

PHYSICS (PHYS)

PHYS 104 ESSENTIAL MATH SKILLS FOR ENGINEERS AND SCIENTISTS 6 UNITS

Grade Only

Prerequisite: Intermediate algebra proficiency, as determined through the Southwestern College Multiple Measures Process.

Lecture 6 hours

Offered: FALL, SUMMER

Introduces and teaches mathematical techniques for engineers and scientists. Covers functions, dimensional analysis, inequalities, matrices, vectors, logarithms and curve fitting. Emphasizes functions and graphing. Includes graphic and numerical applications of trigonometry, circular and inverse functions, and practical applications of right and oblique triangles. Requires a CAS graphing calculator. [D; CSU; UC] (Same as: CHEM 104; ENGR 104)

PHYS 150 FUNDAMENTALS OF PHYSICS I 3 UNITS

Pass/No Pass or Grade is Allowed

Prerequisite: MATH 121 or MATH 250 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 3 hours

Offered: FALL, SPRING

Constitutes the first of a two-semester, calculus-based sequence intended mainly for majors in the life sciences. Includes kinematics, dynamics, work and energy, momentum, fluids, waves, sound, simple harmonic motion, and thermodynamics. [D; CSU; UC; C-ID PHYS 105 (with PHYS 151)]

PHYS 151 FUNDAMENTALS OF PHYSICS LABORATORY I 1 UNIT

Pass/No Pass or Grade is Allowed

Corequisite: PHYS 150 (may be taken previously).

Laboratory 3 hours

Offered: FALL, SPRING

Constitutes the lab component of PHYS 150 (Fundamentals of Physics I). Includes kinematics, dynamics, work and energy, momentum, fluids, waves, sound, simple harmonic motion, and thermodynamics. [D; CSU; UC; C-ID PHYS 105 (with PHYS 150)]

PHYS 152 FUNDAMENTALS OF PHYSICS II 3 UNITS

Pass/No Pass or Grade is Allowed

Prerequisite: PHYS 150 or equivalent.

Corequisite: MATH 122 or MATH 251 (may be taken previously).

Lecture 3 hours

Offered: FALL, SPRING

Constitutes the second of a two-semester, calculus-based sequence intended mainly for majors in the life sciences. Includes electrostatics, magnetism, DC circuits, optics, and modern physics. [D; CSU; UC; C-ID PHYS 110 (with PHYS 153)]

PHYS 153 FUNDAMENTALS OF PHYSICS LABORATORY II 1 UNIT

Pass/No Pass or Grade is Allowed

Corequisite: PHYS 152 (may be taken previously).

Laboratory 3 hours

Offered: FALL, SPRING

Constitutes the lab component of PHYS 152 (Fundamentals of Physics II). Includes electrostatics, magnetism, DC circuits, optics, and modern physics. [D; CSU; UC; C-ID PHYS 110 (with PHYS 152)]

PHYS 270 PRINCIPLES OF PHYSICS I 3 UNITS

Grade Only

Recommended Preparation: RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.

Prerequisite: MATH 250 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 3 hours

Offered: ALL

Introduces classical mechanics. Includes vectors, motion in one to three dimensions, Newton's laws of motion, friction, equilibrium, work, energy, gravitation, rotational motion, and periodic motion. Provides the first of a three-semester calculus-based sequence intended mainly for majors in the physical sciences and engineering. [D; CSU; UC; C-ID PHYS 205]

PHYS 271 PRINCIPLES OF PHYSICS LABORATORY I 1 UNIT

Grade Only

Prerequisite: PHYS 270 or equivalent.

Laboratory 3 hours

Offered: ALL

Provides laboratory experience to supplement PHYS 270. [D; CSU; UC; C-ID PHYS 205]

PHYS 272 PRINCIPLES OF PHYSICS II 3 UNITS

Grade Only

Prerequisite: PHYS 270 or equivalent; MATH 251 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 3 hours

Offered: FALL, SPRING

Introduces electricity, magnetism, and fluid mechanics. Includes electric field, potential, resistance, capacitance, magnetic field, inductance, electromagnetic induction, direct and alternating current, and fluid mechanics. Second of a three-semester, calculus based sequence intended mainly for majors in the physical sciences and engineering. [D; CSU; UC; C-ID PHYS 210]

PHYS 273 PRINCIPLES OF PHYSICS LABORATORY II 1 UNIT

Grade Only

Corequisite: PHYS 272 (may be taken previously).

Laboratory 3 hours

Offered: ALL

Provides laboratory experience to supplement PHYS 272. [D; CSU; UC; C-ID PHYS 210]

PHYS 274
PRINCIPLES OF PHYSICS III
3 UNITS

Grade Only

Prerequisite: PHYS 272 or equivalent.

Corequisite: MATH 252 (may be taken previously).

Lecture 3 hours

Offered: FALL, SPRING

Introduces thermodynamics, waves, optics, and modern physics. Includes the first and second law of thermodynamics, mechanical waves, sound waves, electromagnetic waves, geometrical optics, physical optics, special relativity, quantum mechanics, and atomic spectra. Third of a three-semester, calculus-based sequence intended mainly for majors in the physical sciences and engineering. [D; CSU; UC; C-ID PHYS 215]

PHYS 275
MODERN PHYSICS AND PRINCIPLES OF PHYSICS LABORATORY III
2 UNITS

Grade Only

Recommended Concurrent Enrollment: MATH 254.

Corequisite: PHYS 274 (may be taken previously); MATH 253 (may be taken previously).

Lecture 1 hour, laboratory 3 hours

Offered: SPRING

Covers special relativity, quantum mechanics, and atomic physics. Includes Lorentz transformation, relativistic collisions, the Schrödinger equation in 1D and 3D, and applications to atomic physics. Includes topics such as thermodynamics, electromagnetic waves, geometric and physics optics, relativity, quantum mechanics, and atomic physics. Constitutes 1 unit of lecture on special relativity and quantum mechanics and 1 unit of lab to supplement PHYS 274. [D; CSU; UC; C-ID PHYS 215 (with PHYS 274)]

PHYS 299
INDEPENDENT STUDY
1-3 UNITS

Pass/No Pass or Grade is Allowed

Limitation on Enrollment: Eligibility for independent study.

Lecture 3 hours

Offered: FALL, SPRING

Individual study or research in some area of physics of particular interest to the student and not included in regular courses of the college. [D; CSU]