OUTCOMES BASED LEARNING MATRIX

Course: Survey Chemistry (CHEM 131)   Department: Physical Science   Revised: Fall 2007

This is a survey course for non-science transfer students and involves lectures, demonstrations and laboratory experiments relating to the basic facts and principles of chemistry. Discussions of atomic theory, bonding, states of matter, chemical equilibrium, and applied chemistry are included.

Lecture: 2 hours   Laboratory: 2 hours

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. - define and describe how matter is classified. - differentiate between the concepts of mass and weight, heat and temperature. - 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) - safety Talk - measurement lab (CT, R, QS, TS) - identification of a substance by determination of physical properties. . (CT, R, QS, TS) - separation of a mixture lab. . (CT, R, QS, TS) - chromatography lab. . (CT, R, QS, TS) - organizing and documenting information in lab reports. (CT, W,	- Tests with emphasis on solving problems (CT, W, QS, R) - Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)

	QS)	
The Modern Atom: - identify the parts of the electromagnetic spectrum. - show the relationship of wavelength and frequency to the electromagnetic spectrum. - describe the quantum theory of electrons relating to energy levels, oribitals and spin. - Be able to identify trends in the periodic table for atomic size, ionization energy and electronegativity.	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - spectroscopy 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)
Chemical Bonding: - use the octet rule to predict the formulas of ionic and covalent compounds. - use electronegativity to determine the polarity of covalent bonds: - differentiate between polar and nonpolar molecules: - describe intermolecular forces as: dipole forces, hydrogen bonds, dispersion forces and the relationship of their strength to melting and boiling points:	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - counting molecules 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)
Acids and Bases: - describe acids and bases	- lectures, discussions and demonstrations. (CT, QS, OC)	- Tests with emphasis on solving problems (CT, W, QS, R)

- know the difference between a strong and weak acid or base. - Know the relationship of pH to acids and bases.	- reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - titration lab. (CT, R, QS, TS) - %acetic acid in vinegar lab. . (CT, R, QS, TS) - % ammonia in household ammonia lab. . (CT, R, QS, TS) - % citric acid in fruit juices - organizing and documenting information in lab reports. (CT, W, QS)	- Lab performance (CT, QS, TS, R, OC) - Lab reports (W, QS, CT)
Biochemistry -identify types of carbohydrates - identify lipids and their importance - describe the components of proteins - discuss the four levels of structure of proteins - explain the role of DNA and RNA - identify essentials vitamins and minerals for humans	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - molecular models 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)
Chemistry of Drugs: - discuss drug mechanism - explain different types of chemotherapy used to treat diseases - understand how a neuron works - explain the functions of	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) - synthesis of aspirinlab. (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)

neurotransmitters - discuss the 3 classes of psychoactive drugs: stimulants, hallucinogens, and depressants	TS) - organizing and documenting information in lab reports. (CT, W, QS)	
Solutions: - explain four types of attractions in solutions - discuss difference between homogenerous and heterogenous solutions - perform molarity calculations - explain how soap works - explain how to rid of hard water	- lectures, discussions and demonstrations. (CT, QS, OC) - reading the textbook, including sample problems. (CT, R, QS) - solving assigned problems. (CT, R, QS) -.synthesis of soap 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)