

# PETROLEUM ENGINEERING

College of Engineering and Mines  
Department of Petroleum Engineering  
907-474-7734  
[www.uaf.edu/cem/pete/](http://www.uaf.edu/cem/pete/)

## 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/cem/pete/about/](http://www.uaf.edu/cem/pete/about/).

## Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X, CHEM F105X and F106X, and LS F101X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X, PHYS F211X and F212X.)
3. Complete the following program (major) requirements:\*
 

ES F201—Computer Techniques .....	3
ES F208—Mechanics .....	4
ES F331—Mechanics of Materials .....	3
ES F341—Fluid Mechanics .....	4
ES F346—Basic Thermodynamics.....	3
GE F261—General Geology for Engineers (3)	
or GEOS F101X—The Dynamic Earth (4) .....	3 – 4
GEOS F370—Sedimentary and Structural Geology for Petroleum Engineers .....	4
PETE F103—Survey of Energy Industries.....	1
PETE F104—Fundamentals of Petroleum .....	1
PETE F205—Fundamentals of Drilling Practices .....	1
PETE F206—Introduction to Petroleum Production .....	1
PETE F301—Reservoir Rock and Fluid Properties .....	4
PETE F302—Well Logging.....	3
PETE F303W—Reservoir Rock and Fluid Properties Laboratory 1	
PETE F407—Petroleum Production Engineering .....	3
PETE F411W—Drilling Fluids Laboratory .....	1
PETE F421—Reservoir Characterization .....	3
PETE F426—Drilling Engineering .....	3
PETE F431—Natural Gas Engineering .....	2
PETE F456—Petroleum Evaluation and Economic Decisions..	3
PETE F466—Petroleum Recovery Methods.....	3
PETE F476—Petroleum Reservoir Engineering .....	3
PETE F478—Well Test Analysis.....	2
PETE F481W—Well Completions and Stimulation Design.....	3
PETE F487A—Petroleum Project Design** .....	1
PETE F487BW,O—Petroleum Project Design .....	1
PETE F489—Reservoir Simulation .....	2
Engineering elective*** .....	3
Technical elective**** .....	3
4. Complete the following program (major) requirements:
 

MATH F202X—Calculus III .....	4
MATH F302—Differential Equations .....	3
MATH F310—Numerical Analysis (3)	
or ES F301—Engineering Analysis.....	3
5. Complete the Fundamentals of Engineering Exam (as approved by the Board of Architects, Engineers and Land Surveyors).
6. Minimum credits required .....

\* Students must earn a C grade (2.0) or better in each course.

\*\* PETE F487A is prerequisite for PETE F487B. Must take both courses to meet the oral communication and writing intensive requirements.

\*\*\* As approved by advisor (e.g. ME F416 or ES F307).

\*\*\*\* As approved by advisor (e.g. CE F603).

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

## Baccalaureate Core Requirements

(Note: all courses for Core must be completed with C- or higher.)

### COMMUNICATION (9)

Complete the following:

ENGL F111X .....(3) \_\_\_\_\_  
*ENGL F190H may be substituted.*

Complete one of the following:

ENGL F211X OR ENGL F213X .....(3) \_\_\_\_\_

Complete one of the following:

COMM F131X OR COMM F141X .....(3) \_\_\_\_\_

### PERSPECTIVES ON THE HUMAN CONDITION (18)

Complete all of the following four courses:

ANTH F100X/SOC F100X .....(3) \_\_\_\_\_  
 ECON F100X OR PS F100X .....(3) \_\_\_\_\_  
 HIST F100X .....(3) \_\_\_\_\_  
 ENGL/FL F200X .....(3) \_\_\_\_\_

Complete one of the following three courses:

ART/MUS/THR F200X, HUM F201X OR ANS F202X .... (3) \_\_\_\_\_

Complete one of the following six courses:

BA F323X, COMM F300X, JUST F300X, NRM F303X,  
 PS F300X OR PHIL F322X .....(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 F103X, MATH F107X, MATH F161X OR  
 STAT F200X .....(3 – 4) \_\_\_\_\_  
*\* No credit may be earned for more than one of MATH F107X or F161X.*

OR complete one of the following\*:

MATH F200X, MATH F201X, MATH F202X,  
 MATH F262X OR MATH F272X .....(4) \_\_\_\_\_  
*\*Or any math course having one of these as a prerequisite.*

### NATURAL SCIENCES (8)

Complete any two (4-credit) courses:

ATM F101X .....(4) \_\_\_\_\_  
 BIOL F100X .....(4) \_\_\_\_\_  
 BIOL F103X .....(4) \_\_\_\_\_  
 BIOL F104X .....(4) \_\_\_\_\_  
 BIOL F111X .....(4) \_\_\_\_\_  
 BIOL F112X .....(4) \_\_\_\_\_  
 BIOL F115X .....(4) \_\_\_\_\_  
 BIOL F116X .....(4) \_\_\_\_\_  
 CHEM F100X .....(4) \_\_\_\_\_  
 CHEM F103X .....(4) \_\_\_\_\_  
 CHEM F104X .....(4) \_\_\_\_\_  
 CHEM F105X .....(4) \_\_\_\_\_  
 CHEM F106X .....(4) \_\_\_\_\_  
 GEOG F111X .....(4) \_\_\_\_\_  
 GEOS F100X .....(4) \_\_\_\_\_  
 GEOS F101X .....(4) \_\_\_\_\_  
 GEOS F112X .....(4) \_\_\_\_\_  
 GEOS F120X .....(4) \_\_\_\_\_  
 GEOS F125X .....(4) \_\_\_\_\_  
 MSL F111X .....(4) \_\_\_\_\_  
 PHYS F102X .....(4) \_\_\_\_\_  
 PHYS F103X .....(4) \_\_\_\_\_  
 PHYS F104X .....(4) \_\_\_\_\_  
 PHYS F115X .....(4) \_\_\_\_\_  
 PHYS F116X .....(4) \_\_\_\_\_  
 PHYS F175X .....(4) \_\_\_\_\_  
 PHYS F211X .....(4) \_\_\_\_\_  
 PHYS F212X .....(4) \_\_\_\_\_  
 PHYS F213X .....(4) \_\_\_\_\_

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

Successful completion of library skills competency test OR  
 LS F100X or F101X prior to junior standing.....(0 – 1) \_\_\_\_\_

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

Complete the following:

Two writing intensive courses designated (W) .....(0) \_\_\_\_\_  
 and 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) \_\_\_\_\_

CORE CREDITS REQUIRED ..... 38 – 39

Minimum credits required for degree ..... 120