

# Physics

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

## M.S., M.A.T., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30–33 credits;  
M.A.T.: 36 credits; Ph.D.: 18 thesis credits

The science of physics is concerned with the nature of matter and energy in 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 disciplines such as the biosciences and medicine.

Advanced study at the graduate level is offered in various areas of physics and applied physics, including many of the research specialties found at the UAF's Geophysical Institute. Faculty and student research programs currently emphasize investigations of auroral, ionospheric, magnetospheric and space plasma physics, the physics and chemistry of the upper and middle atmosphere, radio-wave propagation and scattering, solar-terrestrial relations, condensed matter physics, complex dynamics of non-linear systems, ice physics and infrasonics.

The physics department is also responsible for the graduate degree programs in general science, computational physics and space physics. These programs are also described in this catalog.

## Graduate Program—M.S. Degree

1. Complete the general university requirements (page 176).
2. Complete the master's degree requirements (page 180).
3. Complete the thesis or non-thesis requirements:

### Thesis

- a. Complete the following:  
PHYS 699—Thesis.....6-12
- b. Complete four of the following:  
PHYS 611—Mathematical Physics .....3  
PHYS 612—Mathematical Physics .....3  
PHYS 621—Classical Mechanics .....3  
PHYS 622—Statistical Mechanics .....3  
PHYS 631—Electromagnetic Theory .....3  
PHYS 632—Electromagnetic Theory .....3  
PHYS 651—Quantum Mechanics .....3  
PHYS 652—Quantum Mechanics .....3
- c. Complete 12 credits from the following:  
Approved PHYS 600-level courses  
Approved ATM 600-level courses
- d. Minimum credits required .....30

### Non-Thesis

- a. Complete the following:  
PHYS 698—Research.....3-6  
Approved courses .....18
- b. Complete four of the following:  
PHYS 611—Mathematical Physics .....3  
PHYS 612—Mathematical Physics .....3  
PHYS 621—Classical Mechanics .....3  
PHYS 622—Statistical Mechanics .....3  
PHYS 631—Electromagnetic Theory .....3  
PHYS 632—Electromagnetic Theory .....3  
PHYS 651—Quantum Mechanics .....3  
PHYS 652—Quantum Mechanics .....3
- c. Minimum credits required\* .....33

\* At least 30 credits must be regular course work.

## Graduate Program—M.A.T. Degree

1. Complete the general university requirements (page 176).
2. Complete the M.A.T. degree requirements (page 181).
3. Contact the department head for specific degree requirements.
4. Minimum credits required .....36

## Graduate Program—Ph.D. Degree

1. Complete the general university requirements (page 176).
2. Complete the Ph.D. degree requirements (page 180).\*
3. Minimum credits required .....18

\* Demonstrate competency in a foreign language or a research tool.

See General Science.  
See Physics, Applied.  
See Physics, Computational.  
See Physics, Space.

Note: Page numbers refer to the UAF 2006-2007 academic catalog, which can be viewed online at [www.uaf.edu/catalog/](http://www.uaf.edu/catalog/).