Physics (PS)

Courses

PS 107 Introductory Solar System Astronomy 4 Cr.
A descriptive study of the solar system, including the sun, planets, asteroids, comets and interplanetary space. The role of observation in the evolution of astronomy is emphasized. Classroom: 3 hours; laboratory: 2 hours. Does not count as a lab science if taken for 3 credits.

PS 108 Stellar and Galactic Astronomy 4 Cr.
A descriptive introduction to the universe, including stars, galaxies, and recent deep space discoveries. Discussions survey the techniques used by astronomers to interpret the wide variety of observed phenomena in the cosmos. Classroom: 3 hours; laboratory: 2 hours. Does not count as a lab science if taken for 3 credits.

PS 1XL Physics Lab Transfer Elective 4 Cr.

PS 201 General Physics I 4 Cr.
An algebra-based study of mechanics, sound and heat, with correlated laboratory experiments. Classroom 3 hours, laboratory 2 hours. Prerequisite: MA 107. Note: No student will receive credit for both PS 201 and PS 211, or for both PS 202 and PS 212.

PS 202 General Physics II 4 Cr.
An algebra-based study of magnetism, electricity, light, and atomic physics, with correlated laboratory experiments. Classroom: 3 hours; laboratory: 2 hours. Prerequisite: PS 201. Note: Credit cannot be received for both PS 202 and PS 212. Offered spring semesters only.

PS 211 University Physics I 4 Cr.
A calculus-based study of vectors; Newton's laws; uniform, accelerated, rotational and harmonic motion; conservation laws; fluid mechanics; elasticity. Classroom: 3 hours; laboratory: 2 hours. Prerequisite: MA 121. Note: Credit cannot be received for both PS 201 and PS 211. Offered fall semesters only.

PS 212 University Physics II 4 Cr.
A calculus-based study of topics in electricity, magnetism, waves and optics. Classroom: 3 hours; laboratory: 2 hours. Prerequisite: PS 211; Pre- or Co-requisite: MA 122. Note: Credit cannot be received for both PS 202 and PS 212. Offered spring semesters only.

PS 2XX Physics Elective 3 Cr.

PS 334 Classical Mechanics 3 Cr.
A study of Newtonian mechanics including motion of a particle, a system of particles and rigid bodies; gravitation; oscillations; central forces; conservation laws. Introduction to Lagrangian and Hamiltonian formulations of dynamics. Classroom: 3 hours. Offered spring semester of even-numbered years. Prerequisites: PS 212 and MA 224 or permission of instructor.

PS 341 Modern Physics 3 Cr.
A study of the quantum revolution including special relativity, structure and spectra of atoms and molecules, radioactivity, nuclear models, and nuclear interactions. Classroom: 3 hours. Offered fall semester of odd-numbered years. Prerequisites: PS 212 and MA 224 or permission of instructor.

PS 356 Thermodynamics & Statistical Mechanics 3 Cr.
A study of the foundations of thermodynamics and statistical physics: first and second laws of thermodynamics with applications; thermodynamic potentials and applications to systems in equilibrium; statistical mechanics including Boltzmann statistics, quantum statistics and statistical interpretation of entropy. Classroom: 3 hours. Offered spring semester of odd-numbered years. Prerequisites: PS 212 and MA 224 or permission of instructor.

PS 373 Junior Laboratory I 2 Cr.
A laboratory course devoted to scientific inquiry through a collaborative research project under faculty supervision. Introduction to formulation of research questions, experimental design, system modeling, measurement, data collection and data analysis. Laboratory methodology including safety procedures. Read published literature; communicate research results. Written and oral reports required. Laboratory: 6 hours. Offered fall semesters only. Prerequisites: PS 212 and MA 224 or permission of instructor.

PS 374 Junior Laboratory II 2 Cr.
A laboratory course devoted to scientific inquiry through a continuation of the collaborative research project started in Junior Laboratory I. Project culminates in public presentations, written and oral, of research results. Laboratory: 6 hours. Offered spring semesters only. Prerequisite: PS 373 or permission of instructor.

PS 399 Topics: 4 Cr.

PS 421 Advanced Laboratory I 1-4 Cr.
A laboratory investigation in a specific area of experimental physics designed in consultation with physics faculty. Prerequisite: Permission of the instructor. Offered fall semesters only.

PS 422 Advanced Laboratory II 1-4 Cr.
A laboratory investigation in a specific area of experimental physics designed in consultation with physics faculty. Prerequisite: Permission of the instructor. Offered spring semesters only.

PS 426 Electricity and Magnetism 3 Cr.
A study of electrical circuits, and electrostatic and magnetostatic fields. Includes RLC circuits; applications of Gauss' Law and Laplace's equation; dielectric theory; magnetic fields; and theory of magnetic materials. Classroom: 3 hours. Offered fall semester of even-numbered years. Prerequisites: PS 212, MA 223 and MA 224 or permission of instructor.

PS 428 Electrodynamics & Optics 3 Cr.
This course continues PS 426 (Electricity & Magnetism), combining electricity, magnetism and optics into a unified theory embodied by Maxwell’s equations. Includes an introduction to relativistic applications and optical phenomena. Classroom: 3 hours. Offered spring semester of odd-numbered years. Prerequisites: PS 426 or permission of instructor.

PS 444 Quantum Physics 3 Cr.
A study of the mathematical structure of quantum mechanics and applications to atomic and nuclear phenomenon. Topics include: postulates of quantum mechanics, operators, Schrödinger's equation, one dimensional potentials, angular momentum, spin, perturbation theory, and identical particles. Classroom: 3 hours. Offered spring semester of even-numbered years. Prerequisites: PS 341 or permission of instructor.

PS 451 Seminar I 1 Cr.
A study of special topics of current interest. This course integrates reading, writing, speaking and critical thinking skills. Classroom: 1 hour. Prerequisite: permission of the instructor. Offered fall semesters only.

PS 452 Seminar II 1 Cr.
A continuation of PS 451, investigating special topics of current interest. This course integrates reading, writing, speaking, and critical thinking skills. Classroom: 1 hour. Prerequisite: permission of the instructor. Offered spring semesters only.

PS 473 Senior Laboratory I 3 Cr.
A laboratory course devoted to scientific inquiry through a collaborative research project under faculty supervision. Introduction to formulation of research questions, experimental design, system modeling, measurement, data collection and data analysis. Laboratory methodology including safety procedures. Read published literature; communicate research results. Written and oral reports required. Students serve as project leaders as well as research investigators. Conference: 1 hour. Laboratory: 6 hours. Offered fall semesters only. Prerequisites: PS 374 or permission of instructor.

PS 474 Senior Laboratory II 3 Cr.
A laboratory course devoted to scientific inquiry through a collaborative research project under faculty supervision. Introduction to formulation of research questions, experimental design, system modeling, measurement, data collection and data analysis. Laboratory methodology including safety procedures. Read published literature; communicate research results. Written and oral reports required. Students serve as project leaders as well as research investigators. Conference: 1 hour. Laboratory: 6 hours. Offered spring semesters only. Prerequisites: PS 473 or permission of instructor.