THREE RIVERS COMMUNITY COLLEGE

Chemistry 112: General Chemistry II
Instructor: Brent A. Maynard
Office: Room 124 Thames Wing, Thames Valley Campus
Telephone: 885-2373
Office Hours: Monday – 13:30 – 14:30
Tuesday – 17:00-18:00 Wednesday – 13:30 – 14:30

Note: Students are encouraged to see the instructor for help. Instructor is available at other times as well as during office hours.

Course Description: CHEM 112 GENERAL CHEMISTRY II
4 SEMESTER HOURS

Study of fundamental principles, theories, and laws of chemistry. Topics include bonding theory, reaction kinetics, colligative properties, equilibrium systems, thermodynamics and very basic organic chemistry. OFFERED IN SPRING SEMESTER ONLY

Prerequisites: MAT K121 with a C or better or MAT K186 and CHE K121with a C or better

Textbooks:
Lecture: Chemistry 9th Edition
Raymond Chang
McGraw-Hill
Lab: Chemical Principles in the Laboratory, 8th edition
Slowinski, Wolsey and Masterton

Computation of Grades:

1. Quizzes will be given approximately once a week. Quizzes are announced. The average of all quizzes is equal to a one hour exam.
2. The average of lab reports will equal a one hour exam.
3. During the semester 2 or 3 one hour exams will be given.
4. The final exam will have a value equivalent to two one hour exams. FINAL EXAM CUMULATIVE!
5. Final grade = (quiz average + lab average + exam 1 + exam 2 +2xfinal) divided by 6.

Course Objectives:

1. Be able to do thermochemical and calorimetric calculations.
2. Be familiar with volume bond theory, molecular orbital theory and molecular geometry.
3. Be able to do calculations dealing with freezing point depression, boiling point elevation, and osmotic pressure.
4. Be able to do reaction rate calculations and have an understanding of how reaction rate laws pertain to reaction mechanisms.
5. Have an understanding of equilibrium systems and Le Chateliers Principle.
6. Be able to do calculations pertaining to equilibrium constants.

7. Have an understanding of pH and the ability to do calculations for weak acid and bases and buffer solutions.
8. Have an understanding of the laws of thermodynamic calculations dealing with enthalpy, entropy, Gibbs free energy, and equilibrium constants.
9. Be able to predict to flow of electrons in an electrochemical cell and calculate all voltage for both standard and non-standard conditions.
10. Have an understanding of basic organic chemical nomenclature and the classification of compounds such as: alkanes, alkenes, alkynes, acids, alcohols, aldehydes, ketones, esters, and ethers.
11. Have an understanding of simple organic reactions.

Attendance is recorded. There is no formal attendance policy, however, numerous unexcused absences will result in the lower grade being given in a borderline situation.

Tentative Schedule (subject to change)

Chapter 5	Daltons Law of Partial Pressure Gas Stoichiometry
Chapter 6	Energy and enthalpy Hess Law Calorimetry
Chapter 10	Molecular Geometry Valence Bond Theory Hybridization of Orbitals Molecular Bond Theory
Chapter 12	Molality Freezing Point Depression Boiling Point Elevation Osmotic Pressure
Chapter 13	Orders of Reaction Rate Constants Effect of Temperature on Reaction Rate Half-Life Reaction Mechanisms Catalysis
Chapter 14	Equilibrium Constants Le Chateliers Principle
Chapter 15	pH Weak acids - weak bases Ionization constants
Chapter 16	Buffers Titrations Solubility

	Complex ions
Chapter 18	Enthalpy Entropy Second and Third Laws of Thermodynamics Equilibrium Constants Gibbs Free Energy
Chapter 19	Balancing redox equations Electrochemical cells Electrolytic cells Concentration and Temperature cells Fuel cells
Chapter 24	Aliphatic hydrocarbons Aromatic hydrocarbons Functional groups Acids Aldehydes and Ketones Alcohols Esters

Lab Experiments: Some of the experiments we will be doing are listed below. There are 3 or 4 TBA

1. Determination of the equivalent mass of a metal.
2. Calorimetry
3. Hess's Law
4. Determination of molar mass by freezing point depression

5 &6. Reaction kinetics (2 experiments)

7. Determination of an Equilibrium Constant
8. Le Chatelier's Principle and buffers

Policy on academic dishonesty: Academic dishonesty is harmful to the educational process and to class morale. Anyone caught cheating on an exam will be given a zero for that exam and will not receive a letter of recommendation from me for future academic endeavors!

Please try to avoid having cell phones ring during class.

Quizzes: Quizzes will be announced, but I do not have the time to call students who are absent the day a quiz is announced. If you miss a class call me or a classmate in order to find out if a quiz has been scheduled.