OUTCOMES BASED LEARNING MATRIX

Course: General Physics II(PHYS162) Department: Physical Science Revised: Fall 2007

At the end of the course, students will be able to:	**Students will participate in:**	**Faculty will evaluate:**
COURSE OUTCOMES	**OUTCOME ACTIVITIES**	**ASSESSMENT TOOLS**
Static Equilibrium: - describe the conditions of translational and rotational equilibrium. Identify and solve static equilibrium problems.	- lectures, discussions, and demon strations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Boom Lab (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)
Deformation of Solids and Liquids : - define and describe the structure and properties of liquids and solids. - solve deformation problems.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Young's Modulus Lab. (CT, R, QS, TS) -organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)

Universal Gravitation: Understand and describe Newton's laws of Universal Gravitation. - Solve problems involving gravitation and satellite motion.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Satellite Motion Lab. (CT, R, QS, TS)	- Tests with emphasis on solving problems (CT, W, QS, R)
Fluid Mechanics (statics and dynamics): .describe and apply fluid mechanic properties. - solve fluid problems using the equations developed for fluid mechanics.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Archimedes Principle Lab (CT, R, QS, TS) -Bernouilli's Equation Lab (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)
Waves and Simple Harmonic Motion: -describe and apply wave properties including: wavelength, frequency, wave velocity, reflection, diffraction, standing waves, resonance, Doppler Effect, and, beats. -describe and apply simple	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Resonance on a String Lab (CT, R, QS, TS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)

harmonic properties. - identify and solve the differential equations defining various systems exhibiting SHM (continued on next page)	- Speed of Sound Lab (CT, R, QS, TS) - SHM Lab (CT, R, QS, TS) (continued on next page)	
(continued from previous page)	(continued from previous page)	(see previous page)
Temperature and Heat: -describe and apply the properties of temperature and heat including: temperature scales, calorimetry, and heat transfer.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Specific Heat Lab (CT, R, QS, TS) - Heat of Fusion Lab (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)
Kinetic Theory of Gases: -describe and apply the kinetic theory of gases.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Absolute Zero and Ideal Gas Law Lab. (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)
Heat Engines and The Laws of Thermodynamics: - describe the basic properties of	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including	- Tests with emphasis on solving problems (CT, W, QS, R)

heat engines and heat pumps-. -describe and analyze thermodynamic problems using the laws of thermodynamics.	sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS)	
Electric Charges, Forces, and Fields: -describe and apply properties of electric charges, forces, and fields .	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Electric Field Mapping Lab. . (CT, R, QS, TS)	- Tests with emphasis on solving problems (CT, W, QS, R)
COURSE OUTCOMES	**OUTCOME ACTIVITIES**	**ASSESSMENT TOOLS**
Electric Potential and Potential Energy: - describe and apply electric potential and potential energy to the concepts of voltage, and capacitance	- lectures, discussions, and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Capacitor Demo/Lab (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)
Electric Current and DC and AC Circuits: - describe and apply Ohm's Law and the power equation to simple DC and AC circuits.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - DC circuit Demo/Lab. (CT, R, QS,	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)

.	TS) -organizing and documenting information in lab reports. (CT, W, QS) -	
Magnetism: -Describe and apply the properties of magnetism including: magnetic forces and fields, sources of magnetism, ferromagnetism, magnetic torque, and law's of induction .	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - e/m. Lab. (CT, R, QS, TS) -magnetic induction demo. (CT, R, QS, TS) -organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)
Electromagnetic Waves: .describe and apply electromagnetic wave properties as they relate to light, reflection, refraction dispersion, polarization, diffraction, thin lenses.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Spectrometer Demo Lab (CT, R, QS, TS) - Optics Demo Lab (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W, QS)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)