Offshore Oil and Gas Technology

1.1 Course Number: PE311

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

1.3 Semester-offered: 3rd Year-Odd

1.4 Prerequisite: Drilling Technology and Fluid Mechanics

1.5 Syllabus Committee Member: Dr Amit Saxena

2. **Objective:**

- Introduce different types of deep water offshore structures and challenges.
- Estimation of different types of loads on offshore structures such as gravity, wind, wave and current loads.
- Design of fixed offshore structures.
- Concepts of floating structures.
- Fundamental aspects of semisubmersible, TLP, spar and installation methodologies.

3. **Course Content:**

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topic	Lectures
1	Ocean Environment and Sea states, Offshore Fixed Platforms	Introduction to offshore oil and gas operations. Sea States and Weather, Meteorology, oceanography, ice, seabed soil, Buoyancy and stability. Offshore Fixed Platforms: Types, description and operations.	14
2	Offshore mobile units, and offshore drilling units	Offshore Mobile Units: Types, description and installation. Station keeping methods like conventional mooring & dynamic positioning system. Offshore Drilling: offshore drilling from fixed platform, jack up, ships and semi submersibles. Use of conductors and risers.Offshore Well Completion - Platforms and subsea completions, Deep water applications of subsea technology.	14
3	Deep water Technology	Deep water technology: Introduction, definition & prospects. Deep water regions, Deep water drilling rig – selection and deployment, Deep water production system, Emerging deep-	12

		water technologies – special equipment and systems, Remote operation vessels (ROV)	
		Total	**40**

4. Readings

4.1 Textbook:

- Sukumar laik: Offshore Petroleum Drilling and Production, 2016, CRC Press.

4.2 Reference books:

- Subrata Chakavarty: Handbook of Offshore Engineering, 2005, Elsevier
- Srinivasan Chandrasekaran, Arvind Kumar Jain: Ocean Structures: Construction, Materials, and Operations 1st Edition, 2016, CRC Press

5 Outcome of the Course:

Basic understanding of Oceanography, offshore structures, different operations, offshore drilling units and Equipment's used in the industry.