

# Civil Engineering

College of Science, Engineering and Mathematics  
Department of Civil and Environmental Engineering  
(907) 474-7241  
[www.uaf.edu/civileng/cee.html](http://www.uaf.edu/civileng/cee.html)

## B.S. Degree

Minimum Requirements for Degree: 133 credits

Civil engineers plan, design and supervise the construction of public and private structures such as space launching facilities, offshore structures, bridges, buildings, tunnels, highways, transit systems, dams, airports, irrigation projects, and water treatment and distribution facilities.

Civil engineers use sophisticated technology and employ computer-aided engineering during design, construction, project scheduling and cost control. They are creative problem solvers involved in community development and the challenges of pollution, deteriorating infrastructure, traffic congestion, energy needs, floods, earthquakes and urban planning.

The civil engineering program at UAF began in 1922 and graduated its first major in 1931. Many of the more than 800 men and women who have graduated since then work in a wide range of positions all over Alaska. More than 60 percent of Alaska's professional engineers practice in civil engineering. The program at UAF has been accredited since 1940 and currently by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. All engineering programs in the department give special attention to problems of northern regions.

Graduate students may enter one of two programs: the master of civil engineering is for students whose goal is broad professional practice, and the master of science degree is for those who favor an emphasis on research and specialized study.

In addition to general civil engineering courses, the department offers specialties in transportation, geotechnical, structures, water resources, hydrology and environmental studies. These courses emphasize principles of analysis, planning and engineering design in northern regions.

A master's degree program can include courses in environmental engineering, engineering management and other areas. An advanced degree in environmental engineering administered within the civil engineering department is available.

## Major—B.S. Degree

1. Complete the general university requirements (page 106. As part of the core curriculum requirements, complete: MATH 200X, CHEM 105X and CHEM 106X.)
2. Complete the B.S. degree requirements (page 112. As part of the B.S. degree requirements, complete: MATH 201X; PHYS 211X and PHYS 212X.)
3. Complete the following program (major) requirements:\*

CE 112—Elementary Surveying.....	3
CE 326W—Introduction to Geotechnical Engineering .....	4
CE 334—Properties of Materials.....	3
CE 344—Water Resources Engineering.....	3
CE 400—FE Exam .....	0
CE 402—Introduction to Transportation Engineering .....	3
CE 431—Structural Engineering I .....	3
CE 432—Structural Engineering II .....	3
CE 438W,O—Design of Engineered Systems .....	3
CE 441—Environmental Engineering.....	4
DRT 170—Beginning AutoCad .....	3
ES 101—Introduction to Engineering.....	3
ES 201—Computer Techniques .....	3
ES 209—Statics .....	3
ES 210—Dynamics.....	3
ES 301—Engineering Analysis.....	3
ES 331—Mechanics of Materials.....	3
ES 341—Fluid Mechanics .....	4
ESM 450W—Economic Analysis and Operations.....	3
GE 261—General Geology for Engineers .....	3
MATH 202X—Calculus.....	4
MATH 302—Differential Equations .....	3
Technical electives** .....	15
4. Minimum credits required.....133

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

\*\* Technical electives must include 9 credits of CE or ENVE or ESM courses, 3 credits of either ES 307 or ES 346, and 3 credits of approved technical courses. Students should consult their advisor. Four out of 5 electives must be taken from approved CE electives or ENVE elective graduate courses. Only 1 graduate-level course may count toward graduation as a technical elective and the student must be within 30 credits of graduation and have at least a 3.0 GPA to enroll. Students must earn a C grade or better in each technical elective course.

Note: The ability to utilize computers for normal class work is expected in all engineering classes above the 100-level.

**Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at [www.uaf.edu/catalog/](http://www.uaf.edu/catalog/).**

## General University Requirements

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

### COMMUNICATIONS (9)

Complete the following:

ENGL 111X.....	(3)	_____
ENGL 211X OR 213X.....	(3)	_____
COMM 131X OR 141X.....	(3)	_____

### LIBRARY & INFORMATION SKILLS (0-1)

Complete the following:

LS 100X OR 101X.....	(0-1)	_____
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OR Successful completion of library skills competency test.

### PERSPECTIVES ON THE HUMAN CONDITION (18)

Complete either the following six courses:

ANTH 100X OR SOC 100X.....	(3)	_____
ECON/PS 100X.....	(3)	_____
HIST 100X.....	(3)	_____
ART/MUS/THR 200X, HUM 201X OR ANS 202X.....	(3)	_____
ENGL/FL 200X.....	(3)	_____
PHIL 322X, NRM 303X, COMM 300X, PS 300X OR JUST 300X.....	(3)	_____

OR Complete 12 cr from the above list **PLUS** two semester-length courses in a single non-English or Alaska Native language at the university level OR three semester-length courses (9 cr) in American Sign Language.

### MATHEMATICS (3-4)

Complete 3-4 credits from the following:

MATH 107X.....	(3)	_____
OR MATH 131X (except for BBA).....	(3)	_____
OR MATH 161X.....	(3)	_____
MATH 200X.....	(4)	_____
MATH 201X.....	(4)	_____
MATH 202X.....	(4)	_____
MATH 262X.....	(4)	_____
MATH 272X.....	(3)	_____

NOTE: Additional 3 cr of math needed for degree requirements.

### NATURAL SCIENCES (8)

Complete 8 credits from the following:

ATM 101X.....	(4)	_____
BIOL 103X OR 104X.....	(4)	_____
BIOL 105X-106X.....	(8)	_____
BIOL 111X-112X.....	(8)	_____
CHEM 100X.....	(4)	_____
CHEM 103X-104X.....	(8)	_____
CHEM 105X-106X.....	(8)	_____
GEOG 205X.....	(4)	_____
GEOS 100X OR 120X OR 125X.....	(4)	_____
GEOS 101X-112X.....	(8)	_____
MSL 111X.....	(4)	_____
PHYS 102X OR 175X.....	(4)	_____
PHYS 103X-104X.....	(8)	_____
PHYS 211X-212X.....	(8)	_____
PHYS 211X-213X.....	(8)	_____
PHYS 212X-213X.....	(8)	_____