

Physics, B.S.

Program Description

The program of study in physics leading to a Bachelor of Science degree provides students with the opportunity to pursue a major field of concentration in physics with the necessary specialization to succeed in a wide array of post-baccalaureate opportunities. The following concentrations include the course work and experience necessary for student success. See an academic advisor for specific course information and important aspects of each of these concentrations.

General Physics Concentration: Physics is the study of matter, motion, force, and energy across space and time. Physicists develop theories and perform experiments to understand the physical world including everything from the elementary constituents of a proton, electric and magnetic phenomena, lasers, high tech materials, and black holes. The general physics concentration will provide students with a broad conceptual understanding of physical phenomena and technical problem-solving skills. Students who earn bachelor's degrees in physics are well prepared to pursue advanced graduate degrees in physics or related areas of study. It also prepares students for 21st-century careers in government and industry as professional physicists.

Electrical Engineering Concentration: This concentration in electrical engineering combines the study of physics with electrical engineering by further broadening knowledge and skills. In addition, a degree with an electrical engineering concentration will increase the marketability of the physics student.

Mechanical Engineering Concentration: This concentration in mechanical engineering combines the study of physics with mechanical engineering. This curriculum design helps to further broaden the students' analytical skills. In addition, a degree with a mechanical engineering concentration will increase the marketability of the physics student.



This program is a part of the College of Science and Mathematics.

Admission, Enrollment, and Graduation Policies

Admissions Requirements

This program does not have specific admission requirements and only admission to Kennesaw State University is required. For more information, please visit the Admissions section of the Catalog.

Graduation Requirements

Each student is expected to meet the requirements outlined in Academic Policies 5.0

PROGRAM REQUIREMENTS & GRADUATION.

Program Course Requirements

Core IMPACTS Curriculum (42 Credit Hours)

General Education Core IMPACTS Curriculum

Core IMPACTS Curriculum Requirements Specific to This Major:

Science Majors: Must take MATH 1113 or higher in Mathematics & Quantitative Skills and MATH 1179 or higher in Applied Math.

Science and Engineering Majors: Must take two four-hour laboratory sciences in Natural Sciences. Students must choose from CHEM 1211/1211L , CHEM 1212/1212L , BIOL 1107/1107L , or BIOL 1108/1108L.

Core Field of Study (18 Credit Hours)

Students must earn a grade of "C" or better in these courses.

- PHYS 221I: Principles of Physics I
- PHYS 221IL: Principles of Physics Laboratory I
- PHYS 2212: Principles of Physics II
- PHYS 2212L: Principles of Physics Laboratory II
- MATH 2202: Calculus II
- MATH 2203: Calculus III

Two (2) credit hours carried over from Technology, Mathematics, and Sciences.

Major Requirements (18 Credit Hours)

Students must earn a grade of "C" or better in these courses.

Math Requirement (3 Credit Hours)

- MATH 2306: Ordinary Differential Equations

Science and Mathematics Requirement (3 Credit Hours)

- SCM 2000: Culture and Success in Science and Mathematics
OR
- PHYS 2900: Undergraduate Research Experience in Physics

Upper-Division Core Requirements (12 Credit Hours)

- PHYS 3210: Mechanics I
- PHYS 3220: Electromagnetism I
- PHYS 3260: Mathematical Physics
- PHYS 3710: Modern Physics

Major Concentrations (42 Credit Hours)

Students must earn a grade of "C" or better in these courses.

General Physics Concentration

Required Physics Courses (26 Credit Hours)

- PHYS 4210: Quantum Mechanics I
Any 3000 or 4000-level of PHYS courses for 23 credit hours*.
*May include a maximum of 8 credits of any non-PHYS 3000 or 4000-level course.
*May include a maximum of 6 credits of PHYS 3110: Directed Methods or PHYS 4400: Directed Study.

Required Physics Laboratory (6 Credit Hours)

Any PHYS "K" or PHYS "L" laboratory courses for 6 credit hours*

*May include a maximum of 3 credits from PHYS 3110: Directed Methods

Free Electives (10 Credit Hours)

Select 10 credit hours of 1000–4000 level coursework from the University Catalog.

Electrical Engineering Concentration

Required Physics Courses (9 Credit Hours)

- PHYS 4240: Solid State Physics
- PHYS 3500K: Computational Physics I
Any PHYS "K" or PHYS "L" laboratory courses for 3 Credit Hours of laboratory courses *
*May include a maximum of 3 credits from PHYS 3110: Directed Methods.

Electrical Engineering Required Courses (25 Credit Hours)

- ENGR 2214: Engineering Mechanics – Statics
- EE 2301: Circuit Analysis I
- EE 2302: Circuit Analysis II
- EE 2501: Digital Logic Design
- EE 3401: Engineering Electronics
- EE 3701: Signals and Systems
- EE 4201: Control Systems

Upper-Division Electives (8 Credit Hours)

Select 8 credit hours of 3000–4000 level coursework from the University Catalog.

Mechanical Engineering Concentration

Required Physics Courses (9 Credit Hours)

- PHYS 4230: Thermal Physics
- PHYS 3410K: Electronics Laboratory
- PHYS 3500K: Computational Physics I

Mechanical Engineering Required Courses (23 Credit Hours)

- EDG 1211: Engineering Graphics I
- ENGR 2214: Engineering Mechanics – Statics
- ENGR 3122: Engineering Mechanics – Dynamics
- ENGR 3131: Strength of Materials
- ENGR 3132: Strength of Materials Lab
- ENGR 3343: Fluid Mechanics
- ENGR 3345: Fluid Mechanics Laboratory
- ME 4141: Machine Design I
- ME 3101: Materials Science and Engineering

Upper-Division Electives (10 Credit Hours)

Select 10 credit hours of 3000–4000 level coursework from the University Catalog.

Program Total (120 Credit Hours)