

## *Physics (PHY)*

### **PHY 121 Technical Physics - Mechanical**

IAI – P1 900L

3 Hours

Prerequisites: Math 105

4 hours weekly (2-2)

A general study of physics emphasizing applications to the technical field and introducing the topics of 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 and thermodynamics.

### **PHY 153 Technical Physics**

4 Hours

Prerequisites: MAT 107

5 hours weekly (3-2)

A technical course for electronics and industrial maintenance majors. The course, with laboratory, will introduce the fundamental principles of classical physics as they relate to the world of technology. Topics from mechanics, thermodynamics, electricity and magnetism, and optics will be studied.

### **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 and concurrent enrollment in PHY 155 or PHY 205

3 hours weekly (3-0)

A rigorous course in statics for engineering, mathematics, physics, and other majors requiring a calculus-based mechanics course. Vector algebra is used to study particles, rigid bodies, and systems in equilibrium. A programmable calculator is strongly recommended for the course. This course is currently offered in the fall semester.

### **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 205 University Physics I**

IAI – P2 900L, PHY 911

5 Hours

Prerequisites: MAT 131

6 hours weekly (4-2)

PHY 205 is the first course in a standard two-semester calculus-based physics sequence that is offered at virtually all universities and colleges for engineering majors. PHY 205 covers mechanics, heat, and thermodynamics. Physics background is strongly recommended.

### **PHY 206 University Physics II**

IAI – PHY 212

5 Hours

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

5 hours weekly (4-2)

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 212 Thermodynamics**

3 Hours

Prerequisites: PHY 206, MAT 202  
3 hours weekly (3-0)

This is a first course in engineering thermodynamics. Topics include basic concepts and definitions, the Zeroth Law of Thermodynamics, the first and second laws of thermodynamics, ideal and real gas behaviors, control-volume energy analysis, entropy, non-reactive ideal gas mixtures and psychrometrics, and cycles.

### **PHY 214 Introduction to Circuit Analysis**

IAI – EGR 931

3 Hours

Prerequisites: MAT 202 with a grade of “C” or higher and concurrent enrollment in PHY 206  
3 hours weekly (3-0)

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 equivalents; 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 215 Intro to Circuit Analysis With Lab**

IAI – EGR 931L

4 Hours

Prerequisites: PHY 206 and MAT 202  
5 hours weekly (3-2)

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 equivalents; 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 Laboratory**

1 Hour

Prerequisites: PHY 214 or concurrent enrollment  
2 hours weekly (0-2)

The experiments in this laboratory course are designed to explore the theoretical and analytical material in PHY 214 (Introduction to Circuit Analysis). The objective of this course is to enhance students’ understanding of analytical principles developed in PHY 214 by engaging them in real-time applications of these principles in the laboratory. In addition students will develop laboratory practice for testing and evaluating electrical circuits.