

## **B.Tech, Petroleum Engineering 4-Year Degree Program Scheme**

The B. Tech. degree program in Petroleum Engineering is designed to equip students with a strong foundation in engineering principles and specialized knowledge in the field of petroleum Exploration, Exploitation, Production, and Reservoir management. This four-year program is carefully structured to provide students with a comprehensive understanding of the petroleum industry and the technical skills required for successful careers in the oil and gas sector. Each year knowledge is aligned with the subsequent year curriculum to fulfil the objective of the course.

**Year 1:** In the first year, students will focus on building a strong foundation in applied mathematics, physics, chemistry, and engineering fundamentals. They will be introduced to the basics of petroleum engineering, computer programming, and engineering graphics. Through hands-on workshop practices, they will gain valuable practical skills, and communication courses will foster effective interpersonal abilities.

**Year 2:** The second year start more deeper into core petroleum engineering subjects. Students will study applied Geology, Sedimentology, Thermodynamics, Heat and mass transfer, Fluid mechanics and Rock mechanics, which are essential components of petroleum engineering. They will also gain insight into well drilling engineering and reservoir engineering principles. Geology for Petroleum Engineers will provide the geological context crucial for understanding hydrocarbon reservoirs. In addition to this option for open elective courses i.e. Introduction to Petroleum Operations , Ground Penetrating Radar, Geothermal Energy Fundamental of petroleum data acquisition and processing, Corrosion Evaluation and Monitoring, Mud Logging is also available. To make a clear understanding of the theoretical knowledge various lab e.g. Geology Lab & Field Visit, Gomatic Engineering Lab Fluid & Particle Mechanics Lab, Drilling Fluid & Cementing Lab, Heat & Mass Transfer Lab have been setup and the students are doing hand on exercises on live samples.

**Year 3:** In the third year, the focus shifts towards advanced and essential, topics in petroleum engineering. Students will dive into Petroleum Geophysics, reservoir engineering, Reservoir modelling and simulation, formation evaluation, and well logging, gaining proficiency in evaluating subsurface reservoir properties. They will also learn about production engineering, drilling fluids, and natural gas engineering. Enhanced Oil Recovery (EOR) methods will be explored to optimize hydrocarbon recovery. Health, Safety, and Environment considerations in the petroleum industry will be emphasized. Elective courses in various specialized areas will be introduced to cater to individual interests and career goals i.e. Applied Machine Learning for Reservoir Characterization, advance Reservoir modelling and simulation Lab on industry standard software's RMS of Emerson, Geo-log of Paradigm, Oil Field Instrumentation and Control Lab, Hydrocarbon Accounting etc has been set up for hand on practice.

**Year 4:** The final year will consolidate students' knowledge and skills in petroleum engineering. Courses will cover topics such as reservoir management, petroleum economics, and project management. Petroleum geology and exploration will provide

insights into hydrocarbon discovery and prospect evaluation. Environmental management within the petroleum industry will be addressed to ensure sustainable practices. Students will undergo practical training through internships or industrial projects, allowing them to apply their knowledge to real-world situations. In addition, they will undertake a final year project, fostering research and problem-solving abilities.

**Electives:** Throughout the program, students will have the flexibility to choose elective courses from a range of specialized topics, allowing them to tailor their learning based on their interests and career aspirations. Elective subjects may include drilling optimization, computational methods in petroleum engineering, unconventional reservoir engineering, and more.

The B.Tech Petroleum Engineering 4-Year Degree Program is thoughtfully designed to strike a balance between theory, hands-on practice, and industry exposure. Graduates will emerge as well-rounded professionals, ready to contribute to the challenges and opportunities in the dynamic world of the petroleum industry.