

Physics/Applied Physics degrees

Desired student outcomes

The university's mission is to “educate students for lives of thoughtful inquiry, leadership, service, and care – for other people, for their communities, and for the earth.” The university's Principles of General Education and Integrative Learning Objectives describe frameworks to address the mission.

Physics is the scientific study of the material universe at its most fundamental level. A physicist might study the inner workings of atoms and nuclei, the size and age of the universe, the behavior of high-temperature superconductors, or the life cycles of stars, from their formation out of interstellar gases to their end-states as pulsars or black holes.

We offer both a BA and BS. The department believes that the outcomes are essentially the same for both degrees, but since the required student work for the BS is greater, the students holding that degree will be able to grapple with the concepts of physics using more sophisticated mathematical tools.

The student outcomes that the department has adopted are:

1. Graduates will have a broad understanding of the core concepts of classical and modern physics, and will have developed a set of problem solving skills that incorporate these concepts.
2. Graduates of the physics department will be able to effectively communicate scientific ideas to other scientists and to a general audience.
3. Graduates should be able to design and implement an experimental or theoretical study to understand a physical phenomenon. They should write and present clear and comprehensive reports of their laboratory and other research experiences.
4. Graduates of the Physics Department will develop computer skills appropriate for employment or for graduate-level study and research in the 21st century. They will be able to solve computationally physics and/or engineering problems using commonly available software packages such as spreadsheets, matrix manipulation tools, or symbolic manipulation (computer algebra) systems.
5. Graduating physics majors should be adequately trained to apply their knowledge of physics to analyze new situations and solve problems. Their analytical reasoning skills should be transferable, so they can be also applied to areas other than physics. They should be able to evaluate new information, ideas, or assumptions by formulating critical questions.
6. Graduates should be able to gather relevant information on physics topics using the professional-level resources available for scholarly research in physics, and be able to evaluate the legitimacy of the sources. They should be able to do a literature search in order to assess the novelty of a scientific work.
7. Students will learn some of the methods and technologies used in scientific research.
8. Graduates will be able to collaborate effectively in a team environment.

9. Graduates should understand and appreciate the human dimensions of their professional activities, i.e., the diverse social, cultural, economic and international aspects.
10. Graduates should demonstrate high ethical standards and professional integrity in the conduct of their professional activities.