

130A-B. Advanced Laboratory (2-2)

Prerequisite: Phys 102, 120. Advanced experiments in mechanics, electricity and magnetism, atomic and nuclear physics. Opportunity for at least one individual project. (6 lab hours)

135. Physics of Medical Instrumentation (3) (Former Exp 110B)

A course in diagnostic, emergency and laboratory instrumentation, designed for students and personnel in the medical, paramedical and biological fields with emphasis in electronic devices. The subject matter includes basic electronic principles, biomedical recording, oscilloscopes, electrocardiography, encephalography, fetal monitors, etc.

136. Radiation Physics (3)

Prerequisite: Phys 1B or 2B or 4C or permission of instructor. The interaction of radiation with matter: photoelectric, Compton and pair production processes, neutron and charged particle interactions, linear energy transfer, quality factor, attenuation coefficients, shielding. Biological effects, RBE, internal dose, permissible exposures, beneficial application. Instrumentation.

140. Thermodynamics and Kinetic Theory (3)

Prerequisite: Math 81. Fundamental concepts and laws of classical thermodynamics. Rudiments of kinetic theory and statistical thermodynamics with application to physical and chemical systems.

145. Geophysics (3)

Prerequisite: Phys 1A-B or 2A-B or 4A-B-C, Math 75. Basic principles of physics applied to the solution of geological problems, rotation and figure of the earth, the gravity field, seismology and the earth's interior, geomagnetism, and the thermal history of the earth.

162. Solid State Physics (3)

Prerequisite: Phys 102 or Chem 115. Classification of solids; crystalline state and lattice vibrations; properties of metallic lattices and dielectrics; magnetic properties of solids; free electron theory and band theory of metals; semiconductors; imperfections.

165. Experimental Techniques in Solid State Physics (3)

Prerequisite: Phys 4C. Basic concepts in solid state physics. Measurements of conductivity, energy gap in semi-conductors, drift mobility, Hall coefficients, photoconductivity, magnetic susceptibilities, exciton spectra, dielectric loss. Also provides experience in X-ray diffraction, vacuum technology, thin-film deposition, and low temperature techniques. (1 lecture, 6 lab hours)

170A-B. Mathematical Physics (3-3)

Application of mathematical methods to the solution of problems in physics.

175T. Topics in Contemporary Physics (2-4; max total 12)

Designed to provide students with special work in such areas of physics as plasmas, high energy physics, solid state, nuclear structure, astrophysics, low temperature phenomena.

180. Seminar in Physics (1; max total 3)

Prerequisite: senior or graduate physics major or permission of department chairman.

190. Independent Study (1-3; max see reference)

See *Academic Placement—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

203A-B. Theoretical Physics (3-3)

Advanced treatment of classical analytical mechanics including Lagrange's and Hamilton's formulation of the laws of motion, special relativity, small oscillation theory, hydrodynamics.