

CHEMISTRY 1510 Spring 2025
Section 104, 204
Class Number: 7176, 7443

Instructor: Dr. Corey Beck

Telephone: 740-593-0797

Preferred Pronouns: he/him/his

Office: 333 New Chemistry Building

E-mail: bekc1@ohio.edu (preferred)

Office Hours: MWF: 12-1 pm, Location: Chemistry Building Room 324

Office hours are a chance for you to get specific questions answered over class material or practice problems. I have set aside this time for you to get a better understanding of the course material, please use it if you need it.

Lecture: 10:45-11:40 am MWF, Morton Hall 201

Class #: 7176 (7334 if repeating)

Lab: 7264 - Wed 11:50-2:40 pm

7265 - Wed 3:05-5:55 pm

7295 - Th 8:00-10:50 am

7310 - Th 12:30-3:20 pm

7181 – Repeating

Outcome Goals:

1. Name and classify inorganic compounds.
2. Balance chemical equations and use stoichiometric relationships and the mole concept.
3. Identify different types of reactions and predict outcome of these reactions.
4. Understand basic thermodynamics and the role of energy and enthalpy in chemical reactions and perform thermochemical calculations.
5. Understand the basic concepts of quantum theory and use periodic trends to make predictions about atomic properties.
6. Understand theories of chemical bonding including VSEPR, Valence Bond theory and Molecular orbital theory.
7. Apply gas laws and kinetic molecular theory to processes involving gases.

Required Materials:

1. Silberberg, M.S. and Amateis, P.G.; Chemistry: The Molecular Nature of Matter and Change, 10th Edition, digital text bundled with ALEKS. \$121.04, assessed by the registrar's office and paid alongside your semester fees.
2. Top Hat, no cost.
3. Laboratory fee, OHIO Guarantee: \$0; all others: \$110, assessed by the registrar's office and paid alongside your semester fees.
4. Safety goggles (OSHA approved, ANSI Z87.1-2010 standard, available at Athens bookstore OR chemistry storeroom) Goggles must seal completely around the eyes (much like a scuba mask) and follow the ANSI Z87.1-2010 standard. Recommended goggles are: Uvex Flex Seal, Fisher Scientific Cat. No. 19 130 0832 (these will fit over regular glasses) Uvex Carbonvision, Fisher Scientific

Cat. No. 19 111 202 (these will NOT fit over regular glasses) Approx. \$25.00

- Laboratory coat, CHEM Dept approved, available at Athens bookstore OR chemistry storeroom.
- Scientific calculator w/instructions, which must include "ln", "log", and exponent/exponential functions.

Requisites:

- Math:** A basic foundation in algebra must have been demonstrated by Math Placement Level 2 or above or completion of Math 1200.
- Chemistry Placement Exam:** All students enrolled in CHEM 1510 must have scored 34 or better on the Chemistry Placement exam or completed CHEM 1510 previously or earned a grade of C- or better in CHEM 1500.

Continuing Course:

In order to enroll in CHEM 1520, a student must earn a grade of C- or better in CHEM 1510.

Course Material	% of Course Grade
3 – 50 minute exams	45%
Laboratory	20%
Final Exam	20%
ALEKS	15%

Grading Scale	Approximate
90-100%	A-, A
80-89%	B-, B, B+
70-79%	C-, C, C+
60-69%	D-, D, D+
<60%	F

- Your course grade is based on these percentages for each course component.
- Standardized Exam: The final will be the first semester American Chemical Society General Chemistry Exam.
- We will use ALEKS as our electronic homework system. Late homework assignments will receive a 10% penalty per day, with a grade of 0% after 10 days.
- We will use Top Hat or videos for participation credit.

Calculation of your grade: Your course grade is based on the percentages discussed above for each course component and is calculated using the following weighted average.

$$\text{Final Grade} = \frac{\text{Ave\% Exams}}{100\%} * 45\% + \frac{\% \text{Final}}{100\%} * 20\% + \frac{\% \text{Lab}}{100\%} * 20\% + \frac{\text{Ave\% ALEKS}}{100\%} * 15\%$$

Attendance: Students must be present in lecture to receive participation credit. Attendance at all lectures is important to your success. Our analysis of attendance indicates that those who miss class receive much lower grades than those who attend! There are no make-up lectures. Falsification of attendance such as signing in when not physically present is considered academic misconduct. Students who miss class due to a university sanctioned excuse must contact the instructor within 24 hours of the absence in order to have the absence excused. Verification of the absence (doctor's note etc.) is required.

In addition to participation/attendance/absence policies already listed, students may be absent for up to three (3) days each academic semester, without penalty, to take time off for reasons of faith or religious or spiritual belief system or to participate in organized activities conducted under the auspices of a religious denomination, church, or other religious or spiritual organization. Students are required to notify the instructor in writing of specific dates requested for alternative accommodations no later than fourteen (14) days after the first day of instruction. These requests will remain confidential. For more information about this policy, students/you may contact the Director and Title IX Coordinator, Equity and Civil Rights Compliance, Lindley Hall, 006, 740-593-9140, Equity@ohio.edu.

Accessibility Services: Any student who suspects they may need an accommodation based on the impact of a disability should contact the class instructor privately to discuss the student's specific needs and provide written documentation from the Office of Student Accessibility Services. If the student is not yet registered as a student with a disability, they should contact the Office of Student Accessibility Services (Alden Library 230) at disabilities@ohio.edu or 740-593-2620.

Classroom Privacy: The lectures, classroom activities, and all material associated with this class and developed by the instructor are copyrighted on this date, January 16, 2024. Under no circumstances may verbatim recording of these copyrighted classroom lectures and materials by electronic or any other means (including note taking) be conducted for 1) sale, whether or not it is for education benefit, or 2) for the educational benefit for those not enrolled in the class. Recording of classroom activities by any electronic means requires permission of the instructor. All students in a class will be informed if permission has been given for a class to be recorded.

Cell Phones: Please turn off your cell phone during the class period. Do not make or receive phone calls or texts during lecture (unless texting for class participation). Use of a laptop or tablet is permitted for taking class notes and for class participation. Violation will result in expulsion from that day's class. Cell phones are NOT allowed during exams (NOTE: Cell phones are NOT considered acceptable replacements for calculators).

Drop: The last day to withdraw (drop) from an individual class on your fall semester is **Friday, March 29th**. After this withdraw date, the course will remain on the student's academic record with a WP/WF grade and no fee adjustment. Anyone who drops the course without checking out of the lab will receive a grade of WF.

Academic Misconduct: Cheating, dishonesty, plagiarism, or deception in fulfilling course requirements will not be tolerated. Penalties include failing the course and referral to university judiciaries. Examples of academic misconduct include but are not limited to cheating on an exam, laboratory report, or falsifying Top Hat participation through not attending lecture.

Course Structure: Chemistry 1510 is a coordinated multi-section course taught by multiple professors with the same text and the same laboratory exercises. Exams are written, administered, and graded jointly by the professors. ALEKS problem sets are similar for all students in all sections.

Help: Several sources of help are available...

- a) the instructor at their listed office hours (listed on page 1 of syllabus).
- b) Lab TAs; office hours will be posted
- c) the Supplemental Instruction (SI) program.
- d) a Peer-Led Team Learning community (CHEM 1151).
- e) a private tutor, available through the Academic Achievement Center on the 2nd floor of Alden Library.

Supplemental Instruction (SI), <http://cscwww.cats.ohiou.edu/aac/supins/>

An SI leader is a student who has completed CHEM 1510 within the last two years with a grade of A and has demonstrated an ability to communicate with peers. They will be attending CHEM 1510 lectures this semester either in your section or another. The SI leader will conduct 1-hour help sessions at times to be announced (usually 4-8 PM) in class and on Bb.

CHEM 1151; Peer-Led Team Learning, CHEM 1151

Small groups of students (10-12) meet with the same peer mentor (trained student who previously completed the course) each week for two hours. During the sessions challenging problems related directly to the course material are discussed. One hour of pass/fail credit is associated with the experience.

Exam Procedure: 50-minute exams will be administered on Wednesdays as listed below. Alternate exam times will be scheduled in the case of a class conflict only. **You must inform the professor of such a class conflict during the first week of the semester.** If you do not provide information of your conflict, then we cannot guarantee that your schedule needs will be met. All students will take the final exam at the time listed below.

50-min Exam 1 Wednesday, Feb 12th during regular lecture time and location

50-min Exam 1 Wednesday, Mar 26th during regular lecture time and location

50-min Exam 1 Wednesday, Apr 23rd during regular lecture time and location

Final Exam Time: 04/30/25, 7:00 pm

Location: TBD

If you miss or are going to miss an exam for a university sanctioned excuse, you must contact your instructor within 24-hours of the listed exam day and time (e.g., by 10:30 am on Thursday, Feb 13th for Exam 1) to be eligible to receive a make-up exam. All make-up exams will be arranged at the instructor's discretion and must be completed within one week of the listed exam date. **If your final exam grade is higher than your lowest semester exam grade (Exam 1, 2, or 3), then your lowest semester exam grade will be replaced with your final exam grade.**

Lab Exemption: A student may "opt out" of lab for CHEM 1510 if they are repeating the course within the past two years and previously passed the lab with a score $\geq 70\%$. This previous lab score is recorded as the lab score for the current semester and requires enrollment in the "lab exemption" lecture (Class # 7334) and lab section (Class #7181) in the place of registering for a normal lecture and lab. Students meeting the requirements must complete a "Laboratory Exemption Request" form during the first week, providing their name, previous professor, and when they previously took the course to the current professor. Students

meeting the criteria may register directly or may require a permission slip from the professor to properly register.

Breakage: You are responsible for all items in your lab drawer. Payment for missing or broken items will be made via Bobcat Cash as the stockroom cannot accept cash or credit.

Lab Attendance: You are required to attend all lab sessions. In the event that a student must miss a lab session for a valid university-recognized reason, alternate arrangements must be made within **two days** of the absence by contacting your assigned TA or the laboratory coordinator by email (Dr. Frazier Nyasulu, nyasulu@ohio.edu). You are allowed **one excused absence**. Any unexcused absence will be recorded as a **zero** for that day's lab. **There are no make-up labs in this course.**

Lab Procedure and Policies: You must visit Blackboard to access your CHEM 1510 laboratory Bb section. There you can access the lab experiments and study any related lab materials (photos of the equipment, special procedures, etc.) for that week's experiment(s). After looking over the aforementioned lab materials, go to Bb and complete the on-line pre-lab assignment. You will have 40 minutes to complete the assignment. It must be submitted on-line one hour prior to the beginning of the pre-lab briefing. Please use the Firefox web browser for all online pre-lab Bb assignments.

You will be assigned a lab room via e-mail and/or Bb that you will report to every week. You will always report to your assigned lab room at the beginning of every lab session for a short discussion of the day's experiment and safety precautions. **Failure to attend pre-lab will result in a zero for that day's lab.** At every lab meeting, you are to turn in your work to your TA before leaving the lab once you are finished with the experiment(s) for that day. The TAs grade the labs according to standards set by the professors and the lab coordinator.

Tentative Schedule: Labs meet on Wednesday and Thursday

Date	Lab Number: Lab Title
January 17/18	No Lab
January 24/25	Lab 1: Statistical Analysis of Experimental Data
Jan. 31/Feb 1	Lab 2: Check In & How to Make and Report Scientific Me.
February 7/8	Lab 3: Conductivity of Aqueous Solutions
February 14/15	Lab 4: Chemical Equations
February 21/22	Lab 5: Waters of Hydration, Cupric Hydrates
February 28/29	Lab 6: Redox Titrations
March 6/7	Lab 7: Gas Laws
March 13/14	No Lab , Spring Break
March 20/21	Lab 8: Density and Molar Mass and the Gas Constant R
March 27/28	Lab 9: Calorimetry I: Specific Heat Capacity & Enthalpy
April 3/4	Lab 10: Atomic Emission of the Hydrogen atom
April 10/11	Lab 11: Calorimetry II: Enthalpies of neutralization
	Check Out

Tentative Course Outline

Week 1	Introduction
Week 2	Chapter 2: The Components of Matter

**Memorize the name, formula, and charge for the following polyatomic groups:
nitrate, sulfate, phosphate, hydroxide, carbonate, ammonium, chlorate**

Week 3	Chapter 2 cont'd.
Week 4	Chapter 3: Stoichiometry of Formulas and Equations
Week 5	Chapter 4: Three Major Classes of Chemical Reactions

Wednesday, February 12 Hour Exam 1

Week 6	Chapter 4 cont'd.
Week 7	Chapter 5: Gases and the Kinetic-Molecular Theory
Week 8	Chapter 6: Thermochemistry: Energy Flow and Chemical Change
Week 9	Spring Break, NO CLASS
Week 10	Chapter 7: Quantum Theory and Atomic Structure

Wednesday, March 26 Hour Exam 2

Week 11	Chapter 8: Electron Configuration and Chemical Periodicity
Week 12	Chapter 9: Models of Chemical Bonding
Week 13	Chapter 10: The Shapes of Molecules
Week 14	Chapter 11: Theories of Covalent Bonding

Wednesday, April 23 Hour Exam 3

Week 15	Final Exam Review
Week 16	Final Exam Time: 04/30/25, 7:00 pm Rooms TBD

(American Chemical Society First Semester General Chemistry Exam; 70 multiple choice questions)

Chemistry 1510 Course Components, Fall 2025

1. **50-min Exams (45% of your course grade):** The 50-minute exams will consist of challenging questions requiring your total understanding of concepts from recent chapters and your ability to integrate the current material with topics studied previously in the course. Each hour exam counts for 15% of your course grade.
2. **Final Exam (20% of your course grade):** The final exam is comprehensive. It is a multiple-choice exam written by the American Chemical Society Exams Institute.
3. **Laboratory Component (20% of your course grade):** Your final lab grade is recorded as the average of all experiments (with pre-labs) performed over the semester. Those students retaking CHEM 1510 and opting for lab exemption will use their most recent overall lab grade for the laboratory component of their course grade. Please refer to your purchased lab manual for additional details regarding lab policies and grading.
4. **ALEKS (15% of your course grade):** ALEKS is an online homework system used for CHEM 1510. These assignments will be due on Fridays at 11:59 pm. You will have unlimited attempts for each problem prior to the deadline. Homework assignments are designed to reinforce the information covered in lecture and are excellent practice for exams.

The ALEKS class code is **U3UGN-YGLEN**