PHYSICS

Department of Physics

McPheeters-Dennis Hall, Room 102
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Program Description

The Department of Physics prepares graduate students with the skills and experience to perform scientific research in physics with emphasis on the practical applications of theoretical and fundamental physical concepts and experimental studies of the current technological and environmental problems.

The Department offers the **Master of Science Degree in Physics** with concentrations in **Pure Physics or Applied Physics**. The graduate program curriculum focuses on theoretical basis of classical and modern physics that explains the nature and behavior of matter and energy, and the formulation and testing of the laws governing the behavior of the matter-energy continuum that solidify students' command of the concepts and methods of the discipline through coursework and research. The program courses are designed to strengthen and extend a solid background in the fundamentals of scientific thinking and techniques of the theoretical foundation of physics and to introduce to areas of current research in the field and an opportunity for in-depth investigations. The coursework instruction includes modern physics, electricity and magnetism, thermodynamics, mechanics, wave properties, nuclear processes, relativity and quantum theory, quantitative methods, and laboratory methods. The concentration in Applied Physics equips graduates with tools and techniques for analyzing and solving applied problems arising in government and private industry. The two concentrations differ in the choice of elective courses and topic of thesis research or non-thesis research.

Students in this program have opportunities to conduct forefront research working closely with the department faculty complemented by formal coursework, to gain research experience and a deep scientific study of the field. Physics majors are prepared for advanced graduate work and to become the next generation of leading teachers, scholars, researchers and professionals in the fields of fundamental and applied physics, and practice in branches of engineering.

Mission

The mission of the Department of Physics is to prepare students in the theories and experimentation of physical, computational and mathematical sciences through hands-on training and skill-building opportunities for careers in research and technology and entry into advanced degree programs.

Vision

The vision of the Department of Physics to be a recognized force in the Physics community world-wide by training a diverse body of students through an innovative and research-oriented environment to become competent professionals in Physical sciences and related technological areas.

Program Objectives

1. Discuss fundamental and advanced theoretical principles of physics and analytical, computational, and mathematical concepts to conduct in-depth research in the field.
2. Prepare students to develop mathematical models of the physical processes to analyze practical problems using critical thinking and reasoning skills.
3. Engage students in laboratory setting to conduct scientific experiments and use data analysis.
4. Train students to apply mathematical and computational skills required for professional work in the fields of science and technology.
5. Prepare students for advanced graduate studies, or careers in industry, government, or education in fields related to mathematics.

- Physics, M.S. (http://catalog.cau.edu/graduate/programs-study/arts-sciences/natural-sciences-mathematics/physics/physics-ms/)

Program of Study

- Master of Science Degree in Physics (30 Credits)
  - Pure Physics Concentration
  - Applied Physics Concentration