1. Leadership fundamentals in drilling
2. Effective communication strategies
3. Conflict management in operations
4. Decision-making under pressure
5. Safety culture and teamwork
6. Performance evaluation and feedback
7. Implementation of mentoring methodologies
8. Team-based problem solving
9. Building trust in operational teams
10. Case studies and leadership best practices

PRODUCTION & FACILITIES

At Bauerberg Klein, we provide technical training and consulting focused on optimizing production systems and surface facility operations. Our approach covers everything from equipment design and management to process control, aiming to maximize efficiency, ensure operational safety, and maintain production continuity in both conventional and unconventional fields.

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Production

Instructors

Marcelo Reyna - Rajan Chokshi - Gabor Takacs - Ali Hernandez - Martin Nogues - Pablo Subotovsky - Richard Marquez - Ricardo Maggiolo - Eduardo Dottore - Sergio Caicedo - Santiago Salvia - Alfredo Duran - Mercedes Urribarrí - Estalin Sanchez - Kees Veeken - Luis Pastor García.

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Facilities

Instructors

Marcelo Reyna - Rajan Chokshi - Gabor Takacs - Ali Hernandez - Martin Nogues - Pablo Subotovsky - Richard Marquez - Ricardo Maggiolo - Eduardo Dottore - Sergio Caicedo - Santiago Salvia - Alfredo Duran - Mercedes Urribarrí - Estalin Sanchez - Kees Veeken - Luis Pastor García.

Production

1. Introduction to Production Operations

Duration:

20 hours.

Introduction:

This course provides a comprehensive overview of hydrocarbon production operations, covering fundamentals and basic field practices. Ideal for those new to the industry, it combines theory with practical examples to understand the production cycle and the equipment involved.

Objectives:

Provide basic knowledge of production processes, equipment, and safety, preparing participants to operate efficiently in field environments and optimize resources in well management.

Target Audience:

Entry-level engineers, technicians, and operators.

Course Program:

1. Basic Production Concepts
2. Reservoir lifecycle
3. Well types
4. Extraction methods
5. Operational safety
6. Well monitoring
7. Surface equipment
8. Subsurface equipment
9. Fluid flow
10. Phase separation
11. Production data
12. Initial optimization
13. Team roles

2. Nodal Analysis

Duration:

24 hours.

Introduction:

Nodal analysis is a key tool for optimizing production systems. This course introduces its fundamentals, techniques, and practical applications using software and real case studies to evaluate well performance and detect operational constraints.

Objectives:

Teach participants to apply nodal analysis to improve well productivity, identify bottlenecks, and optimize systems using modern tools and sensitivity analysis.

Target Audience:

Production engineers and analysts.

Course Program:

1. System components
2. Inflow/outflow curves
3. Bottlenecks
4. Well modeling
5. Software use
6. Data interpretation
7. Rate optimization
8. Sensitivity analysis
9. Practical cases
10. Integration with artificial lift
11. Operational constraints

3. Artificial Lift Systems

Duration:
28 hours.

Introduction:
This course explores artificial lift systems essential for maximizing hydrocarbon recovery. It covers design, operation, and comparison of methods like mechanical pumping and gas lift, focusing on efficiency and cost.

Objectives:
Train participants in the selection, design, and operation of artificial lift systems to optimize production and solve common problems through practice and real-case analysis.

Target Audience:
Field engineers and technicians.

Course Program:
1. Introduction to artificial lift
2. Types of systems
3. Selection criteria
4. Basic design
5. Daily operation
6. Energy efficiency
7. Common issues
8. Operating costs
9. Basic maintenance
10. Case studies
11. Impact on productivity
12. Recent innovations

4. Mechanical Pumping

Duration:
24 hours.

Introduction:
Mechanical pumping is a widely used method in hydrocarbon production. This course covers everything from system design to maintenance, with emphasis on efficient operation and troubleshooting.

Objectives:
Provide skills to design, operate, and maintain mechanical pumping systems, optimize production, and diagnose failures using techniques like dynamometry and hands-on analysis.

Target Audience:
Engineers and field technicians.

Course Program:
1. Basic principles
2. System components
3. Installation design
4. Equipment selection
5. Field operation
6. Failure diagnostics
7. Practical maintenance
8. Production optimization
9. Dynamometric analysis
10. Real-world cases
11. Operational safety
12. Performance evaluation

5. Electric Submersible Pumping

Duration:
20 to 40 hours.

Introduction:
This course provides a comprehensive overview of Electric Submersible Pumping (ESP) systems, one of the most widely used artificial lift technologies in the oil industry. It covers the principles of operation, installation, and design of these systems to optimize hydrocarbon production.

Objectives:
Train participants in the selection, operation, design, and diagnosis of ESP systems, enabling improved production and reduced operating costs.

Target Audience:
Production engineers, field supervisors, and technical personnel involved in operating ESP wells.

Course Program:
1. Fundamentals of electric submersible pumping
2. Impact on production, CAPEX, and OPEX
3. Main components and system operation
4. Installation and commissioning
5. ESP system selection and design
6. Integration with nodal analysis
7. Performance monitoring and adjustments
8. Troubleshooting and failure diagnosis
9. Practical optimization cases
10. Strategies to extend system life
11. Intermediate-Advanced level

6. Progressive Cavity Pumping

Duration:
20 to 40 hours.

Introduction:
Progressing Cavity Pumping (PCP) is a technology primarily used for the extraction of medium to heavy crude oils and fluids with high solid content. This course covers the fundamentals, operation, and design of these systems to optimize their efficiency and lifespan.

Objectives:
Provide the necessary knowledge for the operation, selection, and implementation of PCP systems, ensuring proper functioning and maintenance to maximize production.

Target Audience:
Production and reservoir engineers, field supervisors, and petroleum production personnel.

Course Program:
1. Basic principles of progressing cavity pumping
2. Comparison with other artificial lift methods
3. System components and operation
4. PCP system selection and design
5. Installation and commissioning
6. Performance monitoring and optimization
7. Typical failures: diagnosis and operational troubleshooting
8. Impact of fluids and well conditions
9. Electro-PCP and permanent magnet motors
10. PCP success stories and best practices
11. Intermediate-Advanced level

7. Gas Lift

Duration:
20 to 40 hours.

Introduction:
Gas lift is one of the most versatile artificial lift techniques for hydrocarbon production. This course addresses both basic and advanced gas lift concepts, from system design to field operation and optimization.

Objectives:
Provide participants with theoretical and practical knowledge of gas lift to ensure well production, reduce operating costs, and improve system efficiency.

Target Audience:
Production engineers, field operators, and artificial lift optimization personnel.

Course Program:

1. Gas lift operating principles
2. Comparison with other methods
3. Classification and selection of gas lift systems
4. Continuous gas lift system design
5. Integration with nodal analysis and simulations
6. Mechanics, installation, and operation of gas lift valves
7. Typical failures in gas lift systems
8. Diagnosis and troubleshooting of operational problems
9. Optimization of injection gas and its impact on production
10. Practical gas lift optimization cases

8. Gas Lift Intermitente

Duration:
16 to 32 hours.

Introduction:
Intermittent gas lift is a gas-based artificial lift technique that naturally follows continuous gas lift when well productivity declines. It improves efficiency and reduces costs, but requires specific knowledge that distinguishes it from other gas lift methods. This course covers both basic and advanced concepts of gas lift, from design to field operation and optimization.

Objectives:
Provide participants with theoretical and practical knowledge on Intermittent Gas Lift—when and how to apply it—to ensure profitable well production and enhance system efficiency.

Target Audience:
Production engineers, reservoir engineers, field operators, and artificial lift optimization personnel.

Course Program:

1. Introduction. Basic operating principles. IGL application window. Similarities/differences with CGL.
2. Infrastructure and equipment needed for IGL.
3. Nodal analysis for IGL. Differences with CGL and steady-state conditions.
4. Mandrel spacing.
5. IGL valves. Operating mechanics.
6. IGL system design. Typical values for key operating variables.
7. Well unloading and start-up with IGL.
8. IGL operation, supervision, and optimization. Troubleshooting.
9. IGL variations: Plunger Lift Assisted IGL; Chamber Lift; Gas Chamber Pump; Conventional Plunger.
10. Pressure and temperature logging for IGL.
11. Sonic logging for IGL. Echometer.

9. Gas Well Liquid Unloading (Deliquification)

Duration:

16 to 24 hours.

Introduction:

The removal of liquids—such as water and condensates—from gas wells is essential to maintain production when fluid buildup restricts gas flow. This course offers a comprehensive overview of the techniques, strategies, and technologies used to efficiently remove liquids from gas wells.

Objectives:

Train participants in available techniques to diagnose issues and select and apply the most appropriate deliquification strategies to optimize gas production and extend well life.

Target Audience:

Production, monitoring, completion, and workover engineers; production/process chemists; reservoir engineers; production programmers and operators.

Course Program:

1. Introduction. Common scenarios.
2. Identifying and diagnosing liquid accumulation problems.
3. Mechanical methods: compression, velocity strings, plunger lift.
4. Chemical methods for liquid removal: foaming agents.
5. Use of gas lift systems for liquid unloading.
6. Implementation of pumping systems for gas wells.
7. Performance evaluation and technique selection.
8. Integration with nodal analysis and simulation models.
9. Impact on production and cost-reduction strategies.
10. Success cases and best practices in the industry.

10. Well Productivity

Duration:

26 hours.

Introduction:

Well productivity is critical for maximizing hydrocarbon recovery. This course covers evaluation and enhancement techniques, integrating data analysis and operational strategies to improve performance.

Objectives:

Teach how to evaluate and enhance well productivity using analytical and operational tools, identifying key factors and applying practical solutions to improve efficiency.

Target Audience:

Production and reservoir engineers.

Course Program:

1. Productivity concepts
2. Flow-affecting factors
3. Well evaluation
4. Pressure analysis
5. Stimulation techniques
6. Operational optimization
7. Software utilization
8. Continuous monitoring
9. Problem diagnosis
10. Practical cases
11. Integration with artificial lift
12. Expected results

11. Production Control

Duration:
22 hours.

Introduction:
Effective production control ensures reservoir stability. This course covers strategies and tools to monitor and adjust operations in real time.

Objectives:
Train participants in production control techniques using data and technology to maintain operational efficiency and quickly respond to changing well conditions.

Target Audience:
Operational engineers and supervisors.

Course Program:
1. Control principles
2. Key performance indicators
3. Real-time monitoring
4. Operational adjustments
5. Technological tools
6. Anomaly response
7. Rate optimization
8. Control safety
9. Data analysis
10. Case studies
11. Continuous improvement
12. Operational reporting

12. Waterflooding Surveillance

Duration:
30 hours.

Introduction:
Water injection monitoring is crucial to optimize secondary recovery in reservoirs. This course explores monitoring techniques, data analysis, and operational adjustments to maximize waterflooding efficiency.

Objectives:
To teach how to design and supervise waterflooding projects by analyzing injection and production data to improve hydrocarbon recovery and manage operational risks with a practical approach.

Target Audience:
Reservoir and production engineers.

Course Program:
1. Fundamentals of waterflooding
2. Injection design
3. Pressure monitoring
4. Rate analysis
5. Pattern evaluation
6. Surveillance tools
7. Data interpretation
8. Operational adjustments
9. Risk management
10. Recovery optimization
11. Field cases
12. Environmental impact

13. Heavy and Extra-Heavy Oil Production

Duration:
32 hours.

Introduction:
Heavy oil production presents unique challenges. This course covers technologies and strategies for extracting and processing these hydrocarbons, from artificial lift to surface handling.

Objectives:
To provide knowledge on selecting and applying technologies for heavy and extra-heavy oil production, optimizing processes, and solving operational issues with a focus on efficiency and cost.

Target Audience:
Production and process engineers.

Course Program:
1. Heavy crude characteristics
2. Artificial lift methods
3. System design
4. Viscosity management
5. Field operations
6. Phase separation
7. Initial transportation
8. Well monitoring
9. Troubleshooting
10. Equipment maintenance
11. Energy optimization
12. Real-world cases

14. Electric Submersible Pumping Failure Analysis

Duration:
26 hours.

Introduction:
ESP system failures can halt production. This course focuses on diagnosing and preventing issues in ESPs through technical analysis and strategic maintenance.

Objectives:
To develop skills for identifying, analyzing, and preventing failures in ESP systems, improving reliability and reducing downtime using advanced techniques and real-world cases.

Target Audience:
ESP engineers and technicians.

Course Program:
1. Introduction to ESP (Electric Submersible Pumps)
2. Common failure types
3. Initial diagnostics
4. Root cause analysis
5. Monitoring tools
6. Failure prevention
7. Corrective maintenance
8. Design optimization
9. Performance evaluation
10. Operational safety
11. Case studies
12. Technical reporting

15. Process Control in Field Facilities

Duration:
24 hours.

Introduction:
Process control ensures stable operations in oil fields. This course teaches how to manage field installations using monitoring tools and modern technologies to optimize production.

Objectives:
To train in efficient process control in field facilities using monitoring tools and operational strategies to ensure continuity and maximize performance.

Target Audience:
Field engineers and supervisors.

Course Program:
1. Control fundamentals
2. Surface equipment
3. Real-time monitoring
4. Operational adjustments
5. Technological tools
6. Anomaly management
7. Process optimization
8. Facility safety
9. Data analysis
10. Practical cases
11. Operational reporting
12. Continuous improvement

16. IPM with the Petex Suite (Prosper, GAP, MBAL)

Duration:
36 hours.

Introduction:
The Petex suite is a leading platform for Integrated Production Modeling. This course teaches how to use Prosper, GAP, and MBAL to optimize well systems and production networks.

Objectives:
Train participants in using the Petex suite to model and optimize production systems, integrating well, network, and reservoir data with a practical and analytical approach.

Target Audience:
Production and reservoir engineers.

Course Program:
1. Introduction to IPM (Integrated Production Modeling)
2. Prosper fundamentals
3. Well modeling
4. Use of GAP
5. Production networks
6. Introduction to MBAL
7. Material balance
8. Data integration
9. Sensitivity analysis
10. System optimization
11. Practical cases
12. Results interpretation

17. Data Science for Production Engineering

Duration:
40 hours.

Introduction:
Data science is transforming production engineering. This course combines data analysis, machine learning, and modern tools to optimize operations and support informed decision-making.

Objectives:
Teach participants how to apply data science techniques to production engineering, from data analysis to prediction, improving operational efficiency and reservoir management with a practical focus.

Target Audience:
Engineers and data analysts.

Course Program:
1. Introduction to data science
2. Basic tools
3. Data analysis
4. Introductory machine learning
5. Predictive models
6. Production data
7. Optimization with AI
8. Results visualization
9. Operational integration
10. Field cases
11. Data ethics
12. Practical projects

18. Production Engineering for Shale Gas Reservoirs

Duration:
34 hours.

Introduction:
Shale gas reservoirs require specialized techniques. This course covers production, fracturing, and optimization strategies with a focus on sustainability and profitability.

Objectives:
Train participants in shale gas production engineering, covering fracture design, artificial lift, and monitoring to maximize recovery and manage technical and environmental challenges.

Target Audience:
Shale gas engineers.

Course Program:
1. Shale gas characteristics
2. Fracturing techniques
3. Well design
4. Artificial lift methods
5. Efficient operation
6. Production monitoring
7. Rate optimization
8. Environmental management
9. Data analysis
10. Common issues
11. Real-world cases
12. Recent innovations

19. Carbon Capture and Storage (CCS) in Production

Duration:
30 hours.

Introduction:
This course covers Carbon Capture and Storage (CCS) in oil and gas production, focusing on emission reduction. It combines technical solutions with field applications to support sustainability goals.

Objectives:
Train participants to implement CCS in production by capturing and securely storing CO_2, optimizing processes, and complying with environmental regulations.

Target Audience:
Production and environmental engineers.

Course Program:
1. Fundamentals of CCS (Carbon Capture and Storage)
2. Emission sources
3. Capture technologies
4. Storage principles
5. Injection design
6. Monitoring systems
7. Operational integration
8. Regulatory framework
9. Risk management
10. Cost analysis
11. Field examples
12. Sustainability impact

20. Subsea Production Systems (Offshore)

Duration:
38 hours.

Introduction:
Subsea systems are key components in offshore production. This course explores their design, installation, and operation, addressing technical challenges and deepwater solutions.

Objectives:
To train participants in the design and management of offshore subsea systems, optimizing production and addressing operational and environmental challenges with advanced technologies and real-world case studies.

Target Audience:
Offshore and subsea engineers.

Course Program:
1. Introduction to subsea systems
2. Main components
3. System design
4. Subsea installation
5. Offshore operations
6. Remote monitoring
7. Subsea maintenance
8. Flow optimization
9. Risk management
10. Advanced technologies
11. Field cases
12. Environmental impact

21. Flow Assurance in Production and Transportation Systems

Duration:

20 to 40 hours.

Introduction:

Flow assurance is essential to ensure the continuous transport of hydrocarbons from the reservoir to surface facilities, avoiding issues like hydrate formation, paraffin deposition, or pipeline blockages. This course covers techniques and strategies to prevent and mitigate these challenges in production and transportation systems, integrating analytical tools and practical solutions.

Objectives:

To train participants in the design and operation of systems that ensure efficient hydrocarbon flow, using simulation models, chemical and mechanical solutions to prevent interruptions and optimize production.

Target Audience:

Production engineers, facilities engineers, production chemists, and hydrocarbon transportation personnel.

Course Program:

1. Fundamentals of flow assurance in the oil & gas industry.
2. Common issues: hydrates, waxes, asphaltenes, and scale.
3. Multiphase flow modeling and simulation.
4. Chemical solutions: inhibitors and dispersants.
5. Design of thermal and mechanical prevention systems.
6. Integration with nodal analysis and hydrocarbon transport.
7. Flow monitoring and diagnostics.
8. Industry best practices and real-world case studies.

22. Automation and Digitalization of Oilfield Operations

Duration:

20 to 40 hours.

Introduction:

Digitalization is transforming the oil industry through technologies such as IoT (Internet of Things), real-time sensors, and advanced control systems. This course covers the principles of automation and digitalization applied to production and surface facilities, focusing on enhancing operational efficiency, safety, and data-driven decision-making.

Objectives:

To provide knowledge on implementing digital technologies for real-time monitoring, predictive maintenance, and process optimization in wells and surface facilities, preparing participants to lead digital transformation efforts in their operations.

Target Audience:

Production engineers, facilities engineers, automation technicians, and data analysts.

Course Program:

1. Introduction to digitalization in the oil & gas industry.
2. IoT technologies and sensors for real-time monitoring.
3. SCADA systems and automated process control.
4. Predictive maintenance through data analysis.
5. Integration of digital twins in operations.
6. Cybersecurity in oilfield digital systems.
7. Impact on operational efficiency and cost reduction.
8. Case studies in upstream and midstream digitalization.

Facilities

23. Surface Production Facilities

Duration:
28 hours.

Introduction:
Surface facilities are essential for hydrocarbon processing. This course introduces the design, operation, and maintenance of installations, from separation to transport, with a practical approach.

Objectives:
To teach the design and operation of surface facilities, optimizing hydrocarbon processing while ensuring safety and efficiency through modern techniques and operational analysis.

Target Audience:
Surface engineers and technicians.

Course Program:
1. Introduction to surface facilities
2. Separation equipment
3. Basic design
4. Daily operations
5. Process monitoring
6. Preventive maintenance
7. Facility safety
8. Initial transportation
9. Flow optimization
10. Data analysis
11. Practical cases
12. Applicable standards

24. Crude Oil Treatment

Duration:
26 hours.

Introduction:
Crude oil treatment ensures quality for transport and refining. This course covers dehydration, desalting, and stabilization processes, integrating theory with operational practice.

Objectives:
Train participants in crude oil treatment techniques, from water separation to stabilization, optimizing oil quality while meeting industry standards efficiently.

Target Audience:
Process engineers and operators.

Course Program:
1. Crude oil properties
2. Separation processes
3. Basic dehydration
4. Crude desalting
5. Oil stabilization
6. Involved equipment
7. Efficient operation
8. Quality monitoring
9. Troubleshooting
10. Equipment maintenance
11. Quality standards
12. Real-world cases

25. Produced Water Treatment

Duration:

24 hours.

Introduction:

The management of formation water is key in production. This course explores treatment and disposal techniques, focusing on sustainability and environmental compliance.

Objectives:

Train participants in the treatment and management of formation water, optimizing separation and disposal processes to minimize environmental impact and meet regulatory requirements.

Target Audience:

Environmental and process engineers.

Course Program:

1. Origin of formation water
2. Chemical characteristics
3. Separation methods
4. Primary treatment
5. Safe disposal
6. Equipment used
7. Environmental monitoring
8. Regulatory standards
9. Process optimization
10. Troubleshooting
11. Practical cases
12. Recent innovations

26. Pumps and Compressors

Duration:

30 hours.

Introduction:

Pumps and compressors are vital in surface facilities. This course covers their design, operation, and maintenance, with a focus on efficiency and failure resolution.

Objectives:

Teach participants how to select, operate, and maintain pumps and compressors, optimizing their performance in transport and compression processes through practical and safe techniques.

Target Audience:

Mechanical engineers and technicians.

Course Program:

1. Types of pumps
2. Types of compressors
3. Operating principles
4. System design
5. Equipment selection
6. Efficient operation
7. Failure diagnostics
8. Preventive maintenance
9. Energy optimization
10. Operational safety
11. Field cases
12. Performance evaluation

27. Hydrocarbon Measurement According to API Standards

Duration:
22 hours.

Introduction:
Accurate hydrocarbon measurement is essential for control and commercial purposes. This course teaches API standards for precise crude oil and gas measurement.

Objectives:
Train participants in the application of API standards for hydrocarbon measurement, ensuring accuracy in volume and quality through standardized techniques and modern tools.

Target Audience:
Measurement engineers and technicians.

Course Program:
1. Introduction to API standards
2. Crude oil measurement
3. Gas measurement
4. Measurement equipment
5. Basic calibration
6. System operation
7. Data recording
8. Quality control
9. Error resolution
10. Practical cases
11. Technical reporting
12. API updates

1.28. Corrosion

Duration:
28 hours.

Introduction:
Corrosion affects equipment and pipelines in the oil industry. This course explores its causes, prevention, and mitigation, focusing on protecting facilities and reducing costs.

Objectives:
Train participants to identify and control corrosion, applying prevention and maintenance strategies to extend the lifespan of equipment and pipelines.

Target Audience:
Maintenance engineers and technicians.

Course Program:
1. Corrosion fundamentals
2. Types of corrosion
3. Contributing factors
4. Prevention methods
5. Chemical inhibitors
6. Corrosion monitoring
7. Corrective maintenance
8. Resistant materials
9. Equipment inspection
10. Associated costs
11. Real-world cases
12. Applicable standards

29. Gas Processing and Conditioning

Duration:
32 hours.

Introduction:
Gas processing ensures its quality for transportation and use. This course covers conditioning techniques, from impurity removal to compression.

Objectives:
Teach how to process and condition natural gas, optimizing its quality and compliance with specifications through efficient technologies and surface processes.

Target Audience:
Gas and process engineers.

Course Program:
1. Gas composition
2. Separation processes
3. Gas dehydration
4. H_2S removal
5. Basic compression
6. Involved equipment
7. Efficient operation
8. Quality monitoring
9. Process optimization
10. Operational safety
11. Practical cases
12. Quality standards

30. Oil and Gas Transportation

Duration:
30 hours.

Introduction:
Efficient hydrocarbon transportation is essential in the value chain. This course covers pipeline design and operation, with emphasis on safety.

Objectives:
Train participants in the design and management of oil and gas transportation systems, optimizing flow and minimizing risks through modern and operational techniques.

Target Audience:
Transportation and logistics engineers.

Course Program:
1. Transportation fundamentals
2. Pipeline design
3. Pipe materials
4. Oil pipeline operation
5. Gas pipeline operation
6. Flow monitoring
7. Pipeline maintenance
8. Transportation safety
9. Leak management
10. Energy optimization
11. Field cases
12. Regulatory standards

31. Project Management para Facilidades

Duration:

34 hours.

Introduction:

Managing surface facility projects requires specific skills. This course teaches project management methodologies applied to the design, construction, and operation of surface installations.

Objectives:

Train participants in the management of facility projects from planning to execution, optimizing resources, timelines, and costs using practical approaches and international standards.

Target Audience:

Engineers and project managers.

Course Program:

1. Introduction to project management
2. Project lifecycle
3. Initial planning
4. Resource management
5. Cost control
6. Operational scheduling
7. Risk assessment
8. Project execution
9. Progress monitoring
10. Project closure
11. PM tools
12. Practical cases

32. Natural Gas Economics

Duration:

26 hours.

Introduction:

Natural gas economics directly impacts its production and commercialization. This course analyzes costs, markets, and strategies to maximize profitability in the gas industry.

Objectives:

Train participants in the economic analysis of natural gas, evaluating costs, pricing, and markets to support strategic decision-making that enhances profitability and sustainability.

Target Audience:

Engineers and economic analysts.

Course Program:

1. Introduction to natural gas
2. Production costs
3. Global markets
4. Gas pricing
5. Financial evaluation
6. Commercial strategies
7. Project evaluation
8. Regulatory impact
9. Economic sustainability
10. Case studies
11. Current trends
12. Economic reporting

33. Mercury Removal

Duration:

24 hours.

Introduction:

Mercury in hydrocarbons poses environmental and operational risks. This course covers techniques for its removal, ensuring product quality and regulatory compliance in surface processes.

Objectives:

Train participants in the identification and elimination of mercury in oil and gas, optimizing processes and ensuring environmental safety through effective technologies and practices.

Target Audience:

Environmental and process engineers.

Course Program:

1. Mercury sources
2. Operational impact
3. Removal methods
4. Available technologies
5. System design
6. Efficient operation
7. Level monitoring
8. Safe disposal
9. Environmental standards
10. Troubleshooting
11. Practical cases
12. Recent innovations

34. Renewable Energy Integration in Surface Facilities

Duration:

28 hours.

Introduction:

This course explores the integration of renewable energy in surface facilities, reducing reliance on fossil fuels. It covers solar and wind applications to improve operational efficiency and sustainability.

Objectives:

Train participants in the design and operation of hybrid systems combining renewables with conventional power in oilfield facilities to optimize energy use and reduce environmental impact.

Target Audience:

Facilities and energy engineers.

Course Program:

1. Renewable energy fundamentals
2. Solar applications
3. Wind integration
4. Hybrid system design
5. Energy storage
6. System operation
7. Efficiency gains
8. Installation process
9. Monitoring tools
10. Maintenance requirements
11. Case studies
12. Regulatory benefits

35. Produced Water Management and Reuse

Duration:

26 hours.

Introduction:

This course delves into produced water management and reuse, addressing advanced treatment and recycling methods. It focuses on sustainability and cost reduction in surface facilities.

Objectives:

Teach techniques to treat and reuse produced water, optimizing resources and minimizing environmental impact efficiently in surface operations.

Target Audience:

Environmental and process engineers.

Course Program:

1. Overview of produced water
2. Water properties
3. Advanced treatment
4. Reuse applications
5. Treatment design
6. Operational control
7. Quality monitoring
8. Disposal options
9. Cost optimization
10. Environmental impact
11. Field examples
12. Innovative technology

36. Pipeline Integrity Management

Duration:

30 hours.

Introduction:

This course focuses on pipeline integrity management, emphasizing monitoring and maintenance to prevent failures. It ensures safe and reliable hydrocarbon transportation in surface systems.

Objectives:

Train participants in evaluating and maintaining pipeline integrity using advanced techniques to extend service life and ensure safe operation.

Target Audience:

Transportation and maintenance engineers.

Course Program:

1. Integrity fundamentals
2. Risk factors
3. Inspection methods
4. Corrosion control
5. Data analysis
6. Repair strategies
7. Monitoring systems
8. Maintenance plans
9. Regulatory standards
10. Risk assessment
11. Case studies
12. Advanced tools

37. Subsea Pipeline Design (Offshore)

Duration:
36 hours.

Introduction:
Subsea pipeline design is critical in offshore operations. This course explores engineering principles for subsea pipelines, addressing deepwater challenges and optimization.

Objectives:
Train participants in the design of subsea pipelines, from material selection to installation, optimizing flow and resistance in offshore environments with a technical focus.

Target Audience:
Subsea and offshore engineers.

Course Program:
1. Introduction to subsea systems
2. Pipeline design
3. Material selection
4. Strength calculations
5. Subsea installation
6. Flow monitoring
7. Subsea maintenance
8. Risk management
9. Design optimization
10. Offshore standards
11. Field cases
12. Advanced technologies

38. Deep Water Installation Technology (Offshore)

Duration:
38 hours.

Introduction:
Deepwater installations require advanced technology. This course covers equipment and methods for offshore operations, focusing on efficiency and safety.

Objectives:
Teach technologies for deepwater installations, from design to operation, optimizing offshore projects and managing technical challenges with innovative solutions.

Target Audience:
Offshore engineers and technicians.

Course Program:
1. Deepwater fundamentals
2. Subsea equipment
3. Facility design
4. Installation methods

39. Offshore Installation Manager (Offshore)

Duration:

40 hours.

Introduction:

Managing offshore installations demands leadership and technical knowledge. This course trains managers in supervising subsea projects, from planning to execution, integrating safety and operational efficiency.

Objectives:

Train managers in leading offshore installations by combining strategic planning, risk management, and leadership to ensure successful projects in complex marine environments.

Target Audience:

Offshore managers and engineers.

Course Program:

1. Role of the offshore manager
2. Project planning
3. Resource management
4. Offshore safety
5. Operational supervision
6. Cost control
7. Critical scheduling
8. Risk assessment
9. Facility execution
10. Progress monitoring
11. Project closure
12. Real-world cases

40. Multiphase Flow

Duration:

30 hours.

Introduction:

Multiphase flow involves the simultaneous transport of gas, liquids, and solids in pipelines. This course explores its dynamics, modeling, and management in surface and subsea facilities.

Objectives:

Teach how to analyze and manage multiphase flow, optimizing the design and operation of transport systems using predictive tools and practical solutions.

Target Audience:

Transportation and design engineers.

Course Program:

1. Introduction to multiphase flow
2. Flow regimes
3. Phase properties
4. Flow models
5. Simulation software
6. Pipeline design
7. Pressure loss
8. Solids management
9. Operational monitoring
10. System optimization
11. Field cases
12. Current trends

UNCONVENTIONAL SHALE AND TIGHT RESERVOIRS

At Bauerberg Klein, we offer specialized training and consulting in the characterization, modeling, and development of shale and tight reservoirs. Our programs are designed to address the technical and economic challenges of these complex assets, integrating geosciences, engineering, and data analysis to maximize productivity and operational efficiency.

bauerberg-klein.com

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Instructors

Alain Gringarten - Larry Lake - Byron Haynes - Tarek Ahmed - Erdal Ozkan - Wim Swinkels - Willem Schulte - Mojdeh Delshad - Tom Blasingame - Giovanni Da Prat - Alvaro Bugari - Alexei Huerta - Juan Rosbaco - James Sheng - Nicolas Kotlar - Elio Borges - Gonzalo Rojas - Lenis Labarca - Luis Gonzalez - Jerry Jensen - Robert Fontenberry - Yalda Barzin - Mike Carlson - Marcos Thibaud - Martín Alvarado - Marcelo Crotti - Luis González - Néstor Sánchez - Zeudy Galbán - Carlos Ferraris - Evelyn Quintero - Víctor Alexei Huerta - Mahsood Abbasadeh.

1. Introduction to Unconventional Reservoirs

Duration:
20 hours.

Introduction:
This course provides a theoretical foundation on Shale and Tight Gas reservoirs, covering their definition, energy relevance, and geological principles. It is designed for professionals seeking to understand the essential aspects of unconventional hydrocarbons and their impact on the modern energy industry.

Objectives:
To facilitate understanding of the fundamental concepts of Shale and Tight Gas, their strategic importance, and technical distinctions. To establish a solid basis for analyzing and developing unconventional reservoir projects.

Target Audience:
Engineers, geologists, and professionals new to unconventional resources.

Course Program:
1. Unconventional reservoir concepts
2. Technical differentiation
3. Global energy context
4. Historical evolution
5. Geological fundamentals
6. Economic relevance
7. Technical challenges
8. Introductory technologies
9. Representative fields
10. Technical vocabulary

2. Geology and Characterization of Shale and Tight Gas Reservoirs

Duration:
30 hours.

Introduction:
This course explores in detail the geology and petrophysical characterization of Shale and Tight Gas reservoirs. Participants will gain the skills to analyze physical and chemical properties critical for accurate resource evaluation.

Objectives:
To develop competencies in geological and petrophysical characterization of Shale and Tight Gas. To provide advanced analytical tools for data interpretation and project planning optimization.

Target Audience:
Geologists, reservoir engineers, and specialized petrophysicists.

Course Program:
1. Geological origin
2. Lithological structures
3. Porosity in shales
4. Permeability in tight sands
5. Hydrocarbon saturation
6. Geochemical analysis
7. Laboratory techniques
8. 3D geological models
9. Seismic interpretation
10. Thermal properties
11. Spatial variability
12. Applied studies

3. Exploration and Resource Assessment in Shale and Tight Gas Reservoirs

Duration:
35 hours.

Introduction:
This course addresses advanced methodologies for exploration and resource evaluation in Shale and Tight Gas. Participants will learn to integrate seismic data, well logs, and reserve estimates to identify prospective zones and assess economic viability.

Objectives:
To provide skills in exploration and assessment techniques for Shale and Tight Gas. To train in the interpretation of geophysical and petrophysical data for technically and normatively accurate resource estimation.

Target Audience:
Geophysicists, engineers, and energy resource analysts.

Course Program:
1. Exploration methodologies
2. Seismic data acquisition
3. Seismic analysis
4. Petrophysical logging
5. Prospect mapping
6. Core analysis
7. Volumetric estimation
8. Probabilistic approaches
9. International standards
10. Digital tools
11. Case studies
12. Risk management

4. Drilling and Well Construction in Shale and Tight Gas Reservoirs

Duration:
40 hours.

Introduction:
This course offers advanced training in drilling and well construction techniques for Shale and Tight Gas, with a strong emphasis on horizontal drilling. Participants will develop skills to design and execute safe and efficient operations in unconventional settings.

Objectives:
To train professionals in the design and execution of drilling operations for Shale and Tight Gas. To provide the technical knowledge necessary to overcome operational challenges and ensure well integrity.

Target Audience:
Drilling engineers and specialized field personnel.

Course Program:
1. Horizontal drilling
2. Trajectory planning
3. Drilling technology
4. Drilling fluids
5. Advanced cementing
6. Pressure management
7. Response to heterogeneity
8. Operational efficiency
9. Safety protocols
10. Applied studies
11. Structural maintenance
12. Technological advancements

5. Geomechanics in Shale and Tight Gas Reservoirs

Duration:

35 hours.

Introduction:

This course covers the principles of geomechanics applied to Shale and Tight Gas reservoirs, essential for understanding the mechanical behavior of rocks during drilling and hydraulic fracturing. It prepares participants to optimize operations through stress and stability analysis.

Objectives:

To develop geomechanical skills for Shale and Tight Gas applications. To train in stress evaluation, wellbore stability, and fracture design to improve efficiency and safety in unconventional reservoirs.

Target Audience:

Geologists, reservoir engineers, and geomechanics specialists.

Course Program:

1. Geomechanics fundamentals
2. Mechanical properties
3. Stress state
4. Geomechanical models
5. Wellbore stability
6. Fracturability
7. Failure analysis
8. Laboratory testing
9. Geomechanical simulation
10. Integration with fracturing
11. Real-time monitoring
12. Practical cases

6. Hydraulic Stimulation in Shale and Tight Gas Reservoirs

Duration:

40 hours.

Introduction:

This course delves into advanced principles and techniques of hydraulic stimulation for Shale and Tight Gas, essential for maximizing productivity in low-permeability reservoirs. Participants will gain knowledge to design efficient and sustainable treatments in unconventional environments.

Objectives:

To provide technical training in the design and execution of hydraulic fracturing in Shale and Tight Gas. To develop skills for optimizing fluids, proppants, and fracture geometry to improve operational efficiency.

Target Audience:

Completion engineers and reservoir specialists.

Course Program:

1. Fracture mechanics
2. Treatment design
3. Specialized fluids
4. Proppants
5. Advanced simulation
6. Fracture geometry
7. Microseismic monitoring
8. Operational optimization
9. Pressure management
10. Environmental considerations
11. Applied studies
12. Technological advancements

7. Reservoir and Production Engineering in Shale and Tight Gas Reservoirs

Duration:
35 hours.

Introduction:
This course examines reservoir engineering and production strategies in Shale and Tight Gas, integrating modeling and performance analysis. It prepares participants to optimize hydrocarbon recovery through advanced techniques in unconventional reservoirs.

Objectives:
Develop skills in modeling and simulation of Shale and Tight Gas. Train participants in production analysis and strategy design to maximize recovery in low-permeability reservoirs.

Target Audience:
Reservoir and production engineers specialized in unconventional resources.

Course Program:
1. Dynamic models
2. Numerical simulation
3. Multiphase flow
4. Decline curve analysis
5. Recovery factors
6. Well optimization
7. Pressure testing
8. Well interference
9. Initial production
10. Long-term forecasting
11. Integrated studies
12. Technical trends

8. Operational and Technological Aspects of Shale and Tight Gas Reservoirs

Duration:
30 hours.

Introduction:
This course analyzes the operations and technologies used in the development of Shale and Tight Gas, highlighting equipment integration and digitalization. Participants will learn to efficiently and safely manage field processes in unconventional environments.

Objectives:
To train professionals in operational and technological management of Shale and Tight Gas. To provide knowledge to implement digital solutions and advanced equipment, optimizing productivity in unconventional reservoirs.

Target Audience:
Operations engineers and technology specialists.

Course Program:
1. Surface infrastructure
2. Automated systems
3. Specialized equipment
4. Operational digitalization
5. Remote supervision
6. Logistics coordination
7. Technical maintenance
8. Energy efficiency
9. Operational safety
10. Applied innovations
11. Field studies
12. Technological outlook

9. Safety, Environment, and Sustainability in Shale and Tight Gas Reservoirs

Duration:
25 hours.

Introduction:
This course evaluates the safety, environmental, and sustainability aspects involved in the development of Shale and Tight Gas reservoirs. Participants will gain tools to comply with regulations and manage impacts, promoting responsible practices in the unconventional industry.

Objectives:
To train professionals in environmental and safety management for Shale and Tight Gas. To teach sustainable strategies and regulatory compliance to minimize impacts and ensure safe operations in unconventional reservoirs.

Target Audience:
Environmental safety and sustainability specialists.

Course Program:
1. Environmental impacts
2. Water management
3. Waste treatment
4. Emission control
5. Local regulations
6. Global standards
7. Operational safety
8. Environmental monitoring
9. Site rehabilitation
10. Applied studies
11. Sustainable approaches

10. Economics and Project Management in Shale and Tight Gas Reservoirs

Duration:
30 hours.

Introduction:
This course examines economic and project management aspects of Shale and Tight Gas development, covering financial analysis and strategic planning. It prepares participants to assess feasibility and lead profitable initiatives in the unconventional energy sector.

Objectives:
To provide training in economic analysis and project management for Shale and Tight Gas. To develop skills for evaluating costs, risks, and financing to optimize the profitability of unconventional projects.

Target Audience:
Project managers and energy economics analysts.

Course Program:
1. Cost structure
2. Financial indicators
3. Economic risks
4. Market dynamics
5. Financing models
6. Strategic planning
7. Cost reduction
8. Sensitivity analysis
9. Fiscal aspects
10. Applied studies
11. Market trends

11. Case Studies and Field Work in Shale and Tight Gas Reservoirs

Duration:
40 hours.

Introduction:
This course integrates theoretical and practical knowledge through case studies and field simulations in Shale and Tight Gas. Participants will apply competencies to real-world projects, facing technical and operational challenges specific to unconventional reservoirs.

Objectives:
To develop practical skills in Shale and Tight Gas management. To train participants in solving real problems through case analysis and hands-on work in unconventional environments.

Target Audience:
Multidisciplinary professionals in unconventional hydrocarbons.

Course Program:
1. Practical methodology
2. Vaca Muerta
3. Marcellus Shale
4. Tight Gas in Texas
5. Drilling simulation
6. Practical stimulation
7. Production analysis
8. Operational management
9. Economic evaluation
10. Capstone project
11. Technical review

12. Trends and Recent Advances in Shale and Tight Gas Reservoirs

Duration:
20 hours.

Introduction:
This course presents current trends and technological advances in the development of Shale and Tight Gas, focusing on innovation and sustainability. Participants will explore the future of the unconventional industry through transformative solutions.

Objectives:
To update knowledge on innovations in Shale and Tight Gas. To provide tools to implement advanced technologies and sustainable strategies, leading the future of unconventional reservoir development.

Target Audience:
Strategic and innovation-driven energy professionals.

Course Program:
1. Advances in hydraulic fracturing
2. Advanced digitalization
3. Operational automation
4. Energy sustainability
5. Renewable integration
6. Water management
7. Advanced materials
8. Economic impact
9. Pioneering projects
10. Strategic vision

PROCESS SAFETY AND OPERATIONAL SAFETY

Our Process and Operational Safety courses are designed to strengthen the ability to anticipate, identify, and manage risks in complex industrial environments. We cover tools such as HAZOP, root cause analysis, protection barriers, and integrity management, with a practical approach aligned with international standards. We train professionals committed to operational efficiency and the protection of people, assets, and the environment.

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1. Fundamentals of Process Safety

Duration:

8 to 16 hours.

Introduction:

This course provides essential concepts on industrial process safety, focusing on the prevention of major accidents and risk management in high-hazard environments.

Objectives:

To offer a comprehensive understanding of process safety by identifying hazards, minimizing risks, and applying international standards to ensure operational integrity.

Target Audience:

Engineers, operations supervisors, maintenance personnel, and industrial safety professionals.

Course Program:

1. Introduction to Process Safety
2. Differences between Occupational Safety and Process Safety
3. Major industrial accidents and their causes
4. Regulatory framework (OSHA 1910.119, API 754, NFPA, ANSI)
5. Process risk assessment and management
6. Hazard and Operability Analysis (HAZOP)
7. Concepts of inherently safer process design
8. Mechanical integrity and equipment reliability
9. Management of Change (MOC) in industrial facilities
10. Safety during shutdowns and plant maintenance
11. Fire and explosion protection
12. Incident analysis and lessons learned
13. Implementation of a safety culture
14. Monitoring of key performance indicators (KPIs)
15. Continuous improvement strategies in process safety

2. Risk Analysis in Industrial Processes (PHA, HAZOP, HAZID, LOPA)

Duration:

8 to 16 hours.

Introduction:

This course covers structured methodologies for identifying, assessing, and controlling risks in industrial processes, including widely adopted techniques in the industry.

Objectives:

To train participants in tools such as PHA, HAZOP, HAZID, and LOPA for evaluating risk scenarios and proposing effective mitigation measures.

Target Audience:

Process, safety and operations engineers, plant managers, and safety auditors.

Course Program:

1. Introduction to risk management in processes
2. Main risk analysis methodologies
3. Preliminary Hazard Analysis (PHA)
4. HAZOP methodology: principles and application
5. Practical HAZOP analysis workshop
6. HAZID analysis: early hazard identification
7. LOPA methodology: layers of protection
8. Risk assessment and mitigation measures
9. Risk matrix application
10. Applicable standards and regulations (IEC 61882, OSHA, API 752)
11. Documentation and reporting of risk studies
12. Consequence analysis and event modeling
13. Integration of risk analysis in operational management
14. Case studies of industrial implementation
15. Best practices for continuous safety improvement

3. Management of Change in Industrial Processes (MOC)

Duration:

8 to 16 hours.

Introduction:

Management of Change (MOC) is a key element in process safety. This course teaches how to implement effective controls to prevent incidents resulting from changes in facilities, procedures, and personnel.

Objectives:

To provide tools for safely evaluating and managing change, ensuring regulatory compliance and minimizing risks in industrial processes.

Target Audience:

Supervisors, plant managers, process engineers, and safety personnel.

Course Program:

1. Introduction to Management of Change (MOC)
2. Importance of MOC in process safety
3. Regulations and standards on change management (OSHA 1910.119)
4. Types of changes requiring MOC control
5. Procedures to assess change impact
6. Risk analysis during the change process
7. Roles and responsibilities in MOC
8. Documentation and approval of changes
9. Control of design and operational changes
10. Changes in operating and maintenance procedures
11. Evaluation of changes in organizational structure
12. Auditing and monitoring MOC effectiveness
13. Case studies on change management failures
14. Best practices for MOC implementation
15. Practical workshop on real-world MOC scenarios

4. Consequence Analysis and Risk Scenario Modeling

Duration:

8 to 16 hours.

Introduction:

This course provides tools to model risk scenarios in industrial processes, evaluating the consequences of hazardous events such as explosions, fires, and toxic releases.

Objectives:

To develop the ability to assess the impact of hazardous events through modeling tools, supporting risk management decision-making.

Target Audience:

Process, safety, and environmental engineers, and risk management specialists.

Course Program:

1. Introduction to consequence analysis in process safety
2. Main risk modeling methodologies
3. Modeling of toxic and flammable gas dispersion
4. Analysis of industrial fires and their effects
5. Explosion modeling in industrial processes
6. Evaluation of spills and leak impacts
7. Use of risk modeling software (ALOHA, PHAST)
8. Assessment of affected areas and safety distances
9. Comparison of modeling methodologies
10. Integration of risk modeling into operations
11. Estimation of damage to people, infrastructure, and environment
12. Historical incident analysis and lessons learned
13. Human and organizational factors in consequence management
14. Applicable international standards and regulations
15. Practical exercise in modeling risk scenarios

5. Fire and Explosion Prevention and Control in Industrial Plants

Duration:
8 to 16 hours.

Introduction:
Fires and explosions represent critical threats in industry. This course covers prevention, detection, and control strategies to minimize risks and respond effectively to such events.

Objectives:
To train participants in the identification of fire and explosion hazards, applying regulations and best practices for their control and mitigation.

Target Audience:
Process engineers, safety supervisors, maintenance personnel, and emergency response teams.

Course Program:

1. Fire fundamentals: theory and propagation
2. Types of industrial fires and explosions
3. Fire risk assessment in industrial plants
4. Hazardous area classification (ATEX, NFPA 70)
5. Fire detection and alarm systems
6. Fire and explosion prevention methods
7. Fire suppression systems (water, foam, CO_2)
8. Fire safety standards and regulations (NFPA, API)
9. Safe handling and storage of flammable materials
10. Ignition source control in hazardous areas
11. Fire and explosion emergency response procedures
12. Personal protective equipment for emergencies
13. Evacuation plans and emergency team training
14. Fire control simulations and drills
15. Real case studies of fires and explosions in industry

6. Prevention and Control of Explosive Atmospheres (ATEX, NFPA 70, IEC 60079)

Duration:
8 to 16 hours.

Introduction:
Explosive atmospheres are a latent hazard in many industries. This course provides tools to prevent and control these risks through international standards and mitigation strategies.

Objectives:
To teach how to identify, classify, and control explosive risk zones in accordance with international standards, ensuring safety in industrial operations.

Target Audience:
Electrical engineers, maintenance personnel, safety supervisors, and industrial facility designers.

Course Program:

1. Introduction to explosive atmospheres
2. ATEX zone classification (0, 1, 2, 20, 21, 22)
3. Ignition sources in industrial environments
4. ATEX, IEC 60079, and NFPA 70 standards
5. Safe design of Ex electrical equipment
6. Protection methods (Ex d, e, i)
7. Risk assessment and mitigation
8. Inspection and maintenance in ATEX zones
9. Ventilation and control of flammable gases
10. Safe handling of flammable substances
11. Protection against static electricity and lightning
12. Emergency plans for explosion scenarios
13. Audits and regulatory compliance
14. Real-world cases and key learnings
15. Practical ATEX classification workshop

7. Lightning Protection and Grounding Systems (NFPA 780, IEC 62305, IEEE Std 80)

Duration:

8 to 16 hours.

Introduction:

Lightning strikes and inadequate grounding can lead to catastrophic risks in industrial facilities. This course covers principles, regulations, and best practices for grounding and lightning protection systems.

Objectives:

To train participants in the design, inspection, and maintenance of grounding and lightning protection systems, minimizing electrical risks and infrastructure damage.

Target Audience:

Electrical engineers, maintenance technicians, safety specialists, and industrial plant supervisors.

Course Program:

1. Introduction to lightning and associated risks
2. Impact of lightning on industrial facilities
3. International standards for lightning protection (NFPA 780, IEC 62305)
4. Components of a Lightning Protection System (LPS)
5. Risk assessment and facility categorization
6. Protection methods: lightning rods, grids, Faraday cages
7. Grounding system design and installation (IEEE Std 80)
8. Ground resistance measurement and use of ground testers
9. Protection against transient and steady overvoltages
10. Inspection and maintenance of grounding systems
11. Protection of electronic and telecommunications equipment
12. Safety in explosive atmospheres and lightning
13. Case studies: failures in grounding systems
14. Testing and certification of lightning protection systems
15. Practical workshop on grounding installation and measurement

8. Safety in Exposure to Hydrogen Sulfide (H_2S) and Toxic Gases

Duration:
8 to 16 hours.

Introduction:
Hydrogen sulfide (H_2S) is highly toxic and lethal even at low concentrations. This course provides essential knowledge for the prevention, detection, and response to exposure to H_2S and other hazardous gases.

Objectives:
To teach how to identify risks associated with H_2S and other toxic gases, apply control measures, and use proper personal protective equipment.

Target Audience:
Workers in the oil, chemical, and mining industries, emergency response teams, and industrial safety personnel.

Course Program:

1. Properties and hazards of hydrogen sulfide (H_2S)
2. Health effects and toxicity levels
3. Exposure limits according to OSHA, ACGIH, and NIOSH
4. Detection and monitoring of H_2S and toxic gases
5. Respiratory protective equipment (SCBA, filters)
6. Evacuation procedures in case of H_2S leaks
7. Safety in areas with potential H_2S presence
8. Ventilation and mitigation of toxic gases
9. Emergency plans and response to exposure
10. Applicable H_2S regulations and standards
11. Safety in confined spaces with H_2S
12. Neutralization methods in industrial processes
13. Use of fixed and portable gas detectors
14. Evacuation and rescue drills
15. Practical workshop on detection and respiratory PPE use

9. Functional Safety and Safety Integrity Level (SIL) in Industrial Processes

Duration:
8 to 16 hours.

Introduction:
Safety Integrity Level (SIL) is a key factor in the implementation of Safety Instrumented Systems (SIS). This course covers the evaluation, design, and certification of functional safety systems.

Objectives:
To train participants in the assessment and application of SIL standards, ensuring that control and protection systems meet industrial safety requirements.

Target Audience:
Control, instrumentation, process, safety, and industrial maintenance engineers.

Course Program:

1. Introduction to functional safety and SIL
2. IEC 61508 and IEC 61511 standards for process safety
3. Safety Instrumented Systems (SIS)
4. Risk assessment and determination of required SIL
5. Risk analysis methods (LOPA, HAZOP, HAZID)
6. Control system architectures with SIL
7. Calculation of Probability of Failure on Demand (PFD)
8. Testing and maintenance of SIL-rated systems
9. Human factors in SIL implementation
10. Validation and certification of SIS
11. Mechanical integrity and reliability of critical equipment
12. Performance evaluation of safety systems
13. Best practices in SIL instrumentation selection
14. Real case studies of SIL system failures and lessons learned
15. Practical workshop on SIL assessment in control systems

10. Safety in the Handling and Storage of Industrial Gases

Duration:
8 to 16 hours.

Introduction:
The use of industrial gases requires strict safety controls. This course addresses best practices for the safe handling and storage of these substances.

Objectives:
To teach proper techniques for handling industrial gases, leak prevention, and emergency response to minimize explosion and toxicity risks.

Target Audience:
Plant operators, maintenance technicians, safety personnel, and industrial logistics staff.

Course Program:

1. Types and characteristics of industrial gases
2. Hazard identification for each gas type
3. Safety regulations for gas handling
4. Safe transportation and storage of gas cylinders
5. Cylinder connection and disconnection procedures
6. Leak detection and hazardous gas monitoring
7. Ventilation and risk mitigation in storage areas
8. Personal protective equipment (PPE) and safety measures
9. Emergency protocols for leaks and spills
10. Fire suppression and control in storage areas
11. Chemical compatibility and gas segregation
12. Safety in the use of cryogenic and pressurized gases
13. Incident analysis from improper gas handling
14. Audits and regulatory compliance in industrial facilities
15. Practical workshop on gas detection and safe handling

11. Safety in the Mining Industry: Surface and Underground Operations

Duration:
8 to 16 hours.

Introduction:
Mining operations pose unique risks requiring specialized safety measures. This course covers accident prevention in surface and underground mining environments.

Objectives:
To provide knowledge for identifying and mitigating mining-related risks, including explosives handling, hazardous atmospheres, and collapse protection.

Target Audience:
Mining engineers, safety supervisors, machinery operators, and maintenance personnel.

Course Program:

1. Introduction to mining safety
2. Risks in surface and underground mining operations
3. Personal protective equipment (PPE) in mining
4. Safety in handling and use of explosives
5. Collapse prevention and slope stability
6. Fire prevention in mines
7. Ventilation and control of hazardous atmospheres
8. Safe handling of heavy equipment and mining machinery
9. Evacuation and rescue procedures in mines
10. Fuel and lubricant storage safety
11. Mining safety regulations and standards
12. Waste management and environmental protection in mining
13. Vibration monitoring and geotechnical risk assessment
14. Case studies of mining accidents and lessons learned
15. Practical workshop on mining safety measures

12. Safety in Water and Industrial Waste Treatment Plants

Duration:
8 to 16 hours.

Introduction:
Water and industrial waste treatment plants handle hazardous substances requiring strict safety protocols. This course provides tools for the safe management of these processes.

Objectives:
To train participants in the safe handling of chemicals, incident prevention, and regulatory compliance in water and waste treatment facilities.

Target Audience:
Environmental engineers, treatment plant operators, safety supervisors, and maintenance technicians.

Course Program:

1. Introduction to safety in treatment plants
2. Risks in water treatment processes
3. Safe handling of chemical products
4. Spill and contamination prevention
5. Safety in the use of chlorine, ammonia, and disinfectants
6. Storage and segregation of chemical substances
7. PPE for plant operators
8. Toxic gas control in treatment processes
9. Safety in confined spaces
10. Environmental and safety regulations
11. Risks in handling sludge and solid waste
12. Safe operation of pumps, valves, and pipelines
13. Audits and safety condition monitoring
14. Real-world cases and preventive measures
15. Practical workshop on safety protocols

13. Safe Handling of Equipment and Operations in Explosive Atmospheres

Duration:
8 to 16 hours.

Introduction:
Working in explosive atmospheres requires certified equipment and specific safety procedures. This course covers proper handling and operation in these environments.

Objectives:
To train participants in the safe handling of electrical and mechanical equipment in ATEX zones, minimizing ignition and explosion risks.

Target Audience:
Electrical engineers, maintenance technicians, safety supervisors, and operators in explosion-risk zones.

Course Program:

1. Introduction to explosive atmospheres
2. Classification of ATEX zones (0, 1, 2, 20, 21, 22)
3. Hazards of flammable gases and combustible dusts
4. Equipment protection methods in explosive atmospheres
5. ATEX, IEC 60079, and NFPA 70 (NEC) standards
6. Installation and maintenance of ATEX electrical equipment
7. Protection against static and electric discharges
8. Work procedures in explosive environments
9. Safe handling of flammable substances
10. Ventilation and dilution of flammable gases
11. Personal protective equipment (PPE) in ATEX zones
12. Inspection and safety audits in hazardous areas
13. Emergency management in explosive atmospheres
14. Real case studies and lessons learned
15. Practical workshop on safe operation in explosive atmospheres

14. Lightning Protection in Industrial and Energy Facilities

Duration:
8 to 16 hours.

Introduction:
Lightning strikes can cause electrical failures and fire hazards in industrial and energy facilities. This course teaches how to design and implement effective lightning protection systems.

Objectives:
To train participants in identifying and mitigating the effects of lightning using applicable protection standards and methods.

Target Audience:
Electrical engineers, maintenance technicians, industrial safety personnel, and workers in high-risk facilities.

Course Program:
1. Introduction to lightning and associated risks
2. Impact of lightning on industrial infrastructures
3. Design of lightning protection systems (LPS)
4. NFPA 780, IEC 62305, and IEEE Std 80 standards
5. Protection methods: lightning rods, meshes, and Faraday cages
6. Risk assessment and facility categorization
7. Protection of sensitive electrical and electronic equipment
8. Mitigation of transient overvoltage
9. Grounding system design and installation
10. Ground resistance measurement and monitoring techniques
11. Safety in explosive atmospheres and lightning events
12. Case studies of lightning protection failures
13. Inspection and maintenance of protection systems
14. Testing and certification of grounding and lightning systems
15. Practical workshop on protection system design and evaluation

15. Major Incident Management and Hydrocarbon Spill Response

Duration:
8 to 16 hours.

Introduction:
Hydrocarbon and chemical spills can cause serious environmental and economic damage. This course trains participants in effective response strategies to such incidents.

Objectives:
To provide knowledge on the prevention, control, and response to hydrocarbon spills, applying environmental regulations and impact mitigation strategies.

Target Audience:
Personnel in safety, environment, operations, emergency response teams, and supervisors in the oil and chemical industries.

Course Program:
1. Introduction to major incident management
2. Types of spills and their environmental impacts
3. Risk assessment for hydrocarbon spills
4. Emergency response plans for environmental incidents
5. Containment and recovery techniques
6. Equipment and materials for spill response
7. International environmental regulations (OSHA, EPA, MARPOL)
8. Soil and water cleanup and recovery methods
9. Hazardous waste management after a spill
10. Coordination with regulatory authorities and agencies
11. Human and organizational factors in crisis management
12. Case studies: historical spills and lessons learned
13. Contingency plan audits and inspections
14. Spill response scenario simulations
15. Practical workshop on barrier deployment and containment

16. Fire Safety and Use of Extinguishing Systems

Duration:
8 to 16 hours.

Introduction:
Fires can cause significant human and material losses. This course covers prevention, detection, and extinguishing strategies for fires in industrial facilities.

Objectives:
To provide knowledge on identifying fire hazards, extinguishing systems, and emergency response plans.

Target Audience:
Safety personnel, emergency brigades, plant operators, and maintenance supervisors.

Course Program:
1. Introduction to fire safety
2. Fire theory and propagation in industrial settings
3. Types of fires and NFPA classification
4. Fire detection and alarm systems
5. Fire extinguishing methods (water, foam, CO_2, dry chemical)
6. Use of extinguishers and fixed suppression systems
7. Safe handling of flammable materials
8. Evacuation and emergency fire response procedures
9. PPE for fire brigades
10. Fire prevention in ATEX zones and storage areas
11. Fire risk assessment in industrial plants
12. Fire simulations and contingency planning
13. Inspection and maintenance of fire protection systems
14. Case studies of industrial fires and lessons learned
15. Practical workshop on extinguishing fires with different agents

17. Development of Process Safety Indicators

Duration:
8 to 16 hours.

Introduction:
Monitoring process safety requires key performance indicators (KPIs). This course covers the selection, measurement, and interpretation of metrics to enhance industrial safety.

Objectives:
To train participants in the identification and application of leading and lagging indicators to support decision-making in process safety.

Target Audience:
Safety managers, process engineers, plant supervisors, and audit professionals.

Course Program:
1. Introduction to KPIs in process safety
2. Differences between leading and lagging indicators
3. Importance of KPIs in decision-making
4. Methodology for selecting relevant KPIs
5. Data measurement and analysis in industrial safety
6. International standards for safety KPIs (API 754, OSHA)
7. Incident analysis and safety trends
8. Integration of KPIs in safety management systems
9. Auditing and monitoring indicators at the plant level
10. Digital tools for KPI management
11. Best practices for KPI communication
12. Safety benchmarking in the industry
13. Human factors in KPI implementation
14. Case studies on indicator management
15. Practical workshop on KPI design for process safety

18. Implementation of Behavior-Based Safety Programs (BBS)

Duration:
8 to 16 hours.

Introduction:
Behavior-Based Safety (BBS) is a key strategy to reduce incidents. This course teaches how to develop effective programs that promote a strong safety culture.

Objectives:
To train participants in identifying and modifying risky behaviors through the implementation of BBS programs in the workplace.

Target Audience:
Safety managers, plant supervisors, safety auditors, and team leaders.

Course Program:
1. Introduction to behavior-based safety
2. Principles of psychology applied to safety
3. Identification of at-risk behaviors in the workplace
4. Observation methodologies and positive feedback
5. Development of BBS safety programs
6. Implementation of behavioral intervention strategies
7. Organizational factors influencing safety
8. Staff training and awareness in BBS
9. Measuring the impact of safety programs
10. Use of technology in behavior-based safety
11. Integration of BBS into safety management systems
12. Evaluation of BBS program effectiveness
13. Best practices for BBS implementation
14. Case studies of successful BBS programs
15. Practical workshop on observation and correction of unsafe behaviors

19. Safety Audits and Inspections in Industrial Facilities

Duration:
8 to 16 hours.

Introduction:
Safety audits and inspections are essential tools for accident prevention. This course provides methodologies for evaluating compliance with safety regulations and standards.

Objectives:
To train participants in planning, executing, and analyzing safety audits and inspections, ensuring regulatory compliance and continuous improvement.

Target Audience:
Safety auditors, plant supervisors, process engineers, and compliance officers.

Course Program:
1. Introduction to safety audits and inspections
2. Differences between internal and external audits
3. Applicable regulations and standards (OSHA, API, NFPA)
4. Planning and preparation for safety audits
5. Checklists and inspection tools
6. Hazard identification and risk assessment
7. Findings analysis and reporting non-conformities
8. Implementation of corrective action plans
9. Best practices for conducting audits
10. Use of technology in audits and inspections
11. Human factors in safety evaluations
12. Follow-up and verification of implemented improvements
13. Case studies of successful audits
14. Safety audit simulations in industrial environments
15. Practical workshop on inspections in industrial settings

20. Leadership Development in Safety: Culture and Communication

Duration:
8 to 16 hours.

Introduction:
Industrial safety requires leadership and effective communication. This course develops skills to foster a safety culture within organizations.

Objectives:
To train participants in safety leadership, strengthening their ability to influence teams and promote a risk prevention culture.

Target Audience:
Safety managers, supervisors, operations leaders, and team leaders.

Course Program:
1. Introduction to safety leadership
2. Importance of safety culture in organizations
3. Characteristics of a safety leader
4. Effective communication in safety management
5. Methods to foster team commitment
6. Strategy development for improving safety culture
7. How to influence safe behavior among workers
8. Conflict resolution in safety management
9. Use of storytelling in industrial safety
10. Coaching and mentoring for safety leadership
11. Measuring the impact of safety leadership
12. Implementation of recognition and motivation programs
13. Evaluation of organizational safety climate
14. Case studies of successful safety leadership
15. Practical workshop on effective communication and safety leadership

21. Continuous Improvement Strategies in Industrial Safety

Duration:
8 to 16 hours.

Introduction:
Continuous improvement is essential in safety management. This course provides tools to identify optimization opportunities and maintain high standards in industrial safe

Objectives:
To train participants in the application of continuous improvement methodologies in safety, promoting a proactive approach to accident prevention and regulatory compliance.

Target Audience:
Safety managers, plant supervisors, process engineers, and safety auditors.

Course Program:
1. Fundamentals of continuous improvement in safety
2. Identifying improvement opportunities
3. Tools such as PDCA, Kaizen, and Lean Safety
4. Integrating safety into operational management
5. Root cause analysis to reduce risks
6. Use of KPIs in continuous improvement processes
7. Audits and reviews for optimization
8. Training and staff awareness
9. Employee engagement in improvement initiatives
10. Innovation and technology in industrial safety
11. Change management in safety initiatives
12. Successful cases of continuous improvement
13. Human factor impact on improvement
14. Evaluation of implemented results
15. Practical workshop to develop an improvement plan

22. ATEX Regulations and Hazardous Area Classification in Industry

Duration:
8 to 16 hours.

Introduction:
Proper hazardous area classification is essential to prevent explosions in industrial environments. This course covers ATEX regulations and their application across industries.

Objectives:
To train participants in identifying, classifying, and controlling explosive risk areas, ensuring compliance with ATEX and IEC 60079 standards.

Target Audience:
Electrical engineers, maintenance technicians, safety personnel, and operators working in explosive risk environments.

Course Program:
1. Introduction to ATEX regulations
2. Differences between ATEX 137 and ATEX 95
3. Classification of hazardous zones (0, 1, 2, 20, 21, 22)
4. Ignition sources and prevention
5. Electrical and mechanical equipment in ATEX areas
6. Protection methods: intrinsic safety, encapsulation, etc.
7. Inspection and maintenance in explosive zones
8. Risk assessment in classified areas
9. Complementary standards (IEC 60079, NFPA 70, NEC)
10. Explosion prevention and control
11. Audits and regulatory compliance
12. Emergency procedures in ATEX zones
13. Real-world cases and incident analysis
14. ATEX safety in risk management
15. Practical workshop on hazardous area classification

23. Standards for Lightning Protection and Grounding Systems

Duration:
8 to 16 hours.

Introduction:
Lightning protection and grounding systems are essential for safety in industrial facilities. This course covers international regulations and best practices.

Objectives:
To train participants in the design, installation, and maintenance of grounding and lightning protection systems in accordance with international standards.

Target Audience:
Electrical engineers, maintenance technicians, industrial safety specialists, and operators in electrically hazardous environments.

Course Program:
1. Introduction to lightning protection
2. Standards: NFPA 780, IEEE 80, IEC 62305
3. Components of the protection system
4. Risk assessment and facility classification
5. Methods: lightning rods, cages, and meshes
6. Grounding system design and installation
7. Measurement with ground resistance testers
8. Surge protection
9. Standards for electronic and telecommunications equipment
10. Inspection and maintenance of protection systems
11. Safety in installation and operation
12. Real-world cases of grounding system failures
13. Prevention in industrial environments
14. Certification and compliance
15. Practical workshop on measurement and evaluation

24. Safety in the Handling and Storage of Lithium Batteries and Energy Systems

Duration:
8 to 16 hours.

Introduction:
The use of lithium batteries and energy storage systems requires safe handling to prevent fires, explosions, and electrical failures. This course addresses related risks and control measures.

Objectives:
To train participants in the safe handling, storage, and maintenance of lithium batteries and energy systems, minimizing the risks of overheating and fires.

Target Audience:
Electrical engineers, maintenance staff, warehouse operators, renewable energy specialists, and industrial safety personnel.

Course Program:

1. Introduction to lithium batteries and their uses
2. Risks associated with handling and operation
3. Applicable international safety regulations
4. Safe storage of lithium batteries
5. Fire protection in battery storage facilities
6. Safe transport and handling of batteries
7. Safe use in industrial systems and renewable energy
8. Charging and discharging with safe practices
9. PPE and safety measures for operators
10. Environmental management and waste disposal
11. Monitoring and fault diagnosis
12. Real-world failure cases and key lessons
13. Incident response involving batteries
14. Safety audits in facilities
15. Practical workshop on handling and failure response

25. Safety in Hot Work, Welding, and Cutting Operations (Hot Work Permit)

Duration:
8 to 16 hours.

Introduction:
Welding and cutting operations pose fire and explosion hazards. This course teaches safe procedures to minimize these risks and comply with international standards.

Objectives:
To train participants in risk identification and the application of safety protocols in hot work, ensuring the protection of personnel and facilities.

Target Audience:
Welders, maintenance technicians, safety supervisors, and industrial operators.

Course Program:

1. Introduction to hot work and associated risks
2. * Safety regulations in welding and cutting (OSHA, NFPA)
3. Hot Work Permits
4. Control of ignition sources in industrial areas
5. Safety procedures before, during, and after hot work
6. Use of personal protective equipment (PPE) for hot work
7. Safe handling and storage of gas cylinders
8. Ventilation systems and fume control
9. Fire and explosion prevention methods
10. Protection against sparks and molten material
11. Risk evaluation in confined spaces with hot work
12. Emergency procedures in case of incidents
13. Case studies of hot work failures and lessons learned
14. Inspection and maintenance of welding and cutting equipment
15. Practical workshop on safe hot work operations

26. Safety in the Use and Handling of Lifting Equipment and Cranes

Duration:
8 to 16 hours.

Introduction:
Lifting operations and heavy load handling require strict safety measures. This course covers the selection, inspection, and safe use of cranes and lifting equipment.

Objectives:
To train participants in the safe operation of cranes and lifting systems, minimizing the risk of accidents and ensuring regulatory compliance.

Target Audience:
Crane operators, safety supervisors, maintenance personnel, and logistics staff.

Course Program:
1. Fundamentals of lifting safety
2. Types of lifting equipment and their uses
3. Applicable OSHA and ANSI regulations
4. Load capacity calculation and safety factors
5. Crane inspection and maintenance
6. Risk assessment prior to lifting operations
7. Proper use of slings, hooks, and accessories
8. Communication and hand signals in lifting
9. Load balance and stability control
10. Safety near power lines
11. Accident prevention for tip-over or dropped loads
12. Emergency response for lifting failures
13. Real-world incident cases and lessons learned
14. Best practices in lift planning
15. Practical workshop on safe crane operations

27. Confined Space Safety

Duration:
8 to 16 hours.

Introduction:
Working in confined spaces involves risks such as asphyxiation, intoxication, and entrapment. This course provides tools for hazard identification and the application of safe work procedures.

Objectives:
To train participants in confined space risk management, including gas monitoring, work permits, and emergency rescue.

Target Audience:
Maintenance technicians, emergency brigades, safety supervisors, and industrial operators.

Course Program:
1. Introduction to confined spaces and their risks
2. Key regulations: OSHA 1910.146 and NFPA
3. Identification and classification of confined spaces
4. Hazardous atmosphere assessment (gas monitoring)
5. Permit-to-work systems in confined spaces
6. Proper use of PPE
7. Ventilation and atmosphere control
8. Safe entry and exit procedures
9. Safety in the presence of liquids and gases
10. Communication and supervision in critical tasks
11. Prevention of entrapments and collapses
12. Rescue and evacuation procedures
13. Rescue equipment and first aid
14. Real-world cases and lessons learned
15. Practical workshop on entry and rescue

28. Control of Hazardous Energy: LOTO (Lockout/Tagout)

Duration:
8 to 16 hours.

Introduction:
Lockout/Tagout (LOTO) is a critical procedure to prevent accidents during operation and maintenance of industrial equipment. This course covers its proper implementation.

Objectives:
To train participants in identifying hazardous energy sources and applying lockout/tagout procedures to protect workers from unexpected equipment startup.

Target Audience:
Maintenance technicians, plant operators, safety supervisors, and electrical personnel.

Course Program:
1. Introduction to hazardous energies
2. Importance of the LOTO procedure
3. OSHA 1910.147 and NFPA regulations
4. Identification of energy sources (electrical, mechanical, etc.)
5. Lockout devices and their proper use
6. Step-by-step lockout/tagout procedures
7. Roles and responsibilities of personnel
8. LOTO training and certification
9. Controlling multiple energy sources in team operations
10. Audits and inspections of LOTO procedures
11. Checklists for safe task execution
12. Promoting a safety culture in LOTO practices
13. Real-world failures and accident cases
14. Simulations and incident response
15. Practical lockout/tagout workshop

29. Working at Heights and Fall Protection Safety

Duration:
8 to 16 hours.

Introduction:
Working at heights poses serious fall risks. This course provides techniques and regulations to prevent accidents during elevated tasks.

Objectives:
To train participants in risk identification, correct selection and use of fall protection equipment, and the application of safe procedures for working at heights.

Target Audience:
Construction workers, maintenance technicians, safety supervisors, and rescue brigades.

Course Program:
1. Fundamentals of working-at-height safety
2. Applicable OSHA, ANSI, and NFPA standards
3. Risk assessment for elevated work
4. Fall protection systems
5. Proper use of harnesses and lifelines
6. Inspection and maintenance of PPE
7. Safety on lifts and ladders
8. Fall prevention in industrial structures
9. Anchoring procedures and lifeline systems
10. Safety on roofs, scaffolding, and towers
11. Rescue protocols in the event of a fall
12. Working-at-height simulations
13. Incident analysis and lessons learned
14. Height work audits and certifications
15. Practical workshop on personal protective equipment use

30. Safety in Industrial Construction and Assembly

Duration:
8 to 16 hours.

Introduction:
Industrial construction and assembly involve significant risks. This course provides strategies to ensure safety in these environments.

Objectives:
To provide tools for accident prevention in construction and assembly projects, in compliance with regulations and best safety practices.

Target Audience:
Construction supervisors, safety engineers, construction workers, and industrial maintenance personnel.

Course Program:

1. Introduction to construction and assembly safety
2. OSHA and NFPA regulations in industrial worksites
3. Risk assessment in construction projects
4. Proper use of PPE in construction
5. Scaffold and platform safety
6. Fall prevention on elevated structures
7. Safe handling of hand and power tools
8. Traffic control and on-site signage
9. Lifting and handling of heavy loads
10. Excavation and trenching safety
11. Safe handling of chemicals and flammable materials
12. Emergency and evacuation plans for construction sites
13. Waste management and environmental control
14. Accident cases and prevention strategies
15. Practical workshop on industrial assembly safety

31. Safety in the Chemical and Petrochemical Industry

Duration:
8 to 16 hours.

Introduction:
Chemical and petrochemical plants handle hazardous substances that require specific safety protocols. This course covers risks and prevention strategies in these environments.

Objectives:
To train participants in the safe handling of chemicals, risk identification, and application of regulations to protect personnel and the environment.

Target Audience:
Process engineers, safety supervisors, plant operators, and emergency response teams.

Course Program:

1. Introduction to safety in the chemical and petrochemical industry
2. Hazard identification and risk assessment
3. Safe handling and storage of chemicals
4. Transport of hazardous substances
5. Spill containment and prevention
6. Atmosphere evaluation and gas monitoring
7. Fire and explosion prevention
8. Proper use of chemical PPE
9. Emergency response to chemical incidents
10. Safety in facility maintenance
11. Control of emissions and hazardous waste
12. Applicable OSHA, EPA, and NFPA regulations
13. Safety inspections and audits
14. Real-world accident cases and lessons learned
15. Practical workshop on chemical incident response

32. Hazardous Waste and Toxic Substance Management

Duration:

8 to 16 hours.

Introduction:

Improper handling of hazardous waste and toxic substances can lead to environmental and health risks. This course addresses safe management and regulatory compliance.

Objectives:

To train participants in the correct segregation, storage, transportation, and disposal of hazardous waste, minimizing health and environmental impacts.

Target Audience:

Environmental engineers, safety supervisors, industrial plant operators, and logistics personnel.

Course Program:

1. Introduction to hazardous waste management
2. Waste classification according to hazard level
3. International regulations: EPA, OSHA, Basel Convention
4. Segregation and safe storage
5. Transport and traceability of waste
6. Treatment techniques and final disposal
7. Safe handling of toxic substances
8. Environmental impact and mitigation strategies
9. Emission control and environmental monitoring
10. Risk assessment in waste handling
11. Spill and leak response
12. Audits and regulatory compliance
13. Management plans in industrial settings
14. Real-world cases of mismanagement and consequences
15. Practical workshop on safe handling and storage

33. Safety in Vehicle Operation and Personnel Transportation

Duration:

8 to 16 hours.

Introduction:

Personnel transportation in industrial and oilfield environments involves risks that require proper management. This course addresses safety measures to minimize accidents during worker transport.

Objectives:

To train participants in the safe operation of vehicles under adverse conditions, regulatory compliance, and implementation of controls to reduce road incidents.

Target Audience:

Industrial drivers, safety supervisors, logistics personnel, and transport operators.

Course Program:

1. Risk factors in personnel transportation
2. International regulations: DOT, OSHA, ISO 39001
3. Safety requirements by vehicle type
4. Safe driving in industrial and oilfield zones
5. Route and journey risk assessment
6. Fleet inspection and preventive maintenance
7. Use of seatbelts and restraint systems
8. Fatigue management and driver distraction prevention
9. Safe transport of hazardous materials
10. Procedures for road accidents
11. Emergency plans for industrial routes
12. Incident analysis and lessons learned
13. Fleet audits and corporate control
14. Driver training simulations
15. Practical workshop on safe driving and emergency response

34. Safety in Explosives Handling for Oilfield and Mining Operations

Duration:
8 to 16 hours.

Introduction:
The use of explosives in mining and oil drilling requires strict safety controls. This course teaches proper procedures for storage, handling, and safe detonation.

Objectives:
To train participants in identifying risks related to explosive handling, ensuring regulatory compliance, and applying control measures in industrial operations.

Target Audience:
Mining engineers, drillers, explosives technicians, safety supervisors, and emergency response teams.

Course Program:
1. Types of explosives in industry
2. International regulations: OSHA, ATF, MSHA
3. Safe storage and transportation
4. Controlled loading and detonation
5. Risk assessment in blasting operations
6. Use of electronic and conventional detonators
7. Personal protective equipment (PPE)
8. Mitigation of vibrations and shock waves
9. Safety in tunnels and confined spaces
10. Response to detonation failures
11. Incident analysis due to mishandling
12. Evacuation and contingency plans
13. Explosive operations audits
14. Best practices in mining and oil industries
15. Practical workshop on blasting simulation

35. Safety in Natural Gas and LNG Facilities

Duration:
8 to 16 hours.

Introduction:
The storage and processing of natural gas and LNG present specific risks requiring rigorous controls. This course covers safety measures to minimize incidents in gas facilities.

Objectives:
To train participants in hazard identification in gas and LNG plants, ensuring regulatory compliance and implementing fire and explosion prevention strategies.

Target Audience:
Process engineers, safety technicians, gas plant operators, and maintenance personnel.

Course Program:
1. Properties of natural gas and LNG
2. Storage and transportation risks
3. International regulations (NFPA, API, OSHA)
4. Containment and tank safety
5. Evaluation of explosive atmospheres
6. Safe loading and unloading of LNG
7. Handling and transport of compressed gas
8. Leak detection and monitoring
9. Fire suppression in gas facilities
10. Safety in cryogenic equipment
11. Emergency management in gas installations
12. Audits and regulatory compliance
13. Incident analysis in gas and LNG plants
14. Contingency response plans
15. Practical workshop on leak and explosion simulation

36. Emergency Drill Execution and Response Planning

Duration:
8 to 16 hours.

Introduction:
Emergency preparedness is essential in industrial safety management. This course teaches how to plan, execute, and evaluate effective emergency drills.

Objectives:
To train participants in organizing emergency drills to ensure personnel respond effectively during critical incidents.

Target Audience:
Emergency brigades, safety managers, supervisors, and operations staff.

Course Program:
1. Fundamentals of emergency planning
2. Risk identification and critical scenarios
3. Drill regulations (OSHA, NFPA, ISO)
4. Types of drills and industrial applications
5. Development of contingency plans
6. Response time and performance evaluation
7. Crisis communication strategies
8. Use of protective and rescue equipment
9. Coordination with external agencies
10. Drills in confined spaces and critical areas
11. Strategies to improve effectiveness
12. Post-drill analysis and corrective improvements
13. Application in oil, chemical, and mining industries
14. Real-world emergency management cases
15. Practical workshop on plant emergency drills

37. Emergency Brigades and Crisis Management in Industrial Plants

Duration:
8 to 16 hours.

Introduction:
Emergency brigades play a key role in responding to incidents in industrial facilities. This course provides training on the organization, equipment, and performance of response teams.

Objectives:
To train highly skilled emergency brigades capable of acting in fires, chemical spills, rescues, and other critical events in the industry.

Target Audience:
Emergency brigade members, safety supervisors, maintenance staff, and industrial operators.

Course Program:
1. Role and importance of emergency response teams
2. Applicable OSHA, NFPA, and local regulations
3. Organization and roles within the emergency team
4. Types of emergencies in industrial plants
5. Personal protective equipment (PPE) for responders
6. Evacuation and rescue procedures
7. Safe intervention during fires
8. Handling of hazardous substances and spills
9. Coordination with firefighters and civil defense
10. Use of communication equipment during crises
11. Leadership in emergency situations
12. Simulation of critical scenarios
13. Auditing and ongoing training
14. Emergency performance evaluation
15. Practical workshop on intervention and rescue

38. Evacuation and Rescue in High-Risk Environments

Duration:
8 to 16 hours.

Introduction:
Industrial operations may involve dangerous conditions where effective evacuation and rescue procedures are essential. This course provides advanced strategies for these scenarios.

Objectives:
To train participants in the planning and execution of safe evacuations, as well as in rescue techniques across various industrial environments.

Target Audience:
Emergency brigades, safety supervisors, high-risk area operators, and emergency response personnel.

Course Program:
1. Principles of industrial evacuation and rescue
2. Emergencies requiring evacuation
3. Procedures in industrial plants
4. Factors affecting safety during evacuations
5. Escape routes and assembly points
6. Evacuation from heights and confined spaces
7. Rescue equipment and assisted evacuation
8. Coordination with emergency services
9. Rescue in high-risk situations
10. Response time evaluation
11. Planning effective evacuation drills
12. Psychological factors during evacuation
13. Audit and improvement of existing plans
14. Real incident analysis and lessons learned
15. Practical workshop on evacuation and rescue

39. Arc Flash Protection and Industrial Electrical Safety

Duration:
8 to 16 hours.

Introduction:
Arc flashes are one of the leading causes of electrical accidents in industry. This course equips participants with tools to identify, prevent, and mitigate arc flash hazards.

Objectives:
To train in the identification of electrical hazards, use of appropriate protective equipment, and application of safety standards to prevent arc flash incidents.

Target Audience:
Electrical engineers, maintenance technicians, plant operators, and safety supervisors.

Course Program:
1. Introduction to arc flash and its hazards
2. Factors causing arc flash events
3. NFPA 70E, IEEE 1584, and OSHA regulations
4. Prevention methods for electrical work
5. Classification of electrical hazard zones
6. Use of PPE for arc flash protection
7. Electrical hazard analysis and modeling
8. Safe procedures for energized systems
9. Inspection of panels and transformers
10. Overcurrent protection and fast disconnection
11. Evaluation of electrical incidents and failures
12. Response to arc flash accidents
13. Electrical safety audits and certification
14. Real-world cases and lessons learned
15. Practical workshop with specialized protective equipment

40. Safety Training Impact Measurement in Industrial Environments

Duration:
8 to 16 hours.

Introduction:
Measuring the impact of safety training is essential to ensure the effectiveness of training programs. This course teaches methodologies to evaluate ROI in safety training.

Objectives:
To provide tools to measure the actual impact of safety training using key performance indicators and evaluation methodologies.

Target Audience:
Safety managers, training coordinators, safety auditors, and plant supervisors.

Course Program:
1. Importance of measuring safety impact
2. Evaluation methods for training programs
3. Key Performance Indicators (KPIs) in safety training
4. Models: Kirkpatrick, Phillips, and applied ROI
5. Data collection and post-training analysis
6. Evaluation of behavioral change
7. Surveys and audits to assess effectiveness
8. Link between training and incident reduction
9. Benchmarking against industry standards
10. Digital tools for impact measurement
11. Factors affecting learning effectiveness
12. Presenting results to management
13. Real-world cases of impact measurement
14. Strategies for continuous improvement
15. Practical workshop on impact evaluation

41. Safety in the Renewable Energy Industry (Wind, Solar, Green Hydrogen)

Duration:
8 to 16 hours.

Introduction:
Renewable energy systems pose specific industrial safety challenges. This course addresses the risks and controls involved in wind farms, solar plants, and green hydrogen production.

Objectives:
To train participants in hazard identification and the application of safety measures in the operation and maintenance of renewable energy facilities.

Target Audience:
Engineers, maintenance technicians, safety supervisors, and operational personnel in the renewable energy sector.

Course Program:
1. Safety in wind and solar energy
2. Hazards in renewable energy parks
3. Installation and maintenance of wind turbines
4. Electrical risks in solar systems and batteries
5. OSHA, IEC, and NFPA regulations
6. Falls during work at heights
7. Green hydrogen and lithium batteries
8. Fire control in renewable facilities
9. Safe operation of solar panels
10. Hazardous waste management
11. Rescue from elevated structures
12. Weather-related operational risks
13. On-site safety audits
14. Real-world cases and lessons learned
15. Practical workshop on prevention and control

42. Safety in the Handling and Transport of Hazardous Materials

Duration:
8 to 16 hours.

Introduction:
Transporting hazardous substances carries environmental and health risks. This course provides training on regulations and best practices for safe handling and transport.

Objectives:
To train participants in the safe handling of hazardous chemicals, ensuring regulatory compliance and reducing incidents in transport and storage.

Target Audience:
Hazardous goods drivers, cargo operators, safety supervisors, and logistics personnel.

Course Program:
1. UN identification and classification of hazardous substances
2. International regulations (ADR, DOT, IMDG)
3. Risk assessment in chemical transportation
4. Safe storage and segregation
5. Use of PPE when handling substances
6. Packaging inspection and labeling
7. Loading and unloading procedures
8. Safe transport of flammable and toxic gases
9. Response to leaks or spills
10. Fire prevention during transport
11. Monitoring and control of conditions
12. Regulatory compliance and audits
13. Accident analysis in chemical logistics
14. Emergency response simulations
15. Practical workshop on safe transportation

43. Behavior-Based Safety (BBS) Management

Duration:
8 to 16 hours.

Introduction:
Behavior-Based Safety (BBS) is an effective strategy to prevent workplace accidents. This course teaches how to influence attitudes and reinforce safe behaviors.

Objectives:
To train participants in identifying unsafe behaviors and applying strategies to improve the safety culture through observation and positive reinforcement.

Target Audience:
Safety managers, supervisors, team leaders, and HR personnel.

Course Program:
1. Fundamentals and principles of Behavior-Based Safety (BBS)
2. Role of the human factor in incident prevention
3. Observation and correction of unsafe behaviors
4. Behavioral psychology applied to safety
5. Designing BBS programs in industrial environments
6. Effective communication and feedback
7. Incident analysis linked to behavior
8. Barriers to changing unsafe habits
9. Positive reinforcement and behavioral incentives
10. Leadership and training in BBS safety
11. Indicators and evaluation of BBS programs
12. Reporting and managing risk behaviors
13. Organizational culture and its impact on BBS
14. Success stories in BBS implementation
15. Practical workshop on field application

44. Industrial Safety Audits and Certification

Duration:
8 to 16 hours.

Introduction:
Industrial safety audits are essential for regulatory compliance. This course teaches how to conduct inspections and manage occupational safety certification processes.

Objectives:
To train participants in the planning, execution, and documentation of safety audits, ensuring continuous improvement and adherence to international standards.

Target Audience:
Safety auditors, quality managers, safety supervisors, and consultants.

Course Program:

1. Fundamentals of industrial safety audits
2. Applicable international standards (OSHA, ISO 45001, NFPA)
3. Types and scope of audits in industrial environments
4. Audit planning and preparation
5. Checklists and control questionnaires
6. Hazard identification and risk assessment
7. Interview techniques and evidence collection
8. Detection of non-conformities and reporting
9. Corrective and preventive action plans
10. Audits in industrial plants and refineries
11. Requirements and processes for safety certifications
12. Audit performance evaluation
13. Digital tools for monitoring and documentation
14. Success stories in industrial audits
15. Practical workshop on audit simulation

45. Safety in the Operation of Pressure Equipment and Piping

Duration:
8 to 16 hours.

Introduction:
The operation of pressure equipment and industrial piping requires strict safety measures to prevent explosions and hazardous leaks. This course covers standards, inspection, and safe maintenance practices.

Objectives:
To train participants in identifying risks in pressure systems, applying safety regulations, and implementing preventive and corrective maintenance strategies.

Target Audience:
Maintenance engineers, plant operators, safety supervisors, and inspection technicians.

Course Program:

1. Key safety concepts for pressure equipment and piping
2. Applicable standards (ASME, API 570, OSHA)
3. Common risks in boilers and pressure vessels
4. Basic inspection and monitoring methods
5. Safe operation and maintenance
6. Leak and failure prevention
7. Application of the LOTO procedure
8. Corrosion and fatigue detection
9. Safe use of valves and fittings
10. Emergency response to failures
11. Explosion prevention in tanks
12. Real accident analysis
13. Key audits and certifications
14. Practical industry cases
15. Practical workshop on safe inspection

46. Ergonomics and Injury Prevention in the Workplace

Duration:
8 to 16 hours.

Introduction:
Musculoskeletal injuries are one of the leading causes of workplace absenteeism. This course teaches ergonomic strategies to reduce risk and improve occupational health.

Objectives:
To train participants in ergonomic workplace design, prevention of musculoskeletal disorders, and safe manual handling techniques.

Target Audience:
Safety supervisors, occupational health professionals, ergonomists, and workers in industrial and office environments.

Course Program:
1. Basic principles of ergonomics applied to workplace safety
2. Identification of ergonomic risks in daily tasks
3. Factors causing musculoskeletal injuries
4. Proper design of workstations
5. Safe techniques for lifting and moving loads
6. Prevention of work-related musculoskeletal disorders
7. Assessment of posture and repetitive movements
8. Ergonomic tools and their application
9. Active breaks and preventive exercises
10. Organizational ergonomic programs
11. Workplace audits from an ergonomic perspective
12. Technology supporting workplace well-being
13. Impact of stress and psychosocial factors
14. Practical cases of ergonomic improvement
15. Practical field workshop on ergonomic assessment

47. Safety in the Food and Beverage Industry

Duration:
8 to 16 hours.

Introduction:
The food and beverage industry faces unique challenges in industrial safety. This course provides tools to minimize risks in the production, storage, and distribution of food products.

Objectives:
To train participants in hazard identification, implementation of Good Manufacturing Practices (GMP), and compliance with food safety regulations.

Target Audience:
Plant supervisors, quality control technicians, operators, and safety personnel in the food industry.

Course Program:
1. Introduction to safety in the food industry
2. Physical, chemical, and biological hazards in food
3. Key standards: ISO 22000, HACCP, FDA
4. Good Manufacturing Practices (GMP) and hygiene
5. Safe handling of raw materials and finished products
6. Prevention of cross-contamination and allergens
7. Safety in the use of food processing machinery
8. Ergonomics in production processes
9. Safe handling of chemicals and sanitizers
10. Emergency response in food plants
11. Fire and explosion prevention in the industry
12. Audits and certifications in food safety
13. Real-world contamination case analysis
14. In-plant food safety programs
15. Practical workshop on hygienic inspection and control

48. Safety in the Management of Industrial and Hazardous Waste

Duration:
8 to 16 hours.

Introduction:
Improper industrial waste management can lead to severe environmental and health risks. This course addresses regulations and strategies for the proper handling and disposal of waste.

Objectives:
To train participants in safe segregation, transportation, and disposal of industrial and hazardous waste, ensuring regulatory compliance and environmental protection.

Target Audience:
Environmental engineers, safety supervisors, plant operators, and logistics personnel.

Course Program:
1. Management and classification of industrial waste
2. Key regulations: EPA, Basel, OSHA
3. Safe storage, labeling, and transportation
4. Physical, chemical, and biological treatment
5. Environmental impact and emission control
6. Safety in handling toxic waste
7. Contingency plans and emergency response
8. Technologies for treatment and recycling
9. Carbon footprint reduction
10. Audits and certifications
11. Real-world cases and lessons learned
12. Recycling and reduction programs
13. Environmental risk assessment
14. Regulatory compliance
15. Practical workshop on safe handling

49. First Aid and CPR in Industrial Environments

Duration:
8 to 16 hours.

Introduction:
First aid and cardiopulmonary resuscitation (CPR) are essential in high-risk industrial environments. This course teaches how to respond to medical emergencies at the workplace.

Objectives:
To train participants in first aid techniques, CPR, and the use of automated external defibrillators (AED) to improve emergency response.

Target Audience:
Emergency response teams, operators, safety supervisors, and plant personnel.

Course Program:
1. Basic principles of first aid
2. Rapid victim assessment in industrial settings
3. Cardiopulmonary resuscitation (CPR) techniques
4. Use of automated external defibrillators (AED)
5. Bleeding control and workplace wound care
6. Treatment of burns and chemical injuries
7. Management of fractures and sprains
8. Emergency procedures for choking
9. Handling exposure to toxic substances
10. Assessment and response to unconscious workers
11. Shock prevention and vital signs monitoring
12. Coordination with emergency services
13. Industrial emergency drills
14. OSHA and ANSI first aid standards
15. Practical workshop on CPR and AED

50. Safety in Exposure to Ionizing and Non-Ionizing Radiation

Duration:
8 to 16 hours.

Introduction:
The use of ionizing and non-ionizing radiation in industry poses serious health risks. This course provides tools for protection and control of exposure.

Objectives:
To train participants in identifying radiation risks, safe use of radiation sources, and implementation of protection measures in industrial environments.

Target Audience:
Safety engineers, radiation protection technicians, industrial plant operators, and occupational medical personnel.

Course Program:
1. Types of radiation and health effects
2. Industrial and medical sources of radiation
3. International regulations (ICRP, OSHA, ANSI)
4. Risk assessment for radiation exposure
5. Protection against ionizing radiation
6. Safety with X-rays and gamma radiation
7. Handling of radioactive materials
8. Safety in telecommunications and microwaves
9. Use of dosimeters and monitoring devices
10. Response to accidental exposure
11. Control of radioactive contamination
12. Evaluation of shielding barriers
13. Radiation incident case studies
14. Radiation protection programs
15. Practical workshop on measurement and control

51. afety in the Green Hydrogen and Fuel Cell Industry

Duration:
8 to 16 hours.

Introduction:
Green hydrogen is a promising energy alternative, but it involves specific risks. This course teaches how to safely manage its production, storage, and transportation.

Objectives:
To train participants in the safe handling of green hydrogen and fuel cells, ensuring regulatory compliance and incident prevention.

Target Audience:
Renewable energy engineers, maintenance technicians, safety supervisors, and hydrogen plant operators.

Course Program:
1. Basic principles of first aid
2. Rapid assessment of victims in industrial environments
3. Cardiopulmonary resuscitation (CPR) techniques
4. Use of automated external defibrillators (AED)
5. Bleeding control and workplace wound management
6. Treatment of burns and chemical injuries
7. Management of fractures and sprains
8. Emergency procedures for choking
9. Handling exposure to toxic substances
10. Assessment and response to unconscious workers
11. Shock prevention and vital signs monitoring
12. Coordination with emergency services
13. Industrial emergency drills
14. OSHA and ANSI first aid standards
15. Practical workshop on CPR and AED

52. Regulations and Standards in Process Safety

Duration:
8 to 16 hours.

Introduction:
Compliance with safety regulations is essential to reduce industrial risks. This course covers key international process safety regulations.

Objectives:
To train participants in the application and compliance of international standards, ensuring safe design and efficient operation of industrial processes.

Target Audience:
Safety managers, process engineers, auditors, and plant supervisors.

Course Program:

1. Introduction to process safety regulations
2. OSHA 1910.119: safe handling of hazardous substances
3. API 754: process safety performance indicators
4. NFPA 30 and 70: flammables and electrical systems
5. ANSI Z10 and ISO 45001: safety and health management
6. Safe storage of chemical substances
7. Risk assessment according to regulatory frameworks
8. Emergency response and preparedness plans
9. Safety audits and certification
10. Monitoring using regulatory indicators
11. Management of change (MOC) under regulation
12. Real cases of non-compliance
13. Best practices for implementation
14. Regulatory audit workshop
15. Practical application in process safety

53. Safety in Industrial Maintenance and Asset Management

Duration:
8 to 16 hours.

Introduction:
Safe industrial maintenance is key to avoiding accidents and improving equipment reliability. This course provides strategies to reduce risks during maintenance tasks.

Objectives:
To train participants in safe maintenance practices, work planning, and asset management to reduce equipment failures and accidents.

Target Audience:
Maintenance technicians, reliability engineers, safety supervisors, and plant operators.

Course Program:

1. Fundamentals of safety in industrial maintenance
2. Applicable OSHA, ISO 55000, and NFPA standards
3. Asset management and its link to safety
4. LOTO procedures in maintenance activities
5. Risk identification in maintenance tasks
6. Safety in electrical, mechanical, and instrumentation maintenance
7. Inspection and monitoring of operational conditions
8. Digital tools for safe maintenance
9. Safe handling of lubricants and fluids
10. Protocols in high-risk areas
11. Preventive and predictive maintenance
12. Incident evaluation related to maintenance activities
13. Safety audits in maintenance operations
14. Failure cases due to poor practices
15. Practical workshop on safe maintenance planning

DATA SCIENCE & AI

Digital transformation is redefining how energy companies operate.
In this section, we offer specialized programs in Data Science, Machine Learning, and Artificial Intelligence, specifically designed for professionals in the Oil & Gas sector. From exploration to production, these courses provide tools to analyze complex data, optimize processes, improve decision-making, and anticipate reservoir and equipment behavior.

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INDEX

Instructors:

Keith Holdaway - Horia Orenstein - Shahab Mohaghegh - Peter Kowalchuk - Doug Crawford - Yohanes Nuwara - Diego Leiguarda - Pedro Alcalá.

1. Data Science and AI and Machine Learning for Oil and Gas

Duration:
24 hours.

Introduction:
This practical course introduces Data Science, AI, and Machine Learning to oil and gas professionals, focusing on data analysis and operational optimization with Python and real-world cases.

Objectives:
Equip participants with Data Science, AI, and Machine Learning skills to analyze oil and gas data, optimize operations, and predict failures using Python and advanced techniques.

Target Audience:
Oil and gas engineers in operations, design, and monitoring interested in predictive analytics and optimization.

Course Program:

1. Introduction to Data Science and AI applied to the energy sector
2. Fundamentals of Machine Learning
3. Basic Python for operational data analysis
4. Data preparation
5. Descriptive statistics for preliminary analysis of field data
6. Predictive modeling to estimate critical parameters
7. Classification of processes and operational patterns
8. Data visualization with Matplotlib
9. Model evaluation using performance metrics
10. Industrial AI applications: real-world cases in oil and gas
11. Data-driven operations optimization
12. Automated failure detection in equipment

2. Machine Learning for Geosciences

Duration:
20 hours.

Introduction:
This course explores how Machine Learning transforms geosciences, training professionals to analyze geophysical data and enhance exploration with modern tools and real examples.

Objectives:
Teach Machine Learning fundamentals and applications in geosciences, using open-source software to process geophysical data and optimize workflows with practical cases.

Target Audience:
Geologists, geophysicists, and petroleum engineers interested in applying Machine Learning to hydrocarbon exploration and development.

Course Program:

1. Machine Learning concepts – Introduction and geological relevance
2. Geophysical data – Sources and main characteristics
3. Weka software – Tool for ML analysis
4. Supervised learning – Predictions in geosciences
5. Unsupervised learning – Clustering of geological data
6. Seismic processing – Signal analysis using ML
7. Data interpolation – Completing geophysical traces
8. Fluid substitution – Reservoir modeling
9. Geological visualization – Maps with processed data
10. Real-world cases – Applications in exploration
11. Workflow integration – ML in geophysical workflows
12. Practical exercises – Solving geological problems

3. Introduction to Petrophysical Data Science and AI with Python

Duration:
28 hours.

Introduction:
This course introduces petrophysicists to Python and Data Science/AI for well log analysis, offering practical tools and advanced techniques to optimize data interpretation.

Objectives:
Build skills in Python and Data Science/AI to process petrophysical data, predict properties, and apply machine learning in real cases using specialized libraries.

Target Audience:
Geologists, petrophysicists, and log analysts interested in analyzing well data with Python and Data Science/AI.

Course Program:

1. Introductory Python
2. Petrophysical data – Sources and initial handling
3. LASIO/WELLY libraries – Well log processing
4. Data cleaning – Preparation of petrophysical datasets
5. Visualization with Seaborn – Well log plotting
6. Basic statistics – Descriptive analysis of data
7. Event detection – Anomaly identification
8. Predictive models – Estimation of petrophysical properties
9. Introduction to AI – Applied to petrophysics
10. Introductory Machine Learning
11. Field cases – Exercises with real data
12. Workflows – Integration in petrophysical analysis
13. AI ethics – Considerations for predictive modeling

4. Data Science for Geophysics

Duration:
16 hours.

Introduction:
This course bridges Data Science and AI with geophysics, teaching scientists to analyze seismic and non-seismic data for optimized exploration with advanced techniques and practical examples.

Objectives:
Train participants in Data Science and AI to process geophysical data, predict lithologies, and enhance collaboration with geosciences using tools like TensorFlow and Keras.

Target Audience:
Data scientists and geophysicists interested in applying Data Science and AI to hydrocarbon and resource exploration.

Course Program:

1. Geophysical concepts – Fundamentals for data scientists
2. Data acquisition – Seismic and non-seismic methods
3. Basic processing – Cleaning geophysical data
4. Introduction to TensorFlow – Applications in geophysical analysis
5. Lithology classification – Prediction using AI
6. Data clustering – Geophysical segmentation
7. Deep Learning – CNNs for seismic interpretation
8. AVO/AVA analysis – Quantitative interpretation
9. Advanced visualization – Mapping with ScikitLearn
10. Practical cases – Applications in exploration
11. Collaboration with geosciences – Interdisciplinary teamwork
12. Future trends – Advances in geophysics through AI

5. Advanced Data Interpretation in Reservoir Engineering

Duration:
32 hours.

Introduction:
This advanced course trains engineers to interpret complex unconventional reservoir data, enhancing decision-making with integration methodologies and real-world analysis examples.

Objectives:
Teach advanced techniques to integrate pressure, rate, and formation data in unconventional reservoirs, optimizing analysis and performance with practical cases and interactive sessions.

Target Audience:
Reservoir engineers and geoscientists focused on analyzing complex data from unconventional reservoirs.

Course Program:
1. Reservoir data
2. Pressure integration
3. Rate interpretation – Production evaluation
4. Formation data – Key geological properties
5. Advanced methods – Combining complex datasets
6. Unconventional reservoirs
7. Data visualization – Plots for analytical insight
8. Real-world cases – Practical integration examples
9. Performance optimization – Data-driven strategies
10. Interactive sessions
11. Current tools – Reservoir software
12. Decision-making – Operational application of insights

6. Data Science Techniques for Well Performance Prediction

Duration:
20 hours.

Introduction:
This course teaches how Data Science predicts unconventional well performance, blending predictive models, real cases, and ethical considerations to optimize outcomes.

Objectives:
Provide Data Science techniques to predict well performance, using advanced models while addressing ethics and future trends with practical examples.

Target Audience:
Reservoir and production engineers, and data scientists interested in predicting unconventional well performance.

Course Program:
1. Well performance – Key factors to predict
2. Introduction to Data Science – Basics of predictive analysis
3. Production data – Dataset preparation
4. Basic models – Building initial predictions
5. Advanced techniques – Modern algorithms for well analysis
6. Model validation – Accuracy assessment
7. Practical cases – Real well examples
8. Data visualization – Decision-support plots
9. Data Science ethics – Responsible use of predictions
10. Future trends – Advances in well performance forecasting
11. Applied exercises – Solving real-world problems
12. Operational integration – Use in daily workflows

7. Data Science Workflows for Artificial Lift, Production, and Facility Engineers

Duration:
24 hours.

Introduction:
This hands-on course teaches engineers to use Data Science for optimizing artificial lift and production, applying workflows with real data and modern tools.

Objectives:
Train participants in Data Science workflows to analyze artificial lift and production data, solving problems with scripts and real field data.

Target Audience:
Production, reservoir engineers, and operators interested in Data Science for artificial lift and facilities.

Course Program:
1. Basic Data Science - Introduction to operational analysis.
2. Artificial Lift - Key data and challenges.
3. Production Data - Sources and initial prep.
4. Practical Scripts - Using predefined code.
5. Operational Analysis - Techniques for field datasets.
6. Process Optimization - Solving common issues.
7. Practical Visualization - Graphics for quick decisions.
8. Field Cases - Applications in real facilities.
9. Value Extraction - Insights from operational data.
10. Workflows - Integration into daily operations.
11. Hands-On Exercises - Solving real cases.
12. Impact Assessment - Reviewing operational results.

8. Drilling Data Science and AI with Python

Duration:
18 hours.

Introduction:
This course trains drilling engineers in Data Science and AI with Python, focusing on operational data analysis and optimization with practical examples and modern tools.

Objectives:
Teach Data Science and AI with Python to analyze drilling data, detect anomalies, and predict parameters, optimizing operations with practical tools and visualizations.

Target Audience:
Drilling engineers interested in analyzing operational data with Python and Data Science/AI.

Course Program:
1. Drilling Data - Operational sources and types.
2. Basic Python - Fundamentals for data analysis.
3. Data Cleaning - Preparing drilling datasets.
4. Initial Statistics - Descriptive parameter analysis.
5. Visualization with Seaborn - Clear operational graphics.
6. Anomaly Detection - Spotting key events.
7. Predictive Models - Forecasting drilling parameters.
8. Simple Regression - Applying to real data.
9. Interactive Dashboards - Building visual tools.
10. Practical Cases - Field operation examples.
11. Drilling Optimization - Using derived insights.
12. Final Review - Assessing practical outcomes.

9. Machine Learning Workflows for Unconventional Petroleum

Duration:

22 hours.

Introduction:

This course teaches how Machine Learning enhances unconventional reservoir management, offering practical workflows and real examples to improve production and completion efficiency.

Objectives:

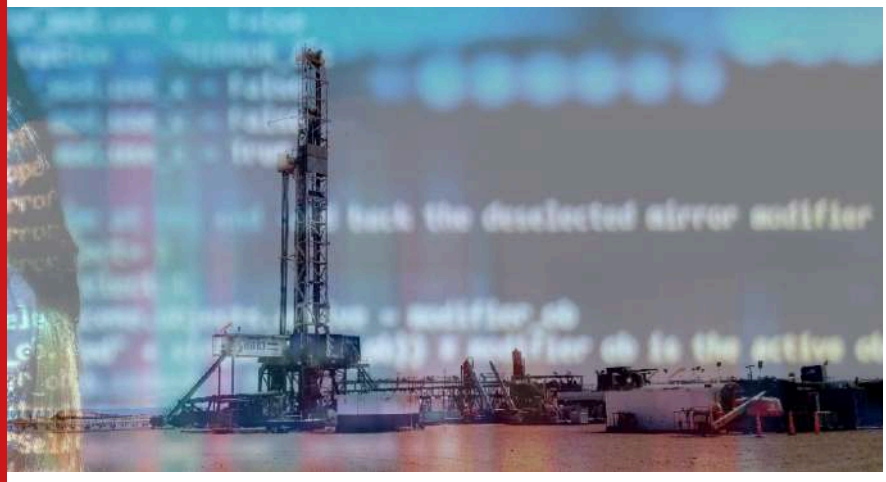
Develop Machine Learning workflows to optimize production and completion in unconventional reservoirs, applying advanced techniques and real cases with performance metrics.

Target Audience:

Engineers, geologists, and petrophysicists interested in optimizing unconventional reservoirs with Machine Learning.

Course Program:

1. Machine Learning Intro - Basics and applications.
2. Unconventional Reservoirs - Features and challenges.
3. E&P Data - Sources in exploration and production.
4. Data Preparation - Cleaning complex datasets.
5. Supervised Models - Predicting production.
6. Unsupervised Models - Reservoir clustering.
7. Basic Deep Learning - Use in advanced analysis.
8. Completion Optimization - ML-driven strategies.
9. Result Visualization - Graphics for decisions.
10. Real Cases - Shale and tight oil examples.
11. Performance Metrics - Evaluating ML models.
12. Operational Implementation - Integration into workflows.



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