# 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 multidisciplinary 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/.

### Major — B.S. Degree

1. Complete the general university requirements. (See page 124. 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 129. 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
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 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).*

# 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 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 F205X ..... (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) _____
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**

**UNIVERSITY OF ALASKA FAIRBANKS**
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