OUTCOMES BASED LEARNING MATRIX

Course: Concepts of Technical Physics II(PHYS133) Department: Physical Science

At the end of the course, students will be able to: **Students will participate in:** **Faculty will evaluate:**

COURSE OUTCOMES	OUTCOME ACTIVITIES	ASSESSMENT TOOLS
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 prob. (CT, R, QS) -Deflection of A Beam Lab and - 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)
Fluid Mechanics (statics and dynamics): .describe and apply fluid mechanical 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)

COURSE OUTCOMES	OUTCOME ACTIVITIES	ASSESSMENT TOOLS
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 harmonic properties.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - Simple Pendulum Lab and - Resonance on a String Lab (CT, R, QS, TS) - Speed of Sound 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)
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 (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 prob. (CT, R, QS) - Abosolute 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)

COURSE OUTCOMES	OUTCOME ACTIVITIES	ASSESSMENT TOOLS
Heat Engines and The Laws of Thermodynamics: - describe the basic properties of heat engines and heat pumps-. -describe and analyze thermodynamic problems using the laws of thermodynamics.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS)	- Tests with emphasis on solving problems (CT, W, QS, R)
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)	- Tests with emphasis on solving problems (CT, W, QS, R)
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 DemoLab (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) - DCcircuit 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)

COURSE OUTCOMES	OUTCOME ACTIVITIES	ASSESSMENT TOOLS
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) - Opics 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)