

# PETROLEUM AND NATURAL GAS ENGINEERING, B.S.

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**Begin Campus:** Any Penn State Campus

**End Campus:** University Park

## Program Description

The undergraduate curriculum in Petroleum and Natural Gas Engineering has been designed to equip the student with the fundamentals necessary to achieve lifelong professional growth. Graduates are prepared to enter both the private and public sectors as petroleum and natural gas engineers or to pursue further education at the graduate level.

The courses are structured to serve as a melting pot for theory, application to case studies, and engineering project design. This enables the student to appreciate and understand that a successful engineering design project requires a sound theoretical foundation, experimentation and engineering judgment. The thrust of the program structure emphasizes the fundamentals of mathematics and earth and engineering sciences and integrates them in application to traditional petroleum and natural gas engineering topics. Design projects are required throughout the curriculum. Execution of these projects requires an amalgamation of problem formulation strategies, testing of alternative design methodologies, feasibility studies, and economic and environmental considerations. Graduates of the program are expected to perform in various facets of the petroleum industry including drilling, production, evaluation, transportation, and storage. The petroleum and natural gas engineering faculty and staff are committed to an interactive teaching and learning environment to ensure that the student is an active participant in the learning process. General education opportunities are sufficiently broad and diverse in scope to enable the student to tailor the educational experience to particular interests, background, and expected role in society.

## What is Petroleum and Natural Gas Engineering?

Petroleum and Natural Gas Engineering is a field related to extracting hydrocarbon resources from subsurface reservoirs. This engineering discipline is about designing, implementing, and managing solutions for subsurface energy production and storage. Petroleum and natural gas engineers solve crucial problems related to one of the most important resources for society today: energy. They predominantly work in the upstream sector of the oil and energy industries, which comprises exploration, field development, well drilling, production and injection well optimization. Once oil and gas are discovered, petroleum engineers determine optimum drilling and completion methods, monitor and manage production operations, and design reservoir development strategies. They are responsible for providing engineering solutions with global economic, environmental, geopolitical, and societal impacts. They are well-suited to solve complex problems in geothermal energy, geological carbon sequestration, hydrogen and energy storage, wastewater disposal, and environmental remediation of soil, groundwater, and other geologic media.

## You Might Like This Program If...

- You enjoy combining disciplines such as geology, chemistry, physics, and mathematics to solve complex problems of importance to society.

- You want to use science and engineering principles to tackle the challenges of global energy demands.
- You seek a profession that offers domestic and international networking opportunities.
- You enjoy working in the field, performing sophisticated computer simulations, or interpreting geologic and production data.