PHYS 3210: Mechanics I

3 Credit Hours

Prerequisite: MATH 2203, MATH 2306, and PHYS 3260

This course is a survey of Newtonian, Lagrangian, and Hamiltonian Mechanics as well as mechanics of central force systems and oscillations. Students will learn how to apply Newtonian mechanics to dynamics of particles and systems of particles, and calculus of variations using Lagrange and Hamilton equations.

PHYS 3220: Electromagnetism 1

3 Credit Hours

Prerequisite: Grades of "C" or better in MATH 2203, MATH 2306, PHYS 2212 and PHYS 2212L

This course is a survey of fundamental principles of electricity and magnetism. Students will learn and solve problems in electrostatic fields, magnetic fields of steady currents, and time-dependent electromagnetic fields.

PHYS 3230: Optics

3 Credit Hours

Prerequisite: Grades of "C" or better in PHYS 2212, PHYS 2212L

PHYS 3230 will present fundamentals and applications of geometric and physical optics. Students will study electromagnetic waves as formulated by Maxwell's equations. The laws of refraction of reflection along with the theories of interference and diffraction will be presented. Students will also learn how some optical devices and lasers work.

PHYS 3260: Mathematical Physics

3 Credit Hours

Prerequisite: Grade of 'C' or better in MATH 2202, and PHYS 2212

This course students will review mathematical techniques that are often used in upper-level physics courses. Students will learn to apply linear algebra, differential equations, vector calculus, Fourier series, Fourier transforms, Bessel functions, Legendre polynomials, and complex analysis to solve problems in physics.

PHYS 3410K: Electronics Laboratory

2 Credit Hours

Prerequisite: Grades of "C" or better in PHYS 2212 and PHYS 2212L

Students will learn how to design, build, and analyze basic discrete and integrated circuits. They will also learn how to represent circuits and to predict the output of analog and digital circuits commonly found in physics laboratories.