

## Stern College

**Department/Program Name: Physics**

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### **Department/Program Mission Statement**

The mission of the undergraduate physics, physical sciences and pre-engineering programs is to provide the highest possible educational experience in physics and the physical sciences for

- Students majoring in physics
- Students majoring in physical sciences
- Students majoring in pre-engineering
- Students minoring in physics
- Students taking service courses as a prerequisite for their majors

### **Department/Program Student Learning Goals & Objectives:**

<b>Department/Program Goal</b>	<b>Objectives</b>
I. Understand both the theoretical concepts and mathematical techniques of the major fields of physics such as classical mechanics, electromagnetism, quantum mechanics, thermodynamics and statistical mechanics, mathematical physics and special theory of relativity	a. Students will be able to choose relevant theories and research methods for examining a specific quantitative problem. b. Students will acquire the skills to apply principles to new and unfamiliar problems. They will be able to analyze these problems and have both physical and numerical insight (e.g. be able to make order-of-magnitude estimates, analyze physical situations by application of general principles as well as by textbook type calculations). c. They will be able to derive and prove equations that describe the physics of the universe. They should be able to understand the meaning and limitations of these equations.
2. Apply measurements skills and modern laboratory techniques, such as using computer models, to perform numerical computations, to simulate physical phenomena and to collect and analyze data	a. Students will be able to use appropriate physical concepts and analysis techniques to analyze the data and fulfill assignments b. Become familiar with basic computational methods and basic software

	c. Acquire basic programming skills for scientific computations
4. Move successfully into graduate school or other professions where strong analytical and problem solving skills are required	a. Gain physics knowledge to qualify for admission to graduate programs in Physics, Engineering and related fields
	b. Gain physics knowledge, analytical and other quantitative skills to qualify for other professions such as school teachers, science associates and research assistants
5. Communicate results of research effectively, both orally and in writing, individually and as a part of a team	a. Become experienced in making oral scientific presentations to audience in the field
	b. Become experienced in making written reports on research results, individually and as a member of research team
	c. Present results in the form of a scientific publication (report, paper, and/or oral presentation)