

# PHYSICS, B.A.

## WELCOME TO THE UW–MADISON DEPARTMENT OF PHYSICS

We have a long history of providing our students with a great educational experience. Our physics department awarded its first Ph.D. in 1899. Since then, our students have earned degrees in virtually every area of physics, and our faculty have played key roles in a myriad of important research efforts.

Physics is the science of the properties of matter, radiation, and energy in all forms. As such, it is the most fundamental of the sciences. It provides the underlying framework for the other physical sciences and engineering and for understanding physical processes in biological and environmental sciences.

## CHOOSE TO BE A PHYSICS MAJOR

### WHY STUDY PHYSICS?

- **Intellectual Satisfaction.** First, and foremost, physics satisfies our deep desire to understand how the universe works. Physics is interesting.
- **Intellectual Challenge.** By striving for fundamental understanding, the physicist accepts the challenge to move past a merely descriptive approach of our world and probes deeply into how and why it works.
- **Physics Produces New Technology.** Today's esoteric physics research will become tomorrow's technological advances.
- **Technical Expertise.** Physicists exploit forefront technologies in their pursuits.
- **Flexibility.** In a fast-paced and changing world, it is much more important to have a broad substantive education than to be trained in a specific skill. We teach people how to think, and how to apply and extend what they know to new types of problems.
- **Physics is Analytical and Quantitative.** People who can reason analytically and quantitatively are essential for the success of almost any pursuit.

The undergraduate physics program will provide an overall view of both classical and modern physics with the flexibility to continue learning in fields that interest you. It will also help you develop skills in analysis, problem-solving, and quantitative reasoning that will aid you in whatever career you pursue after graduation.

Your education can:

- Prepare you for employment in industrial or governmental laboratories.
- Prepare you for graduate studies for master's or doctoral degrees in experimental or theoretical physics.
- Provide a broad background for further work in other sciences, such as materials sciences, aerospace, astronomy, computer science, geophysics, meteorology, radiology, medicine, biophysics, engineering, and environmental studies.
- Provide a science-oriented liberal education. This training can be useful in some areas of business administration, law, or other fields where a basic knowledge of science is useful.

- Provide part of the preparation you need to teach physics. To teach physics in high school, you will also take education courses to become certified. You will need a doctoral degree to become a college or university professor.

Interested in the undergraduate physics program? Check out the physics undergraduate page (<https://www.physics.wisc.edu/academics/undergrads/>) or browse the Undergraduate Physics Majors Handbook (<https://www.physics.wisc.edu/undergrads/handbook.pdf>).

## OTHER PROGRAMS

### AMEP

A program in applied mathematics, engineering and physics (AMEP) (<http://guide.wisc.edu/undergraduate/letters-science/mathematics/applied-mathematics-engineering-physics-bs-amep/>) is described in its own section of the *Guide*.

### Astronomy–Physics

Students interested in an astronomy–physics major should contact the astronomy department (<http://guide.wisc.edu/undergraduate/letters-science/astronomy/>).

### Education–Physics

A student working toward the Bachelor of Science–Education degree may major or minor in physics. Interested students should contact the School of Education (<http://guide.wisc.edu/undergraduate/education/>). Upon request, the physics department will assign an advisor.

### Medical Physics

A suggested curriculum for students interested in graduate study in medical physics is available on the medical physics webpage (<https://www.medphysics.wisc.edu/graduate-program/admissions/#requirements>).