

# Petroleum Engineering

College of Engineering and Mines  
Department of Petroleum Engineering  
(907) 474-7734  
www.uaf.edu/petrol/

## B.S. Degree

Minimum Requirements for Degree: 134 credits

The mission of the petroleum engineering program is to provide its students with quality education and training in the field of petroleum engineering through effective teaching, research and public service, with emphasis on Alaska petroleum resources.

Petroleum engineering offers a unique look at the challenging problems confronting the petroleum industry. This program requires an understanding of many disciplines including mathematics, physics, chemistry, geology and engineering science. Courses in petroleum engineering deal with drilling, formation evaluation, production, reservoir engineering, computer simulation and enhanced oil recovery.

The curriculum prepares graduates to meet the demands of modern technology while emphasizing, whenever possible, the special problems encountered in Alaska. Located in one of the largest oil-producing states in the nation, the UAF petroleum engineering department offers one of the most modern and challenging degree programs available.

The petroleum engineering program educational objectives are:

1. Provide students with a broad knowledge of the principles of petroleum engineering and their application.
2. Provide students with the knowledge and skills required to design and analyze petroleum engineering problems, taking into account, safety, environmental and societal impacts.
3. Provide students with the skills necessary to perform in the multi-disciplinary environment of the 21st century.
4. Provide students with appreciation for the value of continuing professional development in maintaining their professional competence.
5. Assure that graduates from the program are well-prepared to succeed in their professional careers, whether they pursue graduate studies or enter the work force in industry, academia or government.

For more information about the Petroleum Engineering Program mission, goals and educational objectives, visit [www.uaf.edu/petrol/](http://www.uaf.edu/petrol/).

## Major—B.S. Degree

1. Complete the general university requirements. (See page 116. As part of the core curriculum requirements, complete: MATH 200X, CHEM 105X and 106X, and LS 101X.)
2. Complete the B.S. degree requirements. (See page 121. As part of the B.S. degree requirements, complete: MATH 201X, PHYS 211X and 212X.)

3. Complete the following program (major) requirements\*:

ES 201—Computer Techniques .....	3
ES 208—Mechanics.....	4
ES 331—Mechanics of Materials.....	3
ES 341—Fluid Mechanics .....	4
ES 346—Basic Thermodynamics.....	3
GE 261—General Geology for Engineers (3) or GEOS 101X—The Dynamic Earth (4) .....	3–4
GEOS 370—Sedimentary and Structural Geology for Petroleum Engineers .....	4
PETE 103—Survey of Energy Industries .....	1
PETE 104—Fundamentals of Petroleum .....	1
PETE 205—Fundamentals of Drilling Practices .....	1
PETE 206—Introduction to Petroleum Production.....	1
PETE 301—Reservoir Rock and Fluid Properties.....	4
PETE 302—Well Logging.....	3
PETE 303W—Reservoir Rock and Fluid Properties Laboratory.....	1
PETE 407—Petroleum Production Engineering.....	3
PETE 411W—Drilling Fluids Laboratory.....	1
PETE 421—Reservoir Characterization.....	3
PETE 426—Drilling Engineering.....	3
PETE 431—Natural Gas Engineering.....	2
PETE 456—Petroleum Evaluation and Economic Decisions.....	3
PETE 466—Petroleum Recovery Methods.....	3
PETE 476—Petroleum Reservoir Engineering.....	3
PETE 478—Well Test Analysis.....	2
PETE 481W—Well Completions and Stimulation Design.....	3
PETE 487A—Petroleum Project Design** .....	1
PETE 487BW,O—Petroleum Project Design.....	1
PETE 489—Reservoir Simulation .....	2
Engineering elective*** .....	3
Technical elective**** .....	3

4. Complete the following program (major) requirements:

MATH 202X—Calculus.....	4
MATH 302—Differential Equations .....	3
MATH 310—Numerical Analysis .....	3

5. Complete the Fundamentals of Engineering Exam (as approved by the Board of Architects, Engineers and Land Surveyors).

6. Minimum credits required.....134

\* Student must earn a C grade or better in each course.

\*\* PETE 487A is prerequisite for PETE 487B. Must take both courses to meet the oral communication and writing intensive requirements.

\*\*\* As approved by advisor (e.g. ME 416 or ES 307).

\*\*\*\* As approved by advisor (e.g. CE 603).

## Baccalaureate Core Requirements

All degrees (e.g. B.A., B.S., etc.) require additional courses.  
Refer to specific degree and program requirements.

### COMMUNICATION (9)

Complete the following:

ENGL 111X ..... (3) \_\_\_\_\_  
*ENGL 190H may be substituted.*

Complete one of the following:

ENGL 211X OR ENGL 213X ..... (3) \_\_\_\_\_

Complete one of the following:

COMM 131X OR COMM 141X ..... (3) \_\_\_\_\_

### PERSPECTIVES ON THE HUMAN CONDITION (18)

Complete all of the following four courses:

ANTH 100X/SOC 100X ..... (3) \_\_\_\_\_  
ECON 100X OR PS 100X ..... (3) \_\_\_\_\_  
HIST 100X ..... (3) \_\_\_\_\_  
ENGL/FL 200X ..... (3) \_\_\_\_\_

Complete one of the following three courses:

ART/MUS/THR 200X, HUM 201X OR ANS 202X ..... (3) \_\_\_\_\_

Complete one of the following six courses:

BA 323X, COMM 300X, JUST 300X, NRM 303X,  
PS 300X OR PHIL 322X ..... (3) \_\_\_\_\_

**OR complete 12 credits from the above courses PLUS**

- two semester-length courses in a single Alaska Native language or other non-English language **OR**
- three semester-length courses (9 credits) in American Sign Language taken at the university level.

### MATHEMATICS (3)

Complete one of the following:

MATH 103X, MATH 107X, MATH 161X OR STAT 200X ..... (3-4) \_\_\_\_\_  
*\* No credit may be earned for more than one of MATH 107X or 161X.*

**OR complete one of the following:\***

MATH 200X, MATH 201X, MATH 202X,  
MATH 262X OR MATH 272X ..... (4) \_\_\_\_\_

*\*Or any math course having one of these as a prerequisite*

### NATURAL SCIENCES (8)

Complete any two (4-credit) courses:

ATM 101X ..... (4) \_\_\_\_\_  
BIOL 100X ..... (4) \_\_\_\_\_  
BIOL 103X ..... (4) \_\_\_\_\_  
BIOL 104X ..... (4) \_\_\_\_\_  
BIOL 105X ..... (4) \_\_\_\_\_  
BIOL 106X ..... (4) \_\_\_\_\_  
BIOL 111X ..... (4) \_\_\_\_\_  
BIOL 112X ..... (4) \_\_\_\_\_  
CHEM 100X ..... (4) \_\_\_\_\_  
CHEM 103X ..... (4) \_\_\_\_\_  
CHEM 104X ..... (4) \_\_\_\_\_  
CHEM 105X ..... (4) \_\_\_\_\_  
CHEM 106X ..... (4) \_\_\_\_\_  
GEOG 205X ..... (4) \_\_\_\_\_  
GEOS 100X ..... (4) \_\_\_\_\_  
GEOS 101X ..... (4) \_\_\_\_\_  
GEOS 112X ..... (4) \_\_\_\_\_  
GEOS 120X ..... (4) \_\_\_\_\_  
GEOS 125X ..... (4) \_\_\_\_\_  
MSL 111X ..... (4) \_\_\_\_\_  
PHYS 102X ..... (4) \_\_\_\_\_  
PHYS 103X ..... (4) \_\_\_\_\_  
PHYS 104X ..... (4) \_\_\_\_\_  
PHYS 115X ..... (4) \_\_\_\_\_  
PHYS 116X ..... (4) \_\_\_\_\_  
PHYS 175X ..... (4) \_\_\_\_\_  
PHYS 211X ..... (4) \_\_\_\_\_  
PHYS 212X ..... (4) \_\_\_\_\_  
PHYS 213X ..... (4) \_\_\_\_\_

### LIBRARY AND INFORMATION RESEARCH (0-1)

Successful completion of library skills competency test **OR**

LS 100X or 101X prior to junior standing ..... (0-1) \_\_\_\_\_

### UPPER-DIVISION WRITING AND ORAL COMMUNICATION (0)

Complete the following:

Two writing intensive courses designated (W) ..... (0) \_\_\_\_\_  
One oral communication intensive course designated (O) ..... (0) \_\_\_\_\_  
**OR** two oral communication intensive courses designated (O/2), at the upper-division level (see degree and/or major requirements) ..... (0) \_\_\_\_\_

**TOTAL CREDITS REQUIRED** ..... **38-39**