Physics (PHY)

PHY 121 Technical Physics

IAI – P1 900L

3 Hours

Prerequisites: None

4 hours weekly (2-2)

A general study of physics emphasizing applications to the technical fields and introducing the laws of motion and equilibrium and their relation to work, energy, and power. Also included are the principles of mechanics as they are applied to solids and fluids and the principles of heat, electricity, and magnetism.

PHY 155 College Physics I

IAI – P1 900L

5 Hours

Prerequisites: MAT 111 or 2 yrs. H. S. algebra and 1 yr. H. S. Trigonometry

6 hours weekly (4-2)

An introduction to physics. Classical mechanics and topics chosen from heat, sound, and materials science. This is the first in a non-calculus sequence for science, mathematics, pre-med, chemistry, and other majors requiring college physics.

PHY 156 College Physics II

5 Hours

Prerequisites: PHY 155

6 hours weekly (4-2)

A continuation of PHY 155. Electricity and magnetism along with topics selected from optics and modern physics; the final course of the non-calculus college physics sequence.

PHY 201 Statics

IAI – EGR 942

3 Hours

Prerequisites: MAT 131 with a grade of "C" or higher, PHY 155 (or HS Physics I) with a grade of "C" or higher and concurrent enrollment in PHY 205, University Physics I or PHY 205, University Physics I, with a grade of "C" or higher.

3 hours weekly (3-0)

This course introduces principles of static equilibrium to solve statically determinate systems. It is a rigorous course in statics for engineering, mathematics, physics, and other majors requiring a calculus-based mechanics course. Topics include force and moment vectors, equivalent systems of forces and distributed loadings, equilibrium of particles and rigid bodies, centroid, center of gravity, moment of inertia, and virtual work. Structural analysis of simple trusses, space trusses, frames, and machines are considered.

PHY 202 Dynamics

IAI – EGR 943

3 Hours

Prerequisites: PHY 201

3 hours weekly (3-0)

A continuation of PHY 201. Methods of elementary classical mechanics as applied to particles and rigid bodies in nonequilibrium situations. Vector algebra is used extensively and some vector calculus is introduced. A programmable calculator is strongly recommended for the course. This course is currently offered in the spring semester.

PHY 203 Mechanics of Materials

IAI – EGR 945

4 Hours

Prerequisites: PHY 201 with a minimum grade of "C" or higher

3 hours weekly (3-0)

This course is a continuation of Statics (PHY 201), building on that course's material to offer a more thorough understanding of the physics of beams and shafts. Topics include, but are not limited to: concepts of stress and strain, material properties (elastic and plastic); torsion; shear stresses and deformations; thermal stresses; thin-walled pressure vessels; pure bending; stresses and strains; transverse loading of beans; shear stress and combined loading; transformations of stress and strain(Mohr's Circle); design of beams and shafts for strength ; shear and moment diagrams; deflection of beans; energy methods; and column.

PHY 205 University Physics I

IAI – P2 900L, IAI – PHY 911

5 Hours

Prerequisites: Concurrent enrollment in MAT 131

7 hours weekly (4-3)

PHY 205 is the first course in a standard two-semester calculus-based physics sequence that is offered at most universities and colleges for engineering majors. The course will introduce students to the fundamental laws of mechanics and oscillations. Topics covered will include kinematic motion in one and two dimensions, Newton's law, momentum, work and energy, conservation of energy and momentum, rotational motion, force and energy concepts as applied to rotational dynamics, static equilibrium, and brief introduction to elasticity, introduction to universal law of gravitation and Kepler's laws, and simple harmonic motion. The laboratory component of the course will investigate these concepts.

PHY 206 University Physics II

IAI – PHY 912

5 Hours

Prerequisites: PHY 205, MAT 201, or consent of instructor

7 hours weekly (4-3)

PHY 206 is the second course in a standard two-semester calculus-based physics sequence that is offered at virtually all universities and colleges for engineering majors. PHY 206 covers electricity, magnetism, electromagnetic waves, optics, and an introduction to relativity and quantum physics.

PHY 214 Introduction to Circuit Analysis

IAI – EGR 931

3 Hours

Prerequisites: MAT 202 with a grade of "C" or higher and the completion of PHY 206 or concurrent enrollment.

3 hours weekly (3-0)

This course introduces students to fundamental principles of circuit theory as used in engineering and scientific applications. Topics include basic concepts of electrical current, voltage, power and energy; units; independent and dependent sources; resistance R; Ohm's Law; Kirchhoff's Laws; simple resistive circuits; delta-to-wye transformations; resistive circuit analysis methods (node-voltage, mesh-currents, source transformations, Thevenin and Norton equivalents, and superposition); operational amplifiers; capacitance C and inductance L; transient responses of RC, RL and RLC circuits;

sinusoidal steady state RLC circuits (analysis in time domain and frequency domain, and power).

PHY 224 Electric Circuit Analysis with Laboratory

IAI – EGR 931L

4 Hour

Prerequisites: MAT 202 and PHY 206 with a grade of "C" or higher.

5 hours weekly (3-2)

This course introduces students to fundamental principles of circuit theory as used in engineering and scientific applications. Topics include basic concepts of electrical current, voltage, power and energy; units; independent and dependent sources; resistance R; Ohm's Law; Kirchhoff's Laws; simple resistive circuits; delta-to-wye transformations; resistive circuit analysis methods (node-voltage, mesh-currents, source transformations, Thevenin and Norton equivalents, and superposition); operational amplifiers; capacitance C and inductance L; transient responses of RC, RL and RLC circuits; sinusoidal steady state RLC circuits (analysis in time domain and frequency domain, and