ARIZONA WESTERN COLLEGE
SYLLABUS

CHM 152 GENERAL CHEMISTRY II/GE
Credit Hours: 4 Lec 3 Lab 3
SUM # CHM 1152
PREREQUISITES: CHM 151 and MAT 151 or 187

COURSE DESCRIPTION
Continuation of CHM 151. The descriptive and quantitative chemistry of the elements and compounds with regards to kinetics, atomic and molecular structure and bonding, trends of the periodic table, thermochemistry, thermodynamics, and electrochemistry.

1. COURSE GOALS
   - 1.1 Sufficient knowledge and relevant applications of the basic ideas involved with atomic and molecular structure, chemical kinetics, electrochemistry, and thermodynamics.
   - 1.2 Awareness of the local and global relevancy of chemistry in the environment and in the marketplace.

2. OUTCOMES
   Upon satisfactory completion of this course, students will be able to:
   - 2.1 determine acid/base data including pH, pOH, concentration of species in solutions, Ka, and Kb experimentally through pH titration experiments.
   - 2.2 experimentally compare the components of buffers, including strong and weak acids and bases.
   - 2.3 determine moles, current, voltage (under standard and nonstandard conditions) and ion flow of electrochemical cells.
   - 2.4 calculate an equilibrium constant and the concentration of solution components from experimentally-determined data.
   - 2.5 use Le Chatelier's principle and experimental results to connect the effects of changing reaction conditions with reaction equilibrium.
   - 2.6 determine reaction rates and rate laws and experimentally show factors affecting reaction rate.
   - 2.7 determine the effect of concentration on the properties of different compounds, including phase changes and vapor pressure
   - 2.8 relate between energy and chemical systems via equilibrium, electrochemistry, and entropy / Gibbs Free Energy.
   - 2.9 characterize various types of ~~radiation~~ nuclear reactions and determine the energy such reactions produce.
   - 2.10 utilize modern instrumentation, including (but not limited to) visible spectrometer for concentration determination and ^{1}H-NMR for % purity.
   - 2.11 undertake hands-on experiments in a safe manner, including the handling of chemicals and the wearing of personal protective equipment

3. AWC GENERAL EDUCATION (GE) CATEGORY & CRITERIA
   NATURAL SCIENCES
   - How to describe, explain, and predict natural phenomena using scientific, logical, and quantitative reasoning and empirical evidence from observation and experimentation
   - The use of experimentation and/or observation to study natural phenomena, using the scientific method
   - How to communicate information about the natural world using written, numeric, and/or visual formats; and when possible, how to use computational/simulation programming environments as a method for solving systems and simulating theoretical or experimental data
   - How to critically evaluate scientific information, including visual displays and quantitative data

4. METHODS OF INSTRUCTION
   - 4.1 Lecture
   - 4.2 Demonstrations
   - 4.3 Appropriate audio-visual and multi-media aids
   - 4.4 Student group activities when applicable

4.5 Laboratory exercises

5. LEARNING ACTIVITIES
   - 5.1 Laboratory exercises
   - 5.2 Group activities
   - 5.3 Classroom demonstration
   - 5.4 Lectures
   - 5.5 Writing Assignments

6. EVALUATION
   - 6.1 In-class examinations
   - 6.2 Final examination
   - 6.3 Periodic quizzes
   - 6.4 Laboratory exercises
   - 6.5 Writing assignment

7. STUDENT RESPONSIBILITIES
   - 7.1 Under AWC Policy, students are expected to attend every session of class in which they are enrolled.
   - 7.2 If a student is unable to attend the course or must drop the course for any reason, it will be the responsibility of the student to withdraw from the course. Students who are not attending as of the 45th day of the course may be withdrawn by the instructor. If the student does not withdraw from the course and fails to complete the requirements of the course, the student will receive a failing grade.
   - 7.3 Americans with Disabilities Act Accommodations: Arizona Western College provides academic accommodations to students with disabilities through Accessibility Resource Services (ARS). ARS provides reasonable and appropriate accommodations to students who have documented disabilities. It is the responsibility of the student to make the ARS Coordinator aware of the need for accommodations in the classroom prior to the beginning of the semester. Students should follow up with their instructors once the semester begins. To make an appointment call the ARS front desk at (928) 344-7674 or ARS Coordinator at (928) 344-7629, in the College Community Center (3C) building, next to Advising.
   - 7.4 Academic Integrity: Any student participating in acts of academic dishonesty—including, but not limited to, copying the work of other students, using unauthorized “crib notes”, plagiarism, stealing tests, or forging an instructor’s signature—will be subject to the procedures and consequences outlined in AWC’s Student Code of Conduct.
   - 7.5 Texts and Notebooks: Students are required to obtain the class materials for the course.
   - 7.6 Arizona Western College students are expected to attend every class session in which they are enrolled. To comply with Federal Financial Aid regulations (34 CFR 668.21), Arizona Western College (AWC) has established an Attendance Verification process for "No Show" reporting during the first 10 days of each semester.
     Students who have enrolled but have never attended class may be issued a “No Show” (NS) grade by the professor or instructor and receive a final grade of “NS” on their official academic record. An NS grade may result in a student losing their federal financial aid .
     For online classes, *student attendance in an online class is defined as the following* (FSA Handbook, 2012, 5-90):

     - Submitting an academic assignment
     - Taking an exam, an interactive tutorial or computer-assisted instruction
     - Attending a study group that is assigned by the school
     - Participating in an online discussion about academic matters
     - Initiating contact with a faculty member to ask a question about the academic subject studied in the course