

Petroleum Engineers

SOC: 17-2171 • Career Profile Report

■ Key Facts

<div>\$141,280</div> <div>Median Salary</div>	<div>19,600</div> <div>Employment</div>	<div>+1.0%</div> <div>Growth Rate</div>
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■ Requirements & Salary Range

Education: Bachelor's degree

■ Automation Risk Assessment

Low Risk - 17.0% probability of being automated in the next 10-20 years.
This job is relatively safe from automation due to its creative, social, or complex problem-solving requirements.

■ Work-Life Balance

7.2/10 - Good work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	8.2/10	Investigative	8.8/10
Artistic	6.4/10	Social	5.2/10
Enterprising	5.8/10	Conventional	6.6/10

■ Top Skills Required

Analytical skills, Communication skills, Interpersonal skills, Math skills, Problem-solving skills

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Petroleum Engineers are specialized engineers who design and manage **methods for extracting oil and natural gas safely, efficiently, and economically**. They develop technologies and processes that maximize energy recovery while minimizing environmental impact and operational risk. Their work supports global energy supply by improving how subsurface resources are discovered, produced, and managed.

This career is well suited for individuals who enjoy applied engineering, geology, and solving complex problems in high-stakes industrial environments.

What Do Petroleum Engineers Do?

Petroleum engineers plan and oversee drilling and production operations from exploration through long-term field management. Their responsibilities combine engineering analysis, field coordination, and risk management.

Common responsibilities include:

- Designing drilling plans and well completions
- Evaluating underground rock and fluid properties
- Selecting equipment and production methods
- Monitoring well performance and production data
- Improving recovery techniques and efficiency
- Ensuring safety and regulatory compliance
- Collaborating with geologists and operations teams

Areas of Specialization

Petroleum engineers often focus on specific stages of oil and gas production:

- Drilling Engineers: Design and manage drilling operations and equipment.
- Reservoir Engineers: Analyze subsurface reservoirs to maximize resource recovery.
- Production Engineers: Optimize day-to-day oil and gas production.
- Completion Engineers: Design systems that prepare wells for production.
- Well Intervention Engineers: Improve performance of existing wells.
- Facilities Engineers (related role): Design surface processing and transportation systems.

Skills and Abilities Needed

Petroleum engineers combine advanced technical knowledge with operational judgment.

Core Professional Skills

Personal Qualities That Matter

Education and Career Pathway

Becoming a petroleum engineer requires specialized engineering education:

- Bachelor's Degree: In petroleum engineering or a related engineering field
- Internships and Field Experience: Hands-on exposure to drilling or production operations
- Professional Licensure (optional but beneficial): Professional Engineer (PE) credential
- Advanced Education (optional): Master's degree for research or advanced technical roles
- Continuing Education: Staying current with energy technologies and regulations

Where Do Petroleum Engineers Work?

Petroleum engineers are employed across the energy sector:

- Oil and Gas Exploration and Production Companies

- Energy Service and Engineering Firms
- Refining and Processing Facilities
- Government and Regulatory Agencies
- Energy Research and Technology Organizations
- Offshore and Remote Field Operations

Work environments may include offices, drilling sites, offshore platforms, and production facilities.

How Much Do Petroleum Engineers Earn?

Earnings reflect the technical complexity and responsibility of the role:

- Entry-Level Engineers: Typically earn high professional starting salaries
- Experienced Petroleum Engineers: Often earn higher pay with specialization and field experience
- Senior or Technical Specialists: May earn premium compensation in complex projects

Compensation varies by location, market conditions, and employer.

Is This Career Difficult?

Petroleum engineering is technically rigorous and operationally demanding. Engineers must manage safety risks, environmental concerns, and complex subsurface uncertainties. The challenge lies in making high-impact decisions with incomplete data while operating in demanding environments.

Who Should Consider Becoming a Petroleum Engineer?

This career may be a strong fit if you:

- Enjoy engineering, physics, and applied math
- Are interested in energy systems and subsurface science
- Can handle responsibility and technical complexity
- Are comfortable working in industrial or remote settings
- Want a high-impact engineering career in the energy sector

How to Prepare Early

- Take advanced courses in math, physics, and chemistry
- Learn basic geology and earth science concepts
- Develop engineering problem-solving skills
- Seek internships or co-op roles in energy or engineering firms
- Explore accredited petroleum or mechanical engineering programs

Petroleum engineers power the modern energy economy by applying advanced engineering expertise to safely and efficiently unlock the world's oil and natural gas resources.