



Indian Institute of Technology

Course Details Report

Course No: PE6020

Course Name: Drilling Technology

Course Type:

Theory

Description:

This course provides a comprehensive understanding of the drilling process in oil and gas extraction. It covers essential and advanced drilling technologies, including directional, horizontal, laser, and extended-reach drilling. These techniques are useful to enhance oil and gas operations' efficiency, flexibility, and sustainability. The course focuses on equipping students with in-depth knowledge of directional and horizontal drilling methods

Learning Outcomes:

Upon completing this course, students will thoroughly understand vertical, directional, and horizontal drilling techniques, learn about drilling tools, well profiles, and survey analysis, and understand various drilling processes, drill fluids, casing, and drill string requirements.

Course Content:

Drilling Technology Introduction to drilling, drilling fluid — properties and design, drill string, casing, drill bit, cementing.

Directional DOAIM;: Introduction to directional drilling, its objectives, deflection tools and tool orientation, directional well profiles, down-the-hole surveying methods, and surveying analysis methods.

Horizontal and Drilling: Horizontal drilling definition and objectives, different profiles, drilling techniques, mud requirements & characteristics, casing, and drill string requirements, and completion.

Advanced Drilling Techniques: Drilling of HP/HT wells, laser drilling, extended reach drilling, multilateral drilling, coil tubing drilling, and geo-steering.

Text Books:

1. H. Rabia. Oil Well Drilling Engineering — principles and practice. 1985. Graham & Trotman Inc.
2. Dr. Bill Mitchell. Advanced Oilwell Drilling Engineering — Handbook and Computer Programs. 1995. USA Library of congress, MITCHELL ENGINEERING, USA.
3. T. A. Inglis. Directional Drilling — Volume 2. 1987. Graham & Trotman, London.
4. S. D. Joshi. Horizontal Well Technology. 1991. Pennwell Books, Tulsa, OK, USA.

Reference Books:

1. Adam T. Bourgoyne Jr. et al., Applied Drilling Engineering. 1991. Society of Petroleum Engineers, USA.
2. Peter G. Mills. Deviated Drilling. 1986. IHRDC Publishers, Newbury Street, Boston, MA.
3. J. A. "JIM" SHORT. Introduction to Directional and Horizontal Drilling. 1993. Pennwell Books, Tulsa, OK, USA.