College of Applied Sciences

Department of Applied Physics

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What is Physics?

The purpose of physics is to explore the laws of nature, to understand diverse natural phenomena on the basis of these laws, and to explain and predict new phenomena. Modern physics, including the theory of relativity and quantum mechanics, increase human knowledge of nature and lead modern science and technology in diverse fields such as semiconductor electronics, nanotechnologies, new material development, energy-related technology, cosmology, complex systems, and biology.

Physics and Applied Physics at Kyung Hee

The Physics Department was founded in the College of Science and Engineering at the Suwon campus in 1980. In 1999, it became the Physics and Applied Physics major in the School of Electronics and Information, and it returned to the independent department, as the Department of Applied Physics again in 2009. Promising technologies such as nanostructures, memory and non-memory semi-conductors, advanced/energy-related materials, and applied optics have been chosen as areas of specialization, and practical education facilities have been established to provide training programs at the undergraduate level. In the field of nanostructures and semiconductors, we undertake research into the processing, modification and characterization of electronic and optoelectronic materials, and into the design, fabrication and testing of novel electronic and optoelectronic devices. Applied optics, an increasingly important field for all optical telecommunication networks, is also one of our specialized research areas. Currently we have thirteen faculty members performing joint theoretical/experimental collaboration in the fields of nanostructures, semiconductors, new energy-related materials, and optical devices. The Semiconductor Physics Research group was selected for the Brain Korea 21 plus Grant of 7-year graduate school research supported by the Ministry of Education.

Degree Requirements

To receive the Bachelor of Science in Physics and Applied Physics, a student must:

- complete a minimum of 130 credit units
- satisfy the general requirements of the School for professional degrees
- complete 18 units of required courses
- complete 39 units of technical electives for Physics and Applied Physics
- complete 35 units (maximum 56 units) stated in the common studies program and Humanities/Social Science Electives
- acquire a minimum English proficiency test score of TOEIC 650

Courses

Year 1

Physics I,II, Physical Experiment I,II, Calculus I,II, General Chemistry and Laboratory I,II, Introductory Biology, Basic Astronomy

Year 2

Mechanics, Applied Mechanics, Electromagnetic Waves, Electromagnetism, Introduction to Modern Physics, Mathematical Physics I,II, Introduction to Applied Physics, Computational Physics, Introduction to Photonics, Laboratory for Modern Physics, Laboratory for Photonics

Year 3

Thermodynamics and Statistical Physics, Introduction to Digital Electronics, Laboratory for Digital Electronics, Quantum Mechanics I,II, Fourier Optics, Physical Electronics, Semiconductor Engineering, Semiconductor Devices, Photonics Devices, Vacuum and Plasma Physics, Applied Computational Physics, Introduction for Electronics and Circuits, Laboratory for Electronics and Circuits, Laboratory for Physical Properties of Semiconductor and Application

Year 4

Introduction to Condensed Matter Physics, Nuclear and Particle Physics, Semiconductor Fabrication Process, Nanoscience and Technology, Optical Detection System, Physics of New Materials, Design of Optical Systems, Experimental Condensed Matter Physics, Laboratory for Photonic Devices, Digital Circuit Design, Applied Physical Research I,II

Careers and Graduate Destinations

Our students can take a job in most of semiconductor electronics and optics companies or become a physics teacher. We strongly recommend students entering a physics graduate program to have special knowledge and capability for advanced researches. With a graduate degree, students can be welcomed by leading electronics companies or research laboratories.

Faculty

Hae-Yang Chung, Ph.D. University of California, San Diego, 1990, Professor, Applied Optics, chunghy@khu.ac.kr
Gyu-Seung Shin, Ph.D. KAIST, 1985, Professor, Statistical Physics, shings@khu.ac.kr
Suk-Ho Choi, Ph.D. KAIST, 1987, Professor, Semiconductor and Nanostructure Physics, sukho@khu.ac.kr
Jeong-Woo Choe, Ph.D. University of Pittsburgh, 1990, Professor, Semiconductor Physics, jwchoe@khu.ac.kr
Ho-Sun Lee, Ph.D. University of Illinois, Urbana-Champaign, 1993, Professor, Semiconductor Physics, hlee@khu.ac.kr
Dae-Young Lim, Ph.D. University of Texas at Austin, 2001, Professor, Semiconductor Physics, dlim@khu.ac.kr
Minchul Lee, Ph.D. Seoul National University, 2003, Associate Professor, Condensed Matter Theory, minchul.lee@khu.ac.kr
Jong-Soo Lee, Ph.D. Gwangju Institute of Science and Technology, 2005, Associate Professor, Energy-Related and Magnetic Material Experiment, jsrhyee@khu.ac.kr
Jong-Yeog Son, Ph.D. Pusan National University, 2004, Assistant Professor, Semiconductor Thin-film and Nano-structure Experiment, jyson@khu.ac.kr
Hyunwook Song, Ph.D. Gwangju Institute of Science and Technology, 2011, Associate Professor, Molecular Electronics and Nano-structure-based Sensing Devices Experiment, hsong@khu.ac.kr
Kwang Jo Lee, Ph.D. Korea Advanced Institute of Science and Technology, 2008, Associate Professor, Non-linear Optics and Photonic Devices Experiment, kjlee88@khu.ac.kr
Sun Kyung Kim, Ph.D. Korea Advanced Institute of Science and Technology, 2006, Associate Professor, Nanoscale Functioning Optoelectronic Devices Experiment, sunkim@khu.ac.kr
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