



# DE180

## Applied Drilling Engineering

## Course Introduction:

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This five-day course will expose participants to the terminology, concepts, processes, and equipment used to drill oil and gas wells. The planning process followed by drilling engineers will be covered to the extent that participants will understand the process and be able to initiate a well plan and well design. Non-complex calculations and basic problems will be included so that participants will see how this is done by the drilling engineer.

This course will serve to introduce the entry level drilling engineer to the profession. Upon completion of the course, participants should be able to identify rig components, make simple rig sizing calculations, as well as describe basic drilling fluids, drillbit selection concepts, directional drilling plans, and tools used in the drilling technology. Additionally, some cost estimating processes, fundamentals of well control, drilling tool selection, and the important standards used in the drilling industry will be covered.

## Course Objectives:

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**Upon successful completion of this course, the delegates will be able to:**

- ✓ Identify rig components, make simple rig sizing calculations, as well as describe basic drilling fluids, drillbit selection concepts, directional drilling plans, and tools used in the drilling technology
- ✓ How to evaluate and complete a well
- ✓ Learn about different rock types, properties, and their impact on drilling
- ✓ Learn about the main components of a completion string, basic descriptions of intelligent completions, as well as well suspension and well abandonment techniques
- ✓ Learn about high-level operational sequences, the contents of a daily drilling report, real-time operations, and the common types of drilling problems
- ✓ Learn about the difference between a blow out and a well control situation]
- ✓ Learn about the processes that occur prior to well design, such as land leasing, contracting, and site preparation
- ✓ Learn about limit test and leak off test applications in drilling
- ✓ Learn about the well construction process

## Who Should Attend?

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This course is intended for all Drilling engineers, Production and completion engineers, General Petroleum engineers, Reservoir engineer, Operation engineer, Geologist, Geophysicist, Supervisors and Technical managers and field foremen.

# Course Outline:

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## Day 1:

### **THE WELL CONSTRUCTION PROCESS**

- Where drilling fits into the Exploration and Production (E&P) process
- Exploration, appraisal, and development drilling
- Rig components and operation organization
- Risk management, hazards, and loss prevention methods

## Day 2:

### **DRILLING FUNDAMENTALS**

- Sedimentary rock types, properties, and impacts on drilling
- Formation pressures and formation fracture gradient
- Predicting overpressure methods and detection
- Wellbore instability

## Day 3:

### **PRELIMINARY WELL DESIGN**

- Preliminary processes
- Components and contributors of well design
- Directional drilling

## Day 4:

### **PROGRAMMING AND DRILLING**

- Components and contributors of drilling programming
- Operations
- Problems: preventions and solutions
- Calculations for killing a well

## Day 5:

### **EVALUATING AND COMPLETING**

- Types of evaluation methods and application
- LWD and Geosteering
- Well completion schematics and completion string
- Intelligent completions
- Well suspension and abandonment techniques

## Course Certificate:

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**International Center for Training & Development (ICTD)** will award an internationally recognized certificate(s) for each delegate on completion of training.

## Course Methodology:

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**A variety of methodologies will be used during the course that includes:**

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

## Course Fees:

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**To be advised as per the course location.** This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

## Course Timings:

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### Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session