

# Department of Physics

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## Introduction

The theme of Physics is to understand the fundamental principles of nature, from elementary particles to the massive universe, and to predict phenomena that can be derived from fundamental principles. The goal of the Department of Physics here at KAIST is to instill into students deep physical insights and the ability to use such insights in creative ways through thorough and wide-ranging education in both theoretical and experimental subjects. Presently, the department consists of 32 full-time faculties with additional 5 professors emeritus, about 210 graduate students and 200 undergraduate students. Over 3,056 alumni who have graduated from the Department of Physics with a graduate degree have succeeded in playing leading roles in many educational and research institutes as well as in industry. Currently, the demands for well-trained graduates continue to grow.

The undergraduate program begins with an introductory phase which emphasizes a basic understanding of the fundamentals of classical mechanics, electrodynamics, thermodynamics and statistical mechanics, quantum mechanics, mathematical physics and experimental physics. After the completion of introductory courses, the students are introduced to more specialized fields such as solid state physics, optics, atomic and molecular physics, semiconductor physics, plasma physics, particle physics, astrophysics, biophysics and computational physics. In parallel with lecture, students are also encouraged to develop new skills and interests through independent research under the supervision of a chosen professor.

The graduate program focuses on the fields of condensed matter physics, optics, plasma physics, and particle and theoretical physics in both education and research. After the completion of the required courses in advanced classical mechanics, electrodynamics, quantum mechanics, statistical mechanics, and laboratory experiments, students are expected to choose a thesis advisor to start their own research and thesis program. In pursuit of excellence, the research program at the Department of Physics at KAIST covers many diverse topics, frequently in close collaboration with other universities, research institutes, and industry as well as other departments here at KAIST. The Department of Physics at KAIST is also expanding into newly emerging fields such as nonlinear dynamics, soft matter physics, complex systems, biophysics, etc.