

Course Type	Course Code	Name of Course	L	T	P	Credit
DC11	PEC306	Directional Drilling	3	0	0	9

Course Objective

The objective of the course is to provide detailed knowledge of directional drilling, directional well profile, monitoring of the progressing well path and corrective measures for deflected well trajectory.

Learning Outcomes

Upon successful completion of this course, students will:

- have a broad understanding of different type of well profiles.
- Ability to monitor the progressing well path.
- Expertise to correct the deflected well path.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Introduction to Directional drilling, its objectives, deflection tools and tool orientation	5	Understanding of directional coordinates and techniques
2	Directional Drilling: Directional well profiles. Slant Hole Drilling: Objectives and selections, Well profiles and applications.	5	Understanding of Three dimensional geometry of directional well profiles
3	Well Monitoring: Well path deflection & correction. Down the hole surveying methods, Surveying Analysis Methods and Calculations of Three-Dimensional well coordinates.	5	Ability to check the profile of the progressive well and to correct the deflected well path
4	Measurements and Logging While Drilling: Objectives of MWD/ LWD, SWD, MWD tools, Telemetry system.	6	knowledge of well monitoring without interrupting the drilling progress
5	Down Hole Motors: Positive displacement motors and Turbo-drills - motor description, Power calculation and applications. Auto-track and verti-track system. Rotary Steerable system, Geo-steering tools.	5	Awareness of different bottom drive drilling systems and their applications
6	Horizontal Well Drilling: Horizontal well objectives and selection, Different profiles, Drilling techniques, Mud requirements & characteristics, casing and drill string requirements and completion programs. Hole cleaning in high angled wells.	6	Exposure of Horizontal well drilling technology and its applications
7	Special Methods of Directional Drilling: Extended reach drilling, Multilateral drilling, coil tubing drilling and Geo-steering.	5	Exposure of technology for exploration of multi seam and multi layered formation profiles
8	Directional drilling problems and their remedies, torque and drag, stress-strain analysis.	5	Ability to handle the directional well problems properly
	Total contact hours:	42	

Text Books:

- Oil Well Drilling : H Rabia
- Applied Drilling Engineering : Adam T.Bourgoyne Jr. et. al

References:

- Advanced Drilling Techniques : William C. Maurer
- Horizontal Well Technology : SD Joshi
- Horizontal Wells : R. Aguilera et. Al