SYLLABUS
CHEM 202 Lab - General Chemistry II Laboratory
Fall, 2019

Instructor: Dr. J. Scott McConnell

Office and Office Hours: The instructor's office is 519A. Office hours are 1:00 - 4:00 Tuesday; and 1:00 - 4:00 Thursday. Call the Chemistry Department (309-298-1538) or e-mail JS-McConnell@WIU.edu, and make an appointment prior to meeting.

Laboratory Manual: "General Chemistry II Laboratory Manual: CHEM 202." Hayden-McNeil, publishers. ISBN: 978-0-7380-9997-2.

Laboratory Meeting Times: As scheduled

Laboratory Location: Currens 331

Laboratory Assistants: TBA

Expense Materials Required: Costs for these materials are the responsibility of the student.

Laboratory Manual. "General Chemistry II Laboratory Manual: CHEM 202." Hayden-McNeil, publishers. ISBN: 978-0-7380-8922-5.

Material Safety Data Sheets (MSDS) of all chemicals utilized in the laboratory can be found at the following web site: http://hazard.com. E-copies are free of charge.

Approved personal eye protection is required for the laboratory component of CHEM 202. The student must purchase safety goggles.

A simple scientific calculator without extensive memory functions (i.e. Texas Instruments model 30, equivalent, or less sophisticated models).

Students enrolled in this course are levied a non-refundable laboratory usage fee of $35 to cover the cost of consumable supplies utilized during the semester.

Information Regarding CHEM 202 Lab: Lab work is an integral part of the CHEM 202 course. Lab attendance is important and you must attain a minimum of 130 total lab points to pass the course regardless of the lecture grade. It is important that you complete the pre-lab quiz (found on Western Online) and study all relevant materials **BEFORE** the day of the lab so that you are familiar with:

1. The lab procedure and can conduct the lab in a time efficient manner ,

2. The equipment used and the lab techniques involved, and

3. The calculations used in the lab.

All take-home pre-lab quizzes are worth 5 points. The quizzes are given in the lab manual for each laboratory exercise. The lab grade will be based on the best 10 out of 12 labs quizzes and lab reports. There are **NO MAKE UP LAB QUIZZES**.

All labs are worth 15 points and the lab grade will be based on the best 10 out of 12 lab reports. There are **NO MAKE UP LAB REPORTS**. Lab reports are due by 4:30 p.m. the day after the lab session is completed. A penalty of five points per day will be levied for late labs. Lab reports may be turned into the Teaching Assistant or at Currens 107 to the Teaching Assistant's mail box.

Lab reports **MUST BE** marked with the following: student's name, course number (CHEM 202), lab section number, lab meeting time, and the TA's full name. Failure to include this information may result in a zero for the lab report.

The laboratory final examination will be worth 50 points. The laboratory final examination will cover the principles and applications of laboratory techniques, calculations and safety procedures for CHEM 202.

Plagiarized Lab Reports: Most lab experiments and data collection will be conducted by teams of one to three students at the discretion of the TA. This is the limit of student collaboration for CHEM 202 lab exercises. Laboratory reports must be the result of **INDIVIDUAL** effort of the student submitting the report, or the student is subject to penalties of plagiarism. Plagiarism is defined as the practice of taking someone else's work or ideas and presenting them as your own. Plagiarism is a very serious violation of science ethics.

Plagiarism is covered in section I.A. of the Student Academic Integrity Policy (http://www.wiu.edu/policies/acintegrity.php). Possible WIU penalties that will be utilized in CHEM 202 will include: a grade reduction to zero for the lab report; grade reduction to "F" for the entire CHEM 202 course; and referral of the plagiarism issue to the Student Judicial Program.

Students with Disabilities: In accordance with University values and disability law, students with disabilities may request academic accommodations where there are aspects of a course that result in barriers to inclusion or accurate assessment of achievement. To file an official request for disability-related accommodations, please contact the Disability Resource Center at 309-298-2512, disability@wiu.edu or in 143 Memorial Hall. Please notify the instructor as soon as possible to ensure that this course is accessible to you in a timely manner.

University Values, Title IX, and Other Federal and State Laws Prohibit Sex Discrimination, including sexual assault/misconduct, dating/domestic violence, and stalking. If you, or someone you know, has been the victim of any of these offenses,

we encourage you to report this to the Title IX Coordinator at 309-298-1977 or anonymously online at: http://www.wiu.edu/equal_opportunity_and_access/request_form/index.php. If you disclose an incident to a faculty member, the faculty member must notify the Title IX Coordinator. The complete Title IX policy is available at: http://www.wiu.edu/vpas/policies/titleIX.php.

The Following Action is Prohibited under the Student Conduct Code: Disorderly Conduct. Disorderly conduct is defined as any behavior which disrupts the regular or normal functions of the University community, including behavior which breaches the peace or violates the rights of others. (http://sjp.wiu.edu/CodeOfConduct/index.asp)

Student Rights and Responsibilities: Student rights and responsibilities are listed on the WIU website (http://www.wiu.edu/provost/students.php).

Academic Integrity Policy: http://www.wiu.edu/policies/acintegrity.php

Important Dates:

Date (Spring, 2019)	Event
January 14, Mon.	Classes Begin
January 21, Mon.	Dr. Martin Luther King Day - University Closed
February 12, Tues.	Lincoln's Birthday - University Closed
March 11-15, Mon.-Fri.	Spring Break - No Classes
May 6-10, Mon.-Fri.	Final Exam Week

Any situation, condition, or circumstance not covered in the syllabus is subject to the decisions of the instructor, only.

Date	Lab	Experiment	Laboratory Concepts
Aug 27 and 29	Lab 1	LAB CHECK-IN/FORENSIC CHEMISTRY Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Check the equipment in the lab drawer and sign the safety sheet. Complete procedure 2. Record your data and complete the calculations in results section 2. Answer question 1 and 'Matching the ink.'	Lab equipment will be checked and inspected. Instruction will be given in identification. The objectives of this exercise are to experience the challenges of forensic chemistry; to explore laboratory techniques involved in chromatography; and to demonstrate the utility of chemical spot tests.
Sept 3 and 5	Lab 2	CHARLES' LAW Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Do procedures from Western Online. Complete lab procedures and record in 'Charles' Law Data Report Form.' Graph the data after lab. Answer questions 1-7.	Study all background material and lab procedures prior to lab. The objectives of this exercise are to determine temperatures effect on the volume of a gas under constant; and to approximate the value of absolute zero (in Celsius).
Sept 10 and 11	Lab 3	GRAHAM'S LAW OF EFFUSION Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Do procedures from Western Online. Complete procedures 1 - 9. Record results in the 'Data Sheet' a - g. Answer the 'Post-Laboratory Questions' 1 - 5.	Study all background material and lab procedures prior to lab. The objective of this exercise is to determine the rate of diffusion of two gases' and to compare diffusion and effusion.

Sept 17 and 19	Lab 4	DOUBLE REPLACEMENT REACTIONS Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Complete the procedure. Record your data and complete the Report Form Sections I - VI.	Study all background material and lab procedures prior to lab. The objectives of this exercise are to observe reactions at equilibrium and determine the effect of the addition of reactants and products shifts equilibria.
Sept 24 and 26	Lab 5	SPECTROSCOPIC ANALYSIS OF PHOSPHORUS Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Do procedures from Western Online. Complete procedures 1 - 3. Complete 'Data and Calculations' 1 - 3.	Study all background material and lab procedures prior to lab. The objectives of this exercise are to learn about the environmental hazards of dissolved phosphorus in water bodies used as sources of drinking water, and to determine the phosphate concentration of a water sample from a natural water body using UV-Vis spectroscopy.
Oct 1 and 3	Lab 6	FREEZING POINT DEPRESSION ON EFFECT OF ANTIFREEZE MIXTURES Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Do procedures from Western Online. Complete procedures 1 - 13 and 1 - 7. Complete 'Data and Calculations.' Provide answers for sections I, II, and III.	Study all background material and lab procedures prior to lab. The objectives of this exercise are to examine and understand colligative properties, and to use freezing point (T_f) depression calculations to determine molecular weight.

Oct 8 and 10	Lab 7	FACTORS AFFECTING THE RATES OF CHEMICAL REACTIONS Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Complete procedures 1 - 6. Record your data in 'Observation and Data' sections 1 - 6. Answer questions 1 - 2.	Study all background material and lab procedures prior to lab. The objective of this exercise is to study a number of factors that influence chemical reaction rates, including: concentration, the nature of the chemical reactants, the surface area in a heterogeneous reaction, the temperature of the reacting system, the presence of catalysts, and the effects of diffusion.
Oct 15 and 17	Lab 8	MOLAR MASS AND IONIZATION CONSTANT OF A WEAK ACID Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Complete Experimental Procedures 1 - 3. Record your data and complete the calculations in 'Data Table' for 1 - 3.	Study all background material and lab procedures prior to lab. The objectives of this exercise are to determine the molar mass and acid dissociation constant of acetic acid and an unknown weak acid by titration, and to measure pH of solutions containing a known concentration of acetic acid.
Oct 22 and 24	Lab 9	THE SOLUBILITY PRODUCT OF CALCIUM IODATE Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Complete procedures 2 and 3. Record your data and complete the calculations in 'Data and Calculations' for section 2 and 3.	Study all background material and lab procedures prior to lab. The objectives of this exercise are to understand the relation between molar solubility and solubility product (Ksp) of a slightly soluble salt, to measure the solubility product of calcium iodate, and to examine the common ion effect.
Oct 29 and 31	Lab 10	ELECTROCHEMICAL CELLS Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Complete procedures 1 - 3. Record your data and complete sections.	Study all background material and lab procedures prior to lab. The objectives of this exercise are to observe the construction of an electrochemical cell, determine that cell voltages are related to concentrations of the components, and to use a cell voltage to calculate the value of an equilibrium constant.

Nov 5 and 7	Lab 11	NATURAL RADIOACTIVITY Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Do procedures from Western Online. Complete procedures A - C. Record your data and complete sections B and C.	Study all background material and lab procedures prior to lab. The objective of this exercise is to observe a common natural source of radioactivity and to determine the half-life.
Nov 12 and 14	Lab 12	LIMONENE EXTRACTION AND ANALYSIS Prelab Quiz on Western Online (worth 5 points if turned in before lab starts). Lab Exercise. Do procedures from Western Online. Record your data and complete the 'Data and Calculations' section.	Study all background material and lab procedures prior to lab. The objective of this exercise is to determine the actual amount limonene in a provided orange peel. The results and discussion should include at the very least all chromatograms, standard addition curve with errors, equation for best fit line on the standard addition curve.
Nov 19 and 21		LABORATORY FINAL EXAMINATION	The laboratory final examination will cover the principles and applications of laboratory techniques, calculations and safety procedures for CHEM 202. The laboratory final examination will be held during your regular laboratory period.