

College: CLAS

Department: Physics

Degree: B.A./B.S.

Introduction

Physics is the branch of knowledge that attempts to explain all of the phenomena we observe or infer on earth and in the universe. Its study has made possible a modern understanding of the origin of the universe as well as the behavior of biological materials and chemical processes. Scientists trained in this field can engage in such diverse areas as solid state devices, particle physics, energy and the environment, biotechnology, and space travel.

The study of physics does not involve the following of a specific recipe or set of rules; rather it entails developing an attitude or way of looking at phenomena and asking questions. Physicists seek to understand how the physical universe works, no matter what the scale of observation—from quarks to quasars, from the time it takes the proton to spin, to the age of the cosmos. The answers to these questions are summarized into statements called laws. We live in the age of physical law. Awareness of the beauty, harmony, and interplay of the laws of physics greatly enhances our view and appreciation of our environment.

As an undergraduate, you will take a group of core courses that will give you a general background in the subject. You will study force and motion, heat, optics, electricity, magnetism, atomic and nuclear physics, quantum mechanics, and the physical properties of materials, learning both the theoretical and the experimental aspects.

Physicists are employed by almost all industries, particularly by the technical industries and by government laboratories. Roughly half of all students with a bachelor's degree in physics go on to graduate work. In addition to a traditional graduate curriculum in physics or astronomy, they can enter programs in optics, applied physics, engineering physics, and education. Biophysics, material science, atmospheric physics, environmental science, medical physics, and finance are particularly popular fields, now. Environmental programs, electrical engineering, nuclear engineering, and computer science are common graduate school tracks. Medicine and law are also fields that welcome students with physics degrees. Many physicists are entrepreneurs who start their own companies.

Undergraduate Program Learning Outcomes

LO #01: Laws of physics and symmetry principles.

LO #02: Understanding of classical physics, quantum theory, electricity and magnetism, relativity and thermodynamics.

LO #03: Integration and connections between major fields.

LO #04: An understanding of the historical role of physics in the society, economy, environment, and the medical sciences.

LO #05: Ability to access and critically analyze scientific literature.

LO #06: Mastery of computer skills.

LO #07: Ability to effectively communicate the results of scientific inquiry.

LO #08: Plan and execute experiments.

LO #09: Understand and follow the principles of accurate record keeping of all experiments.

LO #10: Understand commonly used modern instruments.

LO #11: Ability to analyze experimental data including statistical analysis and other analytical tools as needed.

LO #12: Ability to interpret experimental results using theory.

LO #13: Understand and recognize common hazards of physical measurements.