

PHYSICS (PHY)

Division: Biology, Chemistry and Physics Division

PHY 101 College Physics I (4 Credits)

This is the first half of a standard college physics sequence for technology, architecture, or biological science majors. Lecture and laboratory work is supported by individual assistance and computer activities. This course includes the study of kinematics, dynamics, momentum, energy, circular motion, universal gravitation, rotational motion, the structure of materials, and fluid

Pre-requisites: (Companion Arithmetic with a score of 069 and Companion Elementary Algebra with a score of 109) or (Arithmetic (Next-Gen) with a score of 260 and Quant,Algebra,Stats(Next-Gen) with a score of 275) or (Bilingual Computation with a score of 20 and Bilingual Algebra with a score of 26) or MTH 100 with a minimum grade of C

PHY 102 College Physics II (4 Credits)

This is the second half of a standard college physics course sequence. Lecture and laboratory work is supported by individual assistance and computer activities. This half emphasizes the study of electricity magnetism and light, with additional topics including solids, fluids, heat, thermodynamics, vibrations, waves, sound, and topics in modern physics.

Pre-requisites: PHY 101 with a minimum grade of C

PHY 103 General Physics I (4 Credits)

This is a first course in general physics for engineering, mathematics and computer science majors. Topics covered include the calculus-based study of vectors, particle kinematics, Newton's laws, friction, conservation of energy and momentum, gravitation and rotation. Emphasis is placed on problem solving and applications to laboratory experience.

PHY 104 General Physics II (4 Credits)

This is a continuation of PHY 103 with an emphasis on electrostatics, direct current and alternating current circuits, electromagnetism, magnetic properties of matter, and electromagnetic oscillations. The laboratory is based upon electrical measurements using modern electronic test equipment.

Pre-requisites: PHY 103 with a minimum grade of C and MTH 121 with a minimum grade of C

PHY 105 Concepts in Physics (4 Credits)

Pre-requisites: MTH 092 with a minimum grade of C

PHY 110 Intro. Data Reduction Applica. (3 Credits)

This is a one semester course in which the theory and application of data reduction and error analysis are introduced. Topics include the binomial distribution, the Gaussian and Poisson probability density functions, estimation of moments, and propagation of uncertainty. Data modeling, including least-squares fitting of linear and polynomial functions, is presented. Using computer software, students are expected to apply the concepts of data reduction error analysis to real data sets derived from the physical sciences.

Pre-requisites: PHY 103 with a minimum grade of C and MTH 121 with a minimum grade of C

PHY 111 Theory of Optics (3 Credits)

This course introduces the physics of optics and light. Topics include the nature of light, reflection, refraction, and image formation for simple optical systems. Laboratory experiments are demonstrated.

PHY 113 Astronomy (4 Credits)

This is an introductory course in astronomy. The major topics covered are: historic works of Aristotle, Ptolemy, Brahe, Kepler and Copernicus, age and origin of the Solar System with descriptions of the planets and their satellites, structure and evaluation of the Sun and other stars. Additional topics include: nature of light, atomic structure, gravitation, and relativity. Lecture and laboratory work is supported by individual assistance and computer activities.

Pre-requisites: ((Companion Arithmetic with a score of 069 and Companion Elementary Algebra with a score of 076) or (Arithmetic (Next-Gen) with a score of 260 and Quant,Algebra,Stats(Next-Gen) with a score of 260) or (Bilingual Computation with a score of 20 and Bilingual Algebra with a score of 19) or MTH 092 with a minimum grade of C or Move Up Math 092 with a score of P or MTH 092 Summer Bridge with a score of P or TRANSFERRED COLLEGE LEVEL MATH with a score of 898 or Elig. for Math 100,101,103 with a score of 905 or Pre-reg. COLG math waiver only with a score of 908 or SAT/ACT Elig for Mth 100 with a score of 994) or COLLEGE DEGREE with a score of 988 or SAT/ACT Elig Eng101 Mth100 with a score of 995 or Transf. Eng 101 Mth 100 with a score of 999

PHY 114 Meteorology (4 Credits)

This course covers the composition and structure of the atmosphere, the flows of energy to, from and through the atmosphere, and the resulting motions produced from small to planetary scales. The physical principles of atmospheric phenomena are stressed to provide an understanding of weather's impact on humans, particularly the impact of severe weather. Methods of analysis are developed through the study of current weather as meteorological data are delivered via the Internet.

Pre-requisites: ((Companion Arithmetic with a score of 069 and Companion Elementary Algebra with a score of 076) or (Arithmetic (Next-Gen) with a score of 260 and Quant,Algebra,Stats(Next-Gen) with a score of 260) or (Bilingual Computation with a score of 20 and Bilingual Algebra with a score of 19) or MTH 092 with a minimum grade of C or Move Up Math 092 with a score of P or MTH 092 Summer Bridge with a score of P or TRANSFERRED COLLEGE LEVEL MATH with a score of 898 or Elig. for Math 100,101,103 with a score of 905 or Pre-reg. COLG math waiver only with a score of 908 or SAT/ACT Elig for Mth 100 with a score of 994) or COLLEGE DEGREE with a score of 988 or SAT/ACT Elig Eng101 Mth100 with a score of 995 or Transf. Eng 101 Mth 100 with a score of 999

PHY 203 General Physics III (5 Credits)

This course is a continuation of PHY 103 and PHY 104, which completes the introductory physics sequence for engineering majors. The theory and applications of the following topics are covered: oscillations with an introduction to Maxwell's Equations and its applications to microwaves, hydrodynamics, kinetic theory, physical and geometrical optics, introduction to atomic theory, the periodic table and elementary particles.

Pre-requisites: PHY 104 with a minimum grade of C and MTH 122 with a minimum grade of C

PHY 299 Physics Research Capstone (2 Credits)

This course is intended for students who are nearing the end of their Associate in Science degree and who are looking to obtain research experience in physics, applied physics, engineering or science. The course is the culmination of learning in the physics curriculum and as such, it reflexively builds upon learning from various college core, mathematics and physical science courses. Each student will develop a proposal for their Capstone project. The project will be conducted at ECC or at an approved research laboratory of a four-year institution under the supervision of a full-time faculty member. As part of the course, students will learn to communicate mathematical and scientific reasoning effectively in written and spoken form.