

PHYSICS (PHYS)

PHYS 1003 - Earth & Space Science (3 Credits)

This course covers the fundamentals of earth and space sciences including the universe, solar system, the earth, rocks, minerals, geological cycle, weather and climate. (Non-science majors)

Corequisites: PHYS 1003L

Lecture hours: 3

PHYS 1003K - Earth & Space Science (4 Credits)

This course covers the fundamental of earth and space sciences including the universe, solar system, the earth rocks, minerals. geological cycle, weather and climate. (non-science majors)

PHYS 1010 - Physics Appreciation (3 Credits)

This course covers surveys the development of physics from Newton to the present day and its technological impact on modern society. (non-science major)

PHYS 1011K - Introduction to Physical Science I (4 Credits)

This course is a brief survey of the important aspects of physics and astronomy. The goal of this course is to provide students with a solid background concerning basic topics in physics and astronomy including topics on basic mechanics, heat, waves, sound, light, electricity and magnetism, universal galaxies, stars and planets. This course is for students not majoring in mathematics or science will not count toward graduation if a physics course is presented for graduation. Offered: Fall, Spring, Summer.

Prerequisites: Learning Support Math Code with a score of 4 and Learning Support English Code with a score of 4 and Learning Support Reading Code with a score of 4

Lecture hours: 3

Lab hours: 2

PHYS 1012K - Introduction to Physical Science II (4 Credits)

This course is for students not majoring in mathematics or science and is a brief survey of the important aspects of chemistry and geology; will not count toward graduation if chemistry is presented for graduation. Laboratory exercises supplement the lecture material. Offered: Fall, Spring, Summer.

Prerequisites: Learning Support Math Code with a score of 4 and Learning Support English Code with a score of 4 and Learning Support Reading Code with a score of 4

Lecture hours: 3

Lab hours: 2

PHYS 1020 - Survey of Modern Science & Tech (3 Credits)

A multimedia course that surveys the advances of modern technology inspired by the physical sciences, the inter-relationships between various science and non-science disciplines and reviews the impact of physics on their study.

PHYS 1111K - Introductory Physics I (4 Credits)

This is an introductory course in physics for science majors. Trigonometry is frequently used. It covers mechanics(kinematics, dynamics, work and energy, momentum and collisions, and rotational motion and statics), and may also include thermodynamics and waves mechanics, thermodynamics and waves. It promotes students understanding of natural phenomena as well as analytical critical thinking skills. A glimpse of the practical application of physics in everyday life is highlighted. Physical concepts as well as problem solving skills are stressed in this course. Laboratory exercises supplement the lecture material. Offered: Fall, Spring, Summer.

Prerequisites: (MATH 1113)

Lecture hours: 3

Lab hours: 3

PHYS 1112K - Introductory Physics II (4 Credits)

This is the second part of the introductory physics and covers electrostatics, electric current and circuits, and electromagnetism, and may also include optics and modern physics. Elementary algebra and trigonometry will be used Laboratory exercises supplement the lecture material. Offered: Fall, Spring, Summer.

Prerequisites: PHYS 1111K

Lecture hours: 3

Lab hours: 3

PHYS 2100 - Computer Applications (3 Credits)

This course is designed to give students the necessary computer skills in using spreadsheets, word processors, data-base applications, graphics and other scientific software that facilitate learning, data analysis and simulation relevant to science disciplines. Offered: Fall, Spring, Summer.

Lecture hours: 3

PHYS 2120 - Applied Math for Sciences I (2 Credits)

This fundamental mathematical concepts and tools needed in the study and application of scientific principles and laboratory practices are covered in this course.

PHYS 2121 - Applied Math for Sciences II (2 Credits)

A course in advanced mathematical concepts and tools needed in the study and application of scientific principles and laboratory practices.

Prerequisites: (PHYS 2120)

PHYS 2211K - Principles of Physics I (4 Credits)

This is an introductory course in calculus-based physics for Chemistry and Pre-Engineering majors. This course covers mechanics (kinematics, dynamics, work and energy, momentum and collisions, and rotational motion and statics), and may also include thermodynamics and waves. Elementary differential calculus is used. Laboratory exercises supplement the lecture material. Students receiving credit for PHYS 2211K cannot receive credit for PHYS 1111K. Offered: Fall, Spring, Summer.

Prerequisites: (MATH 1211 or MATH 1501)

Lecture hours: 3

Lab hours: 3

PHYS 2212K - Principles of Physics II (4 Credits)

This course covers electrostatics, electric current and circuits, and electromagnetism, and may also include optics and modern physics. Elementary calculus will be used. Laboratory exercises supplement the lecture material. Offered: Spring.

Prerequisites: PHYS 2211K

Lecture hours: 3

Lab hours: 3

PHYS 2250 - Responsible Conduct of Research (2 Credits)

This course is designed to provide appropriate training and oversight in the responsible and ethical conduct of research to students engaging in undergraduate research. Ethical and policy issues relevant to the responsible conduct of research will be discussed. Analysis and application of topics including conflict of interest, responsible authorship, policies for handling misconduct, data management, data sharing, and policies involving use of human and animal subjects.

Prerequisites: CHEM 1212K or PHYS 1112K or PHYS 2212K

Lecture hours: 2

PHYS 3001 - Advanced Concepts in Physics (4 Credits)

This course is designed for the middle grades science teachers and covers the physics portion of the Science curriculum. The following topics will be covered: heat, waves, sound, light, motion, force, energy, electricity, and magnetism. The lab includes demonstrations that may be utilized in explaining physics principles.

Prerequisites: (PHYS 1001)

Lecture hours: 3

Lab hours: 1

PHYS 3002 - Advanced Earth and Space Science (4 Credits)

A study of the earth and its connection to other celestial bodies. Theories about the information of the solar system and the universe will be explored. Earth resources and forces that shape the earth will be explored. Earth's atmosphere and weather elements will be studied.

Lecture hours: 3

Lab hours: 1

PHYS 3111 - Mechanics I (3 Credits)

A course that covers elements of coplanar statics of particles and rigid bodies and analysis of forces on structures and beams.

Prerequisites: (PHYS 2221K)

PHYS 3112 - Mechanics II (3 Credits)

A course that covers the study of one-, two- and three dimensional motion of particles and rigid body motion.

Prerequisites: PHYS 3111

PHYS 3220 - Thermodynamics (3 Credits)

This course involves the study of the principles and concepts of heat and thermodynamics including thermal equilibrium, reversible and non-reversible processes and heat engines.

Prerequisites: (PHYS 2221K)

PHYS 3311 - Electricity & Magnetism I (3 Credits)

An intermediate level course covering electrostatics, electric and magnetic fields and forces, electromagnetic induction, AC and DC circuits.

Prerequisites: (PHYS 2222K)

PHYS 3312 - Electricity & Magnetism II (3 Credits)

An advanced level course covering magnetic properties of matter, time-variable electric and magnetic fields, Maxwell's equations and their application to the generation and transmission of electromagnetic waves.

Prerequisites: (PHYS 3311)

PHYS 4011L - Advanced Laboratory I (3 Credits)

This course is designed to provide students with laboratory skills in physics; it covers experiments in classical and modern physics including the Frank-Hertz experiments, photo-electric effects, X-rays, optical and microwave spectroscopy.

PHYS 4012L - Advanced Laboratory II (3 Credits)

This course is designed to provide students with laboratory skills in physics; it covers experiments involving electric and electronic circuits including memory and logic circuits and storage devices.

Prerequisites: PHYS 4011L

PHYS 4110 - Optics (3 Credits)

In this course, wave motion, properties and applications of lenses in optical instruments, interference, diffraction and other optical phenomena and quantum theory of light are investigated.

PHYS 4121 - Modern Physics I (3 Credits)

In this course the student is introduced to the principle and phenomenology of modern physics including special theory of relativity and selected topics in atomic and molecular physics are covered in this course.

Prerequisites: (PHYS 2222K)

PHYS 4122 - Modern Physics II (3 Credits)

A continuation of PHYS 4121, in which topics involving nuclear structure and radioactivity, and selected topics in quantum and solid state physics are examined.

Prerequisites: (PHYS 4121)

PHYS 4230 - Special Projects (3 Credits)

Independent study and research on a selected topic in physics and/or in a related field in which a project report and presentation are required.

PHYS 4240 - Internship (3 Credits)

Internship at off-campus sites to provide experience and training in a real-life work environment.