PHY-Physics

PHY101 - College Physics I

Introductory physics. Vectors, mechanics, energy,momentum, conservation principles and oscillatory motion.

PHY121 - General Physics I

An introductory non calculus course dealing with mechanics and heat.

PHY122 - General Physics II

An introductory non-calculus course addressing the areas of sound, light, and electricity and magnetism.

PHY202 - College Physics II

A continuation of College Physics I. Heat and thermodynamics, hydrostatics, waves and acoustics, electricity, and an introduction to magnetism and ac circuits.

PHY203 - College Physics III

A continuation of College Physics II. Magnetism, AC circuits, Maxwell's equation and electromagnetic waves, light, atomic and nuclear physics, and special relativity. Some review of material from College Physics I and II.

PHY301 - Intermediate Electricity and Magnetism

Electric and magnetic fields and energy, the effects of matter on them, circuits, Maxwell's equations, electromagnetic waves. Vector calculus and differential equations used.

PHY321 - Intermediate Mechanics

Vector calculus, Newtonian kinematics and dynamics of many particle systems, with emphasis on integral relations, motion in a central potential, scattering theory, systems with constraints, variational principles in mechanics, small oscillations, wave equations and special relativity.

PHY331 - Modern Physics

Relativistic kinematics and dynamics, particle and wave aspects of radiation and particles, the structure of the hydrogen atom, and many-electron atoms. Introduction to quantum mechanics.

PHY341 - Mathematical Methods in Physics I

Vector calculus, complex variable analysis and conformal mapping, Fourier series and integrals, ordinary differential equations, partial differential equations, general series representations of functions and special functions.

PHY375 - Radiation and Optics

A review of Maxwell equations and wave analysis. Fraunhofer diffraction, radiation from atoms, polychromatic waves magneto-optic and electro optic effects, and introduction of laser and maser theory.

PHY405 - Quantum Mechanics

Formulation and application of the fundamental principles of quantum theory which evolved in the twentieth century. Planck's quantum postulates, DeBroglie hypothesis and wave particle duality. Momentum space and the Fourier transform. Formulation of the Schrodinger equation and its application to the treatment of particles in potential fields.

PHY455 - Solid State Physics

An introduction to the physics of solid materials, including crystalline lattice structures, band theory, conductors, semiconductors and superconductors. Recent developments in nanoscience as related to solid state physics will also be emphasized.

PHY462 - Fundamentals of Nuclear and Particle Physics

An upper-division course that focuses on the fundamentals of nuclear and particle physics including nuclear models, scattering, potentials, decays, particle accelerators and detectors, elementary particles and their interactions, mathematical symmetries and associated conservation laws, and a summary of the Standard Model. Some familiarity with quantum mechanics and multivariate calculus are assumed.

PHY475 - Astrophysics

Topics concerning stellar evolution including observations, physical states of the stellar interior, evolutionary phases and initial and final stellar structure, and cosmology.

PHY495 - Physics Seminar

An introduction to literature, history, teaching and research methods in the physical sciences.