Physics

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FACULTY:

Professors: Bouadana, Kezerashvili
Asst Profs: Blake, Boyko, Kolchenko, Leng, Maller, Matloff, Mongroo
Lecturers: Wise
CLTs: Grace, Kiezik

PHYSICS

Courses in physics and general science offer students an opportunity to develop an appreciation and understanding of the physical world. Course work develops comprehension of basic physical principles, competence in using logical procedures in problem solving, and an awareness of historical advances and future potential in the field of science.

Courses offered in the department serve the needs of the entire College community. Liberal arts students in the associate in arts (AA) degree program can elect any two-semester, 8-credit sequence in biology, chemistry or physics for which they qualify. Liberal arts students in the associate in science (AS) degree program take two 8-credit sequences of either BIO 1101/BY 101 and BY 1201/201, CHEM 1110/CH 110 and CHEM 1210/CH 210, PHYS 1433/SC 433 and PHYS 1434/SC 434, PHYS 1201/SC 201 and PHYS 1202/SC 202 or PHYS 1441/SC 441 and PHYS 1442/SC 442. AAS students can satisfy core requirements in science by taking any of the following 4-credit courses for which they meet the prerequisites, and baccalaureate degree students satisfy core requirements by taking an 8-credit sequence of either: BIO 1101/BY 101 and BIO 1201/BY 201, BIO 2311/BY 301.1 and BIO 2312/BY 301.2, CHEM 1110/CH 110 and CHEM 1210/CH 210, PHYS 1111/SC 111 and PHYS 1112/SC 112, PHYS 1201/SC 201 and PHYS 1202/SC 202, PHYS 1433/SC 433 and PHYS 1434/SC 434, PHYS 1441/SC 441 and PHYS 1442/SC 442.

COURSES:

PHYS 1111/SC 111
Principles of Science I
SCI Core
3 cl hrs, 2 lab hrs, 4 cr
For non-science students. Topics include astronomy, Newton's laws of motion and space travel, atomic energy, electricity and magnetism. Special emphasis is placed upon scientific principles with applications taken from everyday experiences. Laboratory work illustrates and supplements the lecture material.
Prerequisites: CUNY certification in reading and writing; pre- or corequisite: MAT 1175/MA 175

PHYS 1112/SC 112
Principles of Science II
3 cl hrs 2 lab hrs, 4 cr
A study of physical science as related to humans and society. Topics include modern physics, organic chemistry and life processes, geology, oceanography and astronomy.
Prerequisite: PHYS 1111/SC 111

PHYS 1117/SC 117
Astronomy
3 cl hrs 2 lab hrs, 4 cr
A survey of historical astronomy, astronomical tools including telescopes and space probes, modern planetary and galactic astronomy and cosmology, extra-solar planets, life in the universe and space travel. The influence of cosmic factors upon Earth's climate and habitability is emphasized. At least one field trip per semester.
Prerequisite: PHYS 1111/SC 111 or PHYS 1201/SC 201

PHYS 1201/SC 201
Physical Geology
SCI Core
3 cl hrs, 3 lab hrs, 4 cr (fall only)
A study of the crust of the earth and of the forces and processes that have shaped it. Tectonism, volcanism, metamorphism and sedimentation. Laboratory studies and at least one field trip per semester.
Prerequisite: CUNY certification in reading and writing; pre- or corequisite: MAT 1175/MA 175

PHYS 1202/SC 202
Historical Geology
SCI Core
3 cl hrs, 3 lab hrs, 4 cr
A survey of the geological history of the earth with emphasis on the continent of North America. Topics include hypotheses of earth origin, the relation of geology to the origin of life and its evolution, the techniques of stratigraphy and paleontology applied to the construction of the geologic column and to the interpretation of past events, the history and regional geology of North America. Laboratory studies include work on fossils, geologic map interpretation and local field trips.
Prerequisite: PHYS 1201/SC 201 or department approval required

PHYS 1420/SC 420
Principles of Physics
3 cl hrs, 2 lab hrs, 4 cr
Basic concepts and principles of mechanics, heat, electricity, magnetism, and optics. Laboratory work illustrates and supplements the lecture material. Laboratory experiments are computer-based.
Pre- or corequisite: MAT 1275/MA 275 or equivalent

PHYS 1433/SC 433
Physics 1.2
SCI Core
4 cl hrs, 2 lab hrs, 4 cr
Basic concepts and principles of mechanics, heat and sound for liberal arts students and technology students. Covers statics, kinematics, dynamics, work and energy, circular and rotational motion, fluids, temperature, heat transfer and wave motion.
Pre- or corequisite: MAT 1275/MA 275 or equivalent

PHYS 1434/SC 434
Physics 2.2
SCI Core
4 cl hrs, 2 lab hrs, 4 cr
Basic concepts and principles of electricity and magnetism, light and atomic physics, electrostatics, current electricity, magnetism, electrochemical and electromagnetic effects, alternating currents, electronics, electromagnetic waves, reflection, refraction, optical instruments, interference, diffraction, polarization and the atomic theory of matter.
Prerequisite: PHYS 1433/SC 433

PHYS 1441/SC 441
Physics 1.3
SCI Core
4 cl hrs, 3 lab hrs, 5 cr
Basic concepts and principles of mechanics, heat and mechanical waves for students planning to major in engineering, computer science, chemistry, science or mathematics. Topics include: kinematics, dynamics, statics, work and energy, rotational motion, oscillations and wave motion, fluids, temperature, heat and concepts of thermodynamics. Calculus and vector methods are used throughout the course.
Pre- or corequisite: MAT 1475/MA 475

PHYS 1442/SC 442
Physics 2.3
SCI Core
4 cl hrs 3 lab hrs, 5 cr
A continuation of *PHYS 1441*/SC 441. Electricity, magnetism and optics, electrostatics, electric current and electric circuits, magnetism, electromagnetic induction, alternating current circuits, electromagnetic waves, geometrical optics, optical instruments, spectra and elements of physical optics.
Prerequisite: PHYS 1441/SC 441

PHYS 2443/SC 443
Physics 3.3
3 cl hrs, 3 lab hrs, 4 cr
Selected topics in physics and modern physics including: light, wave optics, interference, diffraction and polarization of light, relativity, origins of the quantum theory, atoms, the nucleus, elements of condensed matter, lasers, holography, elements of elementary particle physics and astrophysics.
Prerequisite: PHYS 1442/SC 442

PHYS 2601/SC 601
Introduction to Research
2 cl hrs, 3 lab hrs, 3 cr
A study of the theoretical and practical application of some basic techniques used in research. Emphasis is placed on an appreciation for the entire process of science from proposal through experimentation, including poster and oral presentations, to writing a final paper. Laboratory experiments are computer-based.
Prerequisites: MAT 1375/MA 375, ENG 1101/EG 101 and one semester of a college science course