OUTCOMES BASED LEARNING MATRIX

Course: Survey Physics (PHYS 131)   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
Introduction: - describe the scientific method. - convert between units in various systems using algebraic cancellation of units. - skillfully use common laboratory instruments to measure length, mass, and time.	- lectures, discussions, and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Measurement 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)
Motion in One Dimension: - define and describe displacement, velocity and acceleration. - solve motion problems using a basic understanding of displacement, velocity and acceleration .	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Acceleration Due To Gravity 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)

Vector Analysis: - find the components of a vector graphically. - add vectors graphically.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Vector 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)
Motion in Two Dimensions: - develop basic understanding of motion in a plane, including projectile motion and circular motion.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Projectile Motion 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)
Newton's Laws: - to analyze common situations with Newton's First and Third Laws - predict the acceleration of several kinds of motion using vector components and Newton's Second Law. These include connected-body problems. (continued on next page)	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Newton's Second Law on the Air Track Labs (CT, R, QS, TS) (continued on next page)	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)

- analyze the forces on a body in translational equilibrium	- Forces In Equilibrium Lab (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W, QS)	
Work and Energy: - calculate work done by a variety of forces. - use the Work-Energy Theorem to solve motion problems. - apply the concept of power to solve problems involving the rate of work being done or the rate of energy transformation.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Conservation of Energy 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)
A number of additional topics will be selected from the following: **Momentum** **Rotational Motion** **Properties of Solids, Liquids, and Gases** **Temperature and Heat** **Thermodynamics**	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Centripetal Force Lab, Satellite Motion Lab, Archimede's Principle Lab, Ideal Gas Lab, Speed of Sound Lab, and numerous demonstrations (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 Sound **Electricity and Magnetism** **Light and Optics** **Modern Physics**		