



DIPLOMA IN WELL ENGINEERING & COMPLETION ENGINEERING

Diploma affiliated by Persian Gulf University

Duration - 3 Months

Diploma Objective:

This 3-month Well Engineering & Completion Engineering Diploma affiliated by Persian Gulf University is meticulously tailored for both recent graduates and experienced professionals aiming to carve out successful careers in the dynamic field of drilling & Completion.

This intensive three-month program is strategically crafted to provide a holistic learning experience, seamlessly integrating practical applications with indispensable software knowledge. This comprehensive program ensures that participants not only grasp theoretical concepts but also gain hands-on experience, preparing them for the dynamic challenges of the industry.

Diploma Prerequisites:

Open Doors to a World of Opportunity - No Matter Your Background!

There are no as such prerequisites for the program. The program starts from scratch and progresses to advanced concepts. This inclusive approach ensures that the program is accessible to anyone, be it a recent graduate or a seasoned working professional.

Join us, regardless of your background, and embark on a transformative journey where we guide you through the essentials and complexities of well engineering and completion, empowering you to thrive in the program and succeed in the field.



Learning Objectives:

Upon completion of this program, participants will emerge with a well-rounded skill set, equipped to handle the complexities and challenges of well engineering and completion, from technical intricacies to project management proficiency.

- ◆ **Fundamental Understanding of drilling & completion:**
Develop a comprehensive understanding of the fundamental principles and concepts in drilling and completion engineering, serving as the basis for advanced knowledge acquisition.
- ◆ **Safety Protocols in Well Engineering:**
Acquire a thorough knowledge of safety protocols and best practices specific to well engineering, ensuring a secure working environment for all operational aspects.
- ◆ **Fundamental Understanding of drilling & completion:**
Develop a comprehensive understanding of the fundamental principles and concepts in drilling and completion engineering, serving as the basis for advanced knowledge acquisition.
- ◆ **Well Engineering Design:**
Master the skills to formulate effective well engineering designs, taking into account geological, geophysical, and reservoir parameters to optimize drilling and completion processes.
- ◆ **Fundamental Understanding of drilling & completion:**
Develop a comprehensive understanding of the fundamental principles and concepts in drilling and completion engineering, serving as the basis for advanced knowledge acquisition.
- ◆ **Casing and Cementing Design:**
Explore advanced techniques in casing and cementing design, ensuring mastery in achieving structural integrity, wellbore isolation, and reservoir protection.
- ◆ **Well Trajectory and Directional Drilling:**
Gain proficiency in well trajectory and directional drilling, mastering the ability to control wellbore paths for enhanced reservoir access and production optimization.
- ◆ **Extended Reach Drilling (ERD) and High-Pressure High-Temperature (HPHT) Operations:**
Develop specialized knowledge in extended reach drilling techniques, allowing for exploration and exploitation of reservoirs over extended distances. Understand the unique challenges and considerations in High-Pressure High-Temperature drilling scenarios.
- ◆ **Drilling and Completion Challenges:**
Identify, analyse, and devise solutions for various challenges encountered in drilling and completion operations. This includes addressing bore hole problems, mitigating stuck pipe incidents, and understanding well costing intricacies.
- ◆ **Project Management:**
Acquire skills in project management related to drilling and completion operations, encompassing effective planning, resource allocation, and timely execution to ensure successful project outcomes

Topics to be Covered:

1. Basic Drilling Concepts:

- Video Demonstration of Drilling process
- Practical Demonstration of how drilling process fits into Oil & gas Company Well Delivery Process

2. Rig Equipment, Safety & Designing

- Type of Rigs
- Hoisting, Circulating, Rotating Equipment
- Pressure Control Equipment
- Rig sizing – Derrick Capacity and substructure, Total Power Requirements

3. Geomechanics for Drilling & Completion

•Wellbore stresses

•Drilling Applications:

- Wellbore breakout and breakdowns
- LOT Graph
- Extended Leak Off Test
- Mini- frac test
- Bit founder point

•Drilling Fluid Applications

- Rock stress and NPT
- Drilling mud window
- Formation instability & swelling
- Caving & stuck pipe
- Geomechanical pre drill assessment

•Wellbore strengthening & Cementing

- The three theories
- Stress cage theory, concept and application
- Property requirement for material
- Plugged Zone theory
- Strength ring theory
- Pressure containment & lost circulation

•Fracturing Technology Applications

- Fracturing background
- Overburden & tectonic stresses
- Closure stress at pay zone
- Acid versus proppant fracturing
- Simulator & model building
- Job sequence
- Diagnostic fluid injection test

4. Drill String & BHA Design

- Component, Function, selection criteria for BHA
- Non Std BHA component, drilling jars type selection
- Drill string design criteria, vibration and examples
- API 7RS, 7, 5D international reference as well as multinational manual

5.Casing Designing

- Casing Seat Selection Philosophy for Onshore/offshore
- Kick tolerance significance and evaluation methods

- Casing Function, type, properties, connection, Liner application
- Casing/Liner Design, How to Analyses different loads (Burst, Collapse, tension), combination. Biaxial, Triaxial, Safety Factor, Design Factor
- Well Engineering Software to design casing with Practical Example
- International references for casing Design API5CT & International company manual will be shared.

6.Cementing Designing

- Functions of Cementing, additives, slurry testing, cementing hardware
- Behind casing/Liner cementation calculation with examples
- Cement Plug application calculation with example
- Determine quality of cement behind casing cement bond evaluation example
- International references for cementing API, 10A, 10F & International company manual will be shared

7.Mud Engineering

- Functions of Mud, selection criteria, additives & testing
- Drilling Fluid properties, problems & Control
- Rig setup for fluid as well as solid control equipment
- International references for drilling mud API, 13A & international company manual will be shared.

8.Drilling Hydraulics

- Pressure Losses, pump outlets
- Hydraulic Fundamentals & Flow type/regimes
- Bit hydraulics optimization by software as well as calculation demonstration
- International Company manual will be shared

9.Hole Problems (Stuck Pipe, lost Circulation)

- Determine In-situ stress, rock properties, rock failure, stress around wellbore
- Stuck Pipe-Mechanism, prevention technique in planning/execution
- Loss Circulation, Reasons, Prevention technique in Planning/ execution
- Fishing, tools, calculation
- HPHT, Salt, Hydrate, ERD, Sinkhole Challenges and solutions
- All multinational co manual will be provided

10.Well Control

- Reasons for costing, factors affected cost time estimate
- Authorization for expenditure AFE practical calculation
- Reference's manual will be provided

11. Directional Drilling Operations and Tools

- Reasons, Coordinate System, UTM, References Directions
- Planning consideration, type of profile, tools and capability
- Dogleg severity, trajectory calculation, anticollision
- API 7RG international reference as well as multinational manual

12. Offshore Drilling

- Floating drilling rigs and equipment
- Unique challenges of deepwater
- Shallow hazards
- Deepwater planning cycle
- Subsea BOP equipment
- Subsea well control issues
- Casing considerations in deepwater using excel
- Regulatory requirements
- Subsea operations and well components
- Drilling fluid challenges in deepwater
- Relief well planning and subsea well abandonment
- Managed Pressure Drilling basics
- Well trajectory and design
- Casing and cementing techniques
- Rig selection, hydraulic design, and well costing

13. Extended Reach Drilling

- Unique differences to conventional wells
- Well Design & Planning Considerations for ERD Wells
- Operational Aspects in executing ERD wells
- ERD Strategies
- Special challenges in cementing in terms of ERD
- Speciality tools for ERD
- Completion & Workover for ERD wells
- Example ERD Wells
- Best practices
- New technology

14. High Pressure & High Temperature Wells

15. Well Completion

- Fundamentals of Well completion
- Procedure, Operations & Components
- Down Hole Equipment
 - Identify the functionality
 - Recognize the full suite of equipment
- Wellhead and Christmas Tree
 - Difference between wellheads and Christmas trees
 - Describe the functions of a wellhead
 - Identifying the various annuli and various seals
 - Function of a Christmas tree
 - Identify the various valves and their functions
- API Standards
 - Identifications
 - Differences between API connections and premium connections
- Packers
 - Function of a packer
 - Packer setting methods
 - Mechanical components of packers
 - Method of categorizing packers
 - Main options for connecting the tubing to the packer
- Tubing
 - Description and connection selection criteria
 - Physical basis for tubing length changes
 - Calculate a simple tubing length change
 - Characteristics of a tubing string, including weight/internal
 - Results from a torque/turn chart
 - Metallurgy, and associated properties
- Safety Valves
 - Components of a landing nipple
 - Lock mandrel system
 - Function of a safety valve
 - A surface controlled and a subsurface controlled valve
 - Conditions where a safety valve should be placed
- Accessories & Well Data
 - Wireline re-entry guides
 - Blast joints
 - Flow couplings
 - Incorporating equipment
 - Identify areas
 - requiring review
 - Reservoir data
 - Fluid data
 - Results from a torque/turn chart



Benefits of Joining:

Edvantage Learning: Your Gateway to Career Excellence

- **Diploma Certification:** Obtain diploma certificate in Well Engineering & Completion From Persian Gulf University
- **Quality Education:** Experience high-quality education that ensures a valuable learning journey.
- **Expert Faculty:** Learn from our dedicated team of highly qualified and experienced instructors, providing mentorship in your chosen field.
- **Flexible Learning Options:** We understand the need for flexibility in your busy life. Access education through online classes, evening courses, and part-time programs that suit your schedule.
- **Proven Track Record:** Our graduates consistently achieve their career aspirations and make substantial industry contributions, reflecting the effectiveness of an Edvantage Learning education.
- **Industry-Relevant Curriculum:** Our programs are designed in collaboration with industry experts, ensuring you gain the skills and knowledge necessary to excel

About Instructor:



Name: - Dr Nitesh Kumar

- Dr. Kumar held the position of Subject Matter Expert for Well Engineering at PETRONAS Cari Gali, Head Quarters in KL, Malaysia.
- He has 18 + years hands on experience in the field of Well Engineering and Drilling Technology.
- PhD & MS degrees in Petroleum Engineering from Texas Tech University, USA and a MTech in Applied Geophysics from IIT-Roorkee.

Name: Samir Kale

- Experience: Over 34 years in the Oilfield industry.
- Expertise: Senior Engineering Professional with a focus on oil and gas wells for offshore/onshore assets.
- Achievements: Proven track record in delivering Well Intervention Services, optimizing "Lifting Cost," and adding significant value to Exploration & Production companies.
- Specialized Skills: Extensive experience in compliance, assurance of QHSE policies, pressure pumping, and contract management.



Time-Table

No. of Weeks	Date	Time
Week 01	20-01-2024	Saturday & Sunday 10:30 AM IST or 5 AM GMT
	21-01-2024	
Week 02	27-01-2024	
	28-01-2024	
Week 03	03-02-2024	
	04-02-2024	
Week 04	10-02-2024	
	11-02-2024	
Week 05	17-02-2024	
	18-02-2024	
Week 06	24-02-2024	
	25-02-2024	
Week 07	02-03-2024	
	03-03-2024	
Week 08	09-03-2024	
	10-03-2024	
Week 09	16-03-2024	
	17-03-2024	
Week 10	23-03-2024	
	24-03-2024	
Week 11	30-03-2024	
	31-03-2024	
Week 12	06-04-2024	
	07-04-2024	



FAQs

1. When is the course commencing?

Ans: January 20th, 2024

2. What are the course fees?

Ans. Fees – 300 USD or 22500 INR (Special discount only for 10 students)

3. What will be the medium of language for the training?

Ans. English

4. Will a certificate be provided?

Ans. Yes

5. What if I missed any live sessions?

Ans. We will be providing the recordings of the whole live sessions of the training along with materials for lifelong.

6. Why we should join?

Ans. Joining a diploma in well engineering offers a unique opportunity to acquire in-depth expertise in a crucial sector of the oil and gas industry. With the ever-growing demand for energy resources, this program not only opens doors to promising career prospects but also allows you to contribute to the safe and efficient production of vital resources, making it a rewarding choice for your professional development.





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FOR ANY QUERIES

 info@edvantage.org.in

 +91 86583 24008