

PETROLEUM ENGINEERING:

ENGINEERING THE FUTURE OF ENERGY



WHAT IS PETROLEUM ENGINEERING?

Wars are fought over it. Global economies would collapse without it. Life as we know it would cease to exist without oil and gas, and petroleum engineers are the only ones who know how to extract it safely from the earth. They solve the most critical and pressing global energy challenges facing humanity, including how to meet increasing global demand for energy while ensuring the safety and cleanliness of our environment.

Projections from the United States Energy Information Administration predict a substantial increase in demand for energy of all types over the next 30 years. They predict that oil and natural gas will constitute about 50 percent of the total energy supply throughout that period. They also predict that, unless significant improvements in technology are discovered, the increased demand for energy will result in increased atmospheric carbon dioxide concentrations. However, new technologies and practices in directional and horizontal drilling, as well as hydraulic fracturing, have opened vast, new domestic natural gas production capabilities which offer the prospect of an ample supply of low-carbon energy for the next century or more in the U.S.

CAREERS IN PETROLEUM ENGINEERING

Career opportunities for petroleum engineers are fantastic, especially in the city of Houston, the Energy Capital of the World. Employment opportunities are widely available with the major integrated international energy companies and service providers, or the many intermediate and independent oil and gas producers, drilling companies, special equipment companies and industry support companies. Employment can be domestic or international, onshore or offshore, and can involve the most sophisticated intelligent systems and technologies. Early on, it can involve specific technical and operational assignments, and later, engineering and business leadership positions. Petroleum engineers with appropriate experience and knowledge often start their own oil and gas companies.

A 2017 salary survey produced by the National Association of Colleges and Employers found that new petroleum engineering graduates earned an average starting salary of \$77,000.

WHY EARN YOUR PETROLEUM ENGINEERING DEGREE AT THE UNIVERSITY OF HOUSTON?

ACADEMICS

The vision for the UH petroleum engineering department is to be the center of world-class petroleum engineering education, research and service in the city of Houston, the center of the world's petroleum industry. Petroleum engineering undergraduate students are taught by leading researchers and industry professionals. Students are prepared to address the challenges of the world's energy needs responsibly, to exceed the evolving expectations of employers in the petroleum and energy industries, to sustain industry leading skills and to be leaders in industry, academia and government.

Learn more at www.petro.uh.edu/undergraduate/overview

INTERNSHIPS

Almost half of Houston's economy is driven by energy, with more than 3,600 energy-related companies based in Houston. All of the major oil and gas companies have operations in Houston, and the region boasts almost 40,000 jobs just in oil and gas extraction,

representing a third of such positions worldwide! The petroleum engineering department at UH is located just a few miles down the road from the world's leading energy companies, so you are expected to hold internships in some of the world's most prestigious offices while working to obtain your bachelor's degree in petroleum engineering.

Internships can be summer-based or can involve 10-20 hours per week throughout the year while taking classes, which is difficult at universities that aren't located in the city of Houston. Interns receive compensation and valuable experience in real petroleum engineering assignments, enhancing the opportunity for direct hire upon graduation.

Learn more at www.petro.uh.edu/undergraduate/internships

RESEARCH

At the University of Houston Cullen College of Engineering, there's no shortage of research for petroleum engineering students. The University of Houston is home to some of the world's most advanced energy research in areas such as sustainability, alternatives and grid power, solar energy, wind energy and superconductivity. Moreover, the university has a 74-acre campus, called Energy Research Park, dedicated solely to bringing industry and academia together to conduct energy research in clean engines and fuels, wind energy, superconductivity and petroleum engineering. All undergraduate students in engineering are strongly encouraged to get hands-on research experience in one of the many faculty research groups, labs or centers on campus while they are pursuing their degrees.

Learn more at www.petro.uh.edu/undergraduate/research_resources

SCHOLARSHIPS

Departmental scholarships are offered through the petroleum engineering program for qualified, top-performing students. Merit-based scholarships are also awarded by the Cullen College of Engineering.

Additional scholarships are offered by the University of Houston Office of Scholarships and Financial Aid. Also, the university's co-op program allows students to receive career training while financing their education.

Learn more at www.petro.uh.edu/undergraduate/scholarship

STUDENT ORGANIZATIONS

Students are encouraged to join academic and professional organizations to build leadership, communication and networking skills. Members of student organizations receive career guidance from engineering professionals and participate in activities that promote engineering.

Petroleum engineering organizations include the Society of Petroleum Engineers (SPE) and the American Association of Drilling Engineers (AADE).

Learn more at www.petro.uh.edu/people/student-organizations

FOR MORE INFORMATION

UH Department of Petroleum Engineering: www.petro.uh.edu

Undergraduate Program: www.petro.uh.edu/undergraduate/overview

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UNIVERSITY of **HOUSTON** | ENGINEERING

BACHELOR OF SCIENCE IN PETROLEUM ENGINEERING

FOUR-YEAR ACADEMIC MAP 2018-2019

YEAR 1

| SEMESTER 1 | | SEMESTER 2 | | Total | |
|--------------------------|-------------------------------|--------------------------|-----------|----------------------------------|---|
| ENGL 1303 | First Year Writing I | 3 | ENGL 1304 | First Year Writing II | 3 |
| MATH 1431 | Calculus I | 4 | MATH 1432 | Calculus II | 4 |
| GEOL 1330 | Physical Geology | 3 | PHYS 1321 | University Physics I | 3 |
| GEOL 1130 | GEOL Lab | 1 | CHEM 1332 | Fundamentals of Chemistry II | 3 |
| CHEM 1331 | Fundamentals of Chemistry | 3 | CHEM 1112 | Fundamentals of Chemistry Lab II | 1 |
| CHEM 1111 | Fundamentals of Chemistry Lab | 1 | ENGI 1331 | Computing for Engineers | 3 |
| ENGI 1100 | Introduction to Engineering | 1 | | | |
| Semester Hours 16 | | Semester Hours 17 | | 33 | |

YEAR 2

| SEMESTER 1 | | SEMESTER 2 | | Total | |
|--------------------------|--------------------------------|--------------------------|--------------|------------------------------|---|
| HIST 1376/77 | The United States to 1877 | 3 | HIST 1378/79 | The United States Since 1877 | 3 |
| MATH 2433 | Calculus III | 4 | MATH 3321 | Engineering Mathematics | 3 |
| PHYS 1322 | University Physics II | 3 | CORE | Social & Behavioral Science | 3 |
| INDE 2333 | Statistics | 3 | MECE 2334 | Thermodynamics | 3 |
| PETR 2311 | Reservoir Petrophysics Lecture | 3 | PETR 2313 | Reservoir Fluids | 3 |
| PETR 2111 | Reservoir Petrophysics Lab | 1 | | | |
| PETR 1111 | Intro to Petroleum Engr | 1 | | | |
| Semester Hours 18 | | Semester Hours 15 | | 33 | |

YEAR 3

| SEMESTER 1 | | SEMESTER 2 | | Total | |
|--------------------------|--------------------------|--------------------------|-----------|---------------------------------------|---|
| ENGI 2304 | Technical Communications | 3 | POLS 1336 | U.S. & Texas Constitutions & Politics | 3 |
| MECE 3400 | Intro to Mechanics | 4 | CHEE 3363 | Fluid Mechanics for Chemical Engr | 3 |
| PETR 3315 | Intro to Well Logging | 3 | PETR 3318 | Well Drilling & Completion I | 3 |
| PETR 3362 | Reservoir Engineering I | 3 | PETR 3321 | Pressure Transient Testing | 3 |
| PETR 3372 | Petroleum Production | 3 | PETR 3310 | Petroleum Production Economics | 3 |
| Semester Hours 16 | | Semester Hours 15 | | 31 | |

YEAR 4

| SEMESTER 1 | | SEMESTER 2 | | Total | |
|-----------------------------|---------------------------------|--------------------------|------------|---------------------------------|---|
| POLS 1337 | U.S. Government | 3 | CORE | Language, Philosophy & Culture | 3 |
| CORE | Creative Arts | 3 | PETR Elect | Petroleum Technical Elective #2 | 3 |
| PETR Elect | Petroleum Technical Elective #1 | 3 | PETR Elect | Petroleum Technical Elective #3 | 3 |
| PETR 4301 | Resrv Character & Modeling | 3 | GEOL Elect | Geoscience Elective | 3 |
| PETR 4311 | Capstone SR. Project I | 3 | PETR 4312 | Capstone SR. Project II | 3 |
| Semester Hours 15 | | Semester Hours 15 | | 30 | |
| TOTAL SEMESTER HOURS | | | | 127 | |

*Students should meet with their academic advisor to formulate their own plan. Course offerings are subject to change.



FAST FACTS

530

TOTAL UNDERGRAD
STUDENTS IN PE
DEPARTMENT

\$77,000

AVERAGE STARTING
SALARY WITH B.S. IN
PETROLEUM ENGINEERING

11

TOTAL
FACULTY IN PE
DEPARTMENT

138

TOTAL FACULTY
IN CULLEN
COLLEGE

22:1

STUDENT-TO-FACULTY
RATIO ACROSS THE
UNIVERSITY