

# PHYSICS, B.S. (SCIENCE)

---

**Begin Campus:** Any Penn State Campus

**End Campus:** University Park

## Program Learning Objectives

- Physics majors will be informed of and take advantage of opportunities to engage in 'hands-on' out-of-class experiential learning, related to their choice of specialty in their chosen major/option.
- Physics majors will be knowledgeable about job search skills, graduate and/or professional programs, employment in industrial, lab positions, teaching careers, and other career paths.
- Physics majors will demonstrate both written and oral scientific communication skills.
- Physics majors will demonstrate mastery of commonly agreed on knowledge base expected of all Physics professionals in four basic core areas and demonstrate problem solving ability in each of these areas, across all options. Students will show mastery in each area by being able to define and explain principles, recognize their application in physical phenomena, and to choose and apply appropriate principles and mathematical tools to set up and solve physics problems.
  - (a) mechanics,
  - (b) electricity and magnetism,
  - (c) thermodynamics and statistical mechanics,
  - (d) quantum mechanics
- Physics majors will be knowledgeable about ethical issues, and demonstrate practice of professional ethics as they relate to their undergraduate experience including in the classroom and lab, the responsible conduct of research, the presentation of scientific results, and in their future profession.
- Physics majors will demonstrate mastery of advanced problem-solving ability, including high-level mathematical methods, estimations, and the ability to write computer code to accomplish a computational task.
- Physics majors will show competency in a variety of experimental techniques, lab safety, experimental measurement, data analysis, and results interpretation relevant to the discipline.