

Shale Gas Opportunities

It's no secret that petroleum and natural gas engineers are currently in great demand, thanks in large part to the discovery of shale gas plays in the United States. Petroleum and natural gas engineers design and develop methods for getting oil and gas from underground deposits, and work to find ways to extract oil and gas from older wells. Admission to West Virginia University's Department of Petroleum and Natural Gas Engineering is competitive, with qualified applicants receiving instruction in drilling engineering, production engineering, reservoir engineering and stimulation design.

While space in the degree program is limited, opportunities to earn a degree at West Virginia University in an area impacted by the shale gas boom aren't! There are a variety of ways in which you may be able to enter the shale gas employment arena.





Programs offered in the Statler College of Engineering and Mineral Resources

CHEMICAL ENGINEERING

Shale gas supplies not only provide domestic energy security, but also create a competitive advantage for U.S. petrochemical manufacturers. Ethane, a component of shale gas, is used by companies to produce ethylene gas through a process known as steam cracking. Ethylene is a building block of a variety of chemicals, include detergents and paints, as well as plastics. Chemical engineers help formulate the ingredients for these chemical-based products, design the equipment used to manufacture or process them and create the procedures used in the process.



CIVIL ENGINEERING

Road and site engineering, field surveying and environmental compliance play key roles in shale exploration and development. Civil and environmental engineers work to minimize the impact on water resources; geological stability of impacted areas; air quality; and infrastructure assets such as roads, pipelines, water and wastewater networks.



ELECTRICAL ENGINEERING

Effective use of energy from shale gas requires conversion of gas into usable energy for homes and vehicles. Electrical engineers work to implement efficient methods for generation, transmission and distribution of energy, including development of smart electrical grids and hybrid-electrical vehicles.



INDUSTRIAL ENGINEERING

A recent report noted that by 2025, shale gas could add more than 1 million workers to the nation's manufacturing industry. That's good news for industrial engineers, who work to find the most efficient processes for production and services.



MECHANICAL ENGINEERING

Mechanical engineers are involved in all stages of the shale gas industry, from production, to storage, to distribution, and utilization. They develop energy-efficient equipment that burns shale gas or its products to generate power, electricity, heating, or cooling with little or no impact on the environment. They play a key role in the design, manufacturing and operation of a wide range of energy systems such as engines, turbines, power plants, and heating and ventilation equipment.

Programs offered in other colleges at West Virginia University include...

ENVIRONMENTAL AND ENERGY RESOURCES MANAGEMENT

As the shale gas industry grows, so do issues related to the business of energy production and utilization, along with associated environmental management, regulatory and policy issues. Students enrolled in this newly created major, offered in the Davis College of Agriculture, Natural Resources and Design, will earn an understanding of how to coordinate the management of these resources across regulatory, institutional and socio-economic structures.

GEOSCIENCE

The growing need for energy and natural materials, environmental protection, natural-hazard mitigation and responsible stewardship of land and natural resources has led to an increased need for geoscientists, who study the physical aspects of the Earth. The Eberly College of Arts and Sciences offers degree programs in geology, geography and environmental geoscience, all of which are experiencing unprecedented growth.

 **West Virginia University**
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