

Physics, Applied

College of Science, Engineering and Mathematics
Department of Physics
(907) 474-7339
www.uaf.edu/physics/

B.S. Degree

Minimum Requirements for Degree: 130 credits

The science of physics is concerned with the nature of matter and energy for all physical systems, from elementary particles to the structure and origin of the universe. Physics, together with mathematics and chemistry, provides the foundation for work in all fields of the physical sciences and engineering, and contributes greatly to other fields such as the biosciences and medicine.

The field of applied physics encompasses those areas that have developed practical applications from fundamental research in physics in the last century, including space physics, plasma physics, condensed matter physics, device physics, surface physics, biophysics, laser physics and reactor physics.

The undergraduate curriculum provides a solid foundation in general physics. Students may study in areas of applied physics such as atmospheric physics, computational physics and engineering physics.

Major—B.S. Degree

Concentrations: Atmospheric Physics, Computational Physics

1. Complete the general university requirements (page 106. As part of the core curriculum requirements, complete: MATH 200X.)
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:
 - a. Complete the following:

MATH 202X—Calculus.....	4
MATH 302—Differential Equations	3
PHYS 213X—Elementary Modern Physics*	4
PHYS 311—Mechanics*	4
PHYS 331—Electricity and Magnetism*	3
 - b. Complete mathematics credits at the 200-level or above9
 - c. Complete physics credits at the 300-level or above*12
 - d. Complete credits in applied physics* (see note)20
4. Minimum credits required130

Atmospheric Physics

1. Complete the general university requirements (page 106. As part of the core curriculum requirements, complete: MATH 200X.)
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:
 - a. Complete the following:

MATH 202X—Calculus.....	4
MATH 302—Differential Equations	3
PHYS 213X—Elementary Modern Physics*	4
PHYS 311—Mechanics*	4
PHYS 331—Electricity and Magnetism*	3
 - b. Complete mathematics credits at the 200-level or above9
 - c. Complete physics credits at the 300-level or above*12
 - d. Complete the following:

ATM 401—Introduction to Atmospheric Science	3
ATM 409—Atmospheric Thermodynamics	3
ATM 413—Atmospheric Radiation	3
ATM 445—Atmospheric Dynamics	3
 - e. Complete credits in other relevant upper-division courses*8
(see note).....
4. Minimum credits required130

Computational Physics

1. Complete the general university requirements (page 106. As part of the core curriculum requirements, complete: MATH 200X.)
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:
 - a. Complete the following:

MATH 202X—Calculus.....	4
MATH 302—Differential Equations	3
PHYS 213X—Elementary Modern Physics*	4
PHYS 311—Mechanics*	4
PHYS 331—Electricity and Magnetism*	3
 - b. Complete mathematics credits at the 200-level or above9
 - c. Complete physics credits at the 300-level or above*12
 - d. Complete the following:

PHYS 220—Introduction to Computational Physics	4
MATH 310—Numerical Analysis	3
CS 201—Computer Science I.....	3
CS 202—Computer Science II	3
 - Complete credits in other relevant upper-division courses* (see note)4
4. Minimum credits required130

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

Note: These credits must be in a chosen subject area and approved before the beginning of the student's final semester by the head of the physics department.

Note: Must exclude PHYS 103X and 104 from core curriculum Natural Science requirement.

See General Science. **Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.**

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at 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) _____
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) _____