

# Physics, Applied



**College of Science, Engineering and Mathematics**  
**Department of Physics**  
**(907) 474-7339**  
**www.uaf.edu/physics/**  
**Degree: B.S.**  
**Minimum Requirements for Degree: 130 credits**

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

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

The undergraduate curriculum is based on a solid foundation in general physics. Students may study in the areas of applied physics such as atmospheric physics, space physics and engineering physics. A student completing this curriculum should be prepared for a career in industry and for advanced work in applied physics or related sciences (such as geophysics and biophysics).

## UNDERGRADUATE PROGRAM

### MAJOR

#### Physics, Applied—B.S. Degree

1. Complete the general university requirements (page 28). (As part of the core curriculum requirements, complete: MATH 200X.)
2. Complete the B.S. degree requirements (page 34). (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 above .....
  - c. Complete physics credits at the 300-level or above\* .....
  - d. Complete credits in applied physics\* (see note) .....
4. Minimum credits required .....

## Concentrations: Atmospheric Physics, Computational Physics

### Atmospheric Physics

1. Complete the general university requirements (page 28). (As part of the core curriculum requirements, complete: MATH 200X.)
2. Complete the B.S. degree requirements (page 34). (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 above .....
  - c. Complete physics credits at the 300-level or above\* .....
  - 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\* (see note)8
4. Minimum credits required .....

### Computational Physics

1. Complete the general university requirements (page 28). (As part of the core curriculum requirements, complete: MATH 200X.)
2. Complete the B.S. degree requirements (page 34). (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 above .....
  - c. Complete physics credits at the 300-level or above\* .....
  - 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. Minimum credits required .....

\* 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.  
 See Physics.  
 See Physics, Computational.  
 See Space Physics.



University of Alaska Fairbanks

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