# BACHELOR OF SCIENCE IN
# PETROLEUM ENGINEERING

## WHY PETROLEUM ENGINEERING?

Modern civilization would not have existed as we know it today without oil and gas providing the means to transport goods across the globe, providing the necessary energy for transportation across the world or across the country. Petroleum engineers are the only ones who know how to extract hydrocarbons safely and efficiently from the underground formations. 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.

## 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.

A 2022 salary survey produced by Payscale.com found that petroleum engineering graduates earned an average base salary of $101,170.

## HOW WE EVOLVE

Petroleum engineers are at the heart of seeking energy for the future.

How do we do it: by seeking low-cost, clean, traditional and alternative energy sources for transportation and power generation including alternative fuels and their efficient combustion; employ new technology to enhance production and the efficient utilization of petroleum fuels; seek out materials and technology for compact and alternative power sources; and search for efficient power transmission and distribution.

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

### ACADEMICS

The vision for the Petroleum Engineering Department at UH is to be at the center of world-class petroleum engineering education, research, and service in the city of Houston, the center of the world's energy industry. Petroleum engineering undergraduate students are taught by leading academic 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.

Our degree plan offers a conventional degree in petroleum engineering covering the four main pillars: Reservoir, Production, Drilling and Formation Evaluation Engineering. We also have a minor in Renewable Energy Engineering that covers the latest applications in the energy industry.

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 the major oil and gas companies have operations in Houston, and the region boasts almost 40,000 jobs just in oil and gas extraction, Which represents 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. Our students are expected to hold internships in some of the world's most prestigious offices while working to obtain a bachelor's degree in petroleum engineering.

Internships may be summer-based or may 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

At UH, we have the support of our Petroleum Engineering Advisory Board (PEAB), where funds have been donated to partner with Houston energy companies to create Externships. These opportunities provide students with current issues to research and solve. They are co-led by UH Faculty and companies such as Oxy, SLB, Hess, Exxon and many more.

UH also has university partnerships with Study Abroad programs and internships.

### RESEARCH

At the University of Houston Petroleum Engineering Department, pioneering research is taking place to evaluate hydrocarbon bearing formations, produce oil and gas efficiently and to venture into new areas of securing the decarbonization of energy production. The University of Houston Petroleum Engineering Department is home to some of the world's most advanced energy research in areas such as waterless stimulation, formation evaluation and testing techniques, $CO_2$ sequestration, hydrocarbon production techniques, and application to renewable energy techniques such as Hydrogen application and economy.

Learn more at www.petro.uh.edu/graduate/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)

American Association of Drilling Engineers (AADE)

Other petroleum student organizations such as Pi Epsilon Tau (PIET), ARMA and SPWLA all have chapters within the department.

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

Cullen College of Engineering
UNIVERSITY OF HOUSTON

U.S. Well - Exhibit 2014
Liberty v. U.S. Well - IPR2025-00066

# BACHELOR OF SCIENCE IN PETROLEUM ENGINEERING

# ILLUSTRATIVE FOUR-YEAR ACADEMIC PLAN

## YEAR 1

| SEMESTER 1 | | | SEMESTER 2 | | | Total |
|---|---|---|---|---|---|---|
| ENGL 1301 | First Year Writing I* | 3 | ENGL 1302 | First Year Writing II* | 3 | |
| MATH 2413 | Calculus I* | 4 | MATH 2414 | Calculus II* | 4 | |
| GEOL 1303 | Physical Geology | 3 | PHYS 2325 | University Physics I | 3 | |
| GEOL 1103 | GEOL Lab | 1 | CHEM 1312 | Fundamentals of Chemistry 2* | 3 | |
| CHEM 1311 | Fundamentals of Chemistry* | 3 | CHEM 1112 | Fundamentals of Chemistry Lab | 1 | |
| CHEM 1111 | Fundamentals of Chemistry Lab | 1 | ENGI 1331 | Computing for Engineer | 3 | |
| ENGI 1100 | Introduction to Engineering | 1 | | | | |
| | **Semester Hours** | **16** | | **Semester Hours** | **17** | **33** |

## YEAR 2

| SEMESTER 1 | | | SEMESTER 2 | | |
|---|---|---|---|---|---|
| HIST 1301 | The United States to 1877* | 3 | HIST 1302 | The United States Since 1877* | 3 |
| MATH 2415 | Calculus III | 4 | MATH 3321 | Engineering Mathematics | 3 |
| PHYS 2326 | University Physics II | 3 | INDE 2333 | Statistics | 3 |
| PETR 1111 | Intro to Petroleum Engr | 3 | MECE 2334 | Intro to Thermodynamics | 3 |
| PETR 2311 | Reservoir Petrophysics | 3 | PETR 2313 | Reservoir Fluids | 3 |
| PETR 2111 | Reservoir Petrophysics - Lab | 1 | | | |
| | **Semester Hours** | **18** | | **Semester Hours** | **15** **30** |

## YEAR 3

| SEMESTER 1 | | | SEMESTER 2 | | |
|---|---|---|---|---|---|
| ENGI 2304 | Technical Communications* | 3 | GOVT 2306 | U.S. & TX Constitutions & Politics* | 3 |
| PETR 3363 | Fluid Mechanics | 3 | PETR 3310 | Petroleum Production Economics | 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 |
| MECE 3400 | Intro to Mechanics | 4 | PETR 3372 | Petroleum Production Operations | 3 |
| | **Semester Hours** | **16** | | **Semester Hours** | **15** **31** |

## YEAR 4

| SEMESTER 1 | | | SEMESTER 2 | | |
|---|---|---|---|---|---|
| GOVT 2305 | U.S. Government* | 3 | CORE | Language, Philosophy & Culture* | 3 |
| CORE | Creative Arts* | 3 | PETR ELEC | Petroleum Technical Elective #2 | 3 |
| CORE | Social & Behavioral Sciences* | 3 | PETR ELEC | Petroleum Technical Elective #3 | 3 |
| PETR ELEC | Petroleum Technical Elective #1 | 3 | GEOL ELEC | Geoscience Elective | 3 |
| PETR 4301 | Reservoir Character & Modeling | 3 | PETR 4312 | Capstone SR. Project II | 3 |
| PETR 4311 | Capstone SR. Project I | 3 | | | |
| | **Semester Hours** | **18** | | **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.*

## PE FAST FACTS

**65** Total Undergrad Students in Department

**208** Total Faculty in Cullen College

**$101,170** Average Salary

**21:1** Student-to-Faculty Ratio in the PE Department

# FOR MORE INFORMATION

Get in touch with us and schedule a virtual or in person meeting: https://www.egr.uh.edu/academics/undergraduate-programs
UH Department of Petroleum Engineering: www.petro.uh.edu
Undergraduate Program: www.petro.uh.edu/undergraduate/overview | Email: mastrum@uh.edu or tajohnson@uh.edu

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