

Production Engineering

1.1 Course Number: PE231

1.2 Contact Hours: 3-0-0 Credits: 9

1.3 Semester-offered: 2nd Year-Even

1.4 Prerequisite: Basic Reservoir and Drilling Engineering

1.5 Syllabus Committee Member: Dr. Shivanjali Sharma

2. **Objective:** Designing, Analyzing and Optimizing Petroleum Production System

3. **Course Content:**

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topic	Lectures
1	Well Components:	Wellbore, Wellhead, Flow line, Safety Control System. Reservoir Deliverability: Vertical Wells, Horizontal Wells, Multilateral Wells, Inflow Performance Relationship, Construction of IPR Curves Using Test Points, Composite IPR of Stratified Reservoirs, Future IPR	15
2	Wellbore Performance:	Single-Phase Liquid Flow, Single-Phase Gas Flow, Multiphase Flow in Oil Wells Choke Performance: Sonic and Subsonic Flow, Single-Phase Liquid Flow, Single-Phase Gas Flow, Multiphase Flow Well Deliverability: Principle of Nodal Analysis	13
3	Well Tubing and Packers:	Wellhead-Tubing-Packer Relation, Tubing selection, Production Packers. Perforating methods, design and equipment Field processing of oil & gas: Separation Systems, Dehydration Systems Pressure vessels, shell and tube heat exchangers. Storage of petroleum and petroleum products	12
		Total	40

4. Readings

4.1 Textbook:

- 1) Nind, T.E.W: Principles of Oil Well Production, 1981, Mc. Graw - Hill Co.
- 2) Allen Thomas, and Alan Roberts; 1989, Production Operations, Volume 1 and 2; 3rd Edition, Oil and Gas Consultants International, Inc

4.2 Reference books:

Larry W. Lake: Petroleum Engineering Handbook Volume IV: Production Operations Engineering 2007. Society of Petroleum Engineers

5 Outcome of the Course:

- Students will get to learn about: Components and Performance Analysis of Petroleum Production Systems Oil and Gas Processing and Surface Facilities, Monitoring and evaluation of Flow Assurance