Learning Objectives

The mission of the Department of Physics & Astronomy at USC is to provide our students with a solid foundation in the fundamental concepts of classical and contemporary physics. Coursework of the various degree programs in the Department educates students through a variety of tools that include observations, experimentation, data analysis, mathematical modeling, and abstract thought. The foundation provided in our Department prepares our students both for further study in graduate and professional schools as well as for careers as the scientists, engineers, and teachers who will create the science and technology of the future, and train and inspire new generations.

The Department of Physics & Astronomy intends to provide our students an education that:

A. General Skills and Breadth
   • Is stimulating and intellectually challenging
   • Lays the foundation of versatility and innovative thinking needed for careers in research, industry, business, and education
   • Develops the potential of each student to meet new challenges
   • Builds transferable skills in the use of the tools of experimental and theoretical science, and in conveying scientific results in clear and concise oral and written communication
• Prepares our Bachelor of Science students to attend highly rated graduate schools

B. Subject–specific Knowledge
• Proficiency in the basic fields of physics, and appropriate selected areas of application
• Working knowledge of a variety of classical and modern experimental and theoretical techniques

C. Subject–specific Skills
• Ability to solve advanced problems in physics and astronomy using appropriate mathematical tools
• Competence in the use of basic laboratory equipment and the ability to master new techniques and equipment
• Skill in modeling fundamental physical behavior and selecting appropriate computational tools to successfully test the accuracy of such models
• Ability to plan and execute, under supervision, an original experiment or investigation
• Ability to analyze experimental results critically and draw appropriate conclusions

D. Key Skills
• Research a topic and make effective use of appropriate resources
• Work independently and in collaboration with colleagues
• Draw appropriate conclusions from experiments and other investigations
• Communicate complex scientific ideas concisely and accurately