

GRAYSON COLLEGE
Course Syllabus

CHEM 1312 General Chemistry 2 and CHEM 1112 General Chemistry 2 Lab
Spring 2017

Professor Contact Information

Instructor: Dr. Jane Johnson-Carr

Email: carrj@grayson.edu

Office Location: S205A

Office Hours: MWR 11:00-12:00; T 2:00-3:00, F 8:00-12:00

Office Phone (903) 463-8668

Science Office Phones: (903) 463-8797 or (903) 463-8702

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Although students must register for a separate course number for lab and lecture, the two “courses” are in fact the same course and are separated for scheduling and reporting reasons. Your final grade is derived from the combination of your lecture and laboratory grades. Together the lecture and laboratory satisfy the state learning objectives (CS1, CT2, CT3, EQS2, and TW1) and therefore must be taken concurrently.

Concurrent enrollment in CHEM 1112 lab is required. Prerequisite: CHEM 1411 or CHEM 1311 and CHEM 1111.

Course Description – from college catalog

A continuation of CHEM 1411, this second semester course sequence involves the general study of inorganic chemistry including fundamental concepts, thermodynamics, kinetics, chemical equilibrium, descriptive chemistry of the main group and transition metal elements, acids and bases, colligative properties, electrochemistry, and oxidation-reduction reactions. Organic chemistry is introduced. This second semester laboratory sequence is designed to provide an introductory level knowledge of the techniques and procedures employed in a first year chemistry laboratory course. Experiments dealing with inorganic synthesis, qualitative analyses, chemical equilibrium, kinetics, acids/bases/buffers, molecular structure, colligative properties of materials, and solubility product are utilized.

Student Learning Outcomes

Upon successful completion of this course, students will:

1. State the characteristics of liquids and solids, including phase diagrams and spectrometry.
2. Articulate the importance of intermolecular interactions and predict trends in physical properties.
3. Identify the characteristics of acids, bases, and salts, and solve problems based on their quantitative relationships.
4. Identify and balance oxidation-reduction equations, and solve redox titration problems.
5. Determine the rate of a reaction and its dependence on concentration, time, and temperature.
6. Apply the principles of equilibrium to aqueous systems using LeChatelier's Principle to predict the effects of concentration, pressure, and temperature changes on equilibrium mixtures.
7. Analyze and perform calculations with the thermodynamic functions, enthalpy, entropy, and free energy.
8. Discuss the construction and operation of galvanic and electrolytic electrochemical cells, and determine standard and non-standard cell potentials.
9. Define nuclear decay processes.
10. Describe basic principles of organic chemistry and descriptive inorganic chemistry
- L1. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
- L2. Demonstrate safe and proper handling of laboratory equipment and chemicals.
- L3. Conduct basic laboratory experiments with proper laboratory techniques.
- L4. Make careful and accurate experimental observations.
- L5. Relate physical observations and measurements to theoretical principles.
- L6. Interpret laboratory results and experimental data, and reach logical conclusions.
- L7. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
- L8. Design fundamental experiments involving principles of chemistry.
- L9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

Required Textbooks (ISBN # included) and Materials

Chemistry: Atoms First by Julia Burge and Jason Overby. Combo; Loose Leaf book with Connect Access Card
9781259117770 / 1259117774 Students **MUST** obtain Connect Access.

Canvas Access to Lab Report Sheets (printed from Canvas, no separate laboratory manual)

Scientific Calculator

Safety Goggles

Required Assignments & Academic Calendar

In case of inclement weather, emergency closings, or other unforeseen disruptions to scheduled classes, student must log onto their Canvas accounts for directions on where or how to continue their coursework.

	Week Starting	M/T	W/Th	Homework Problems From Burdge and Overby	Connect Quizzes to Complete	Laboratory Experiment
1	Jan 16	7.3, 11.6	Chap 12	7.31, 33, 35, 37 11.65 12.16, 37, 41, 43, 77, 79, 81, 111, 112, 115	Q7.3 Q12	Check-In, Safety #1 Statistical Analysis
2	Jan 23	13.1-13.5	13.6	13.11, 17, 23, 37, 38, 57, 61, 63, 69, 82, 83, 85, 86, 103, 107	Q13-1 Q13-2	#2 Vapor Pressure and Enthalpy
3	Jan 30		UNIT 1 EXAM			#3 Molar Mass by Freezing Point Depression
4	Feb 6	Chap 14	15.1, 15.2	14.15, 31, 33, 41, 43, 45, 49 15.7, 8, 18,	Q14	#4 Thermodynamics and K _{sp}
5	Feb 13	15.3-15.6	16.1-16.4	15.23, 25, 27, 38, 45, 53, 55, 59, 61, 63, 69, 71, 73	Q15	#5 LeChatlier's Principle, Acids, Bases and Buffers
6	Feb 20	16.5-16.9	16.10-16.12	16.35, 37, 51, 53, 55, 69, 71, 95, 97, 99, 104, 114, 125	Q16-1 Q16-2	#6 Determination of K _{eq}
7	Feb 27		UNIT 2 EXAM			#7 K _a of Bromothymol Blue
	Mar 6	17.1-17.3	17.4-17.6	17.9, 11, 13, 17, 19, 21, 37, 39, 41, 49, 51, 55, 65	Q17-1 Q17-2	#8 Titration Curves (CS1)
8	Mar 13	SPRING BREAK				
9	Mar 20	19.1-19.3	19.4	19.9, 11, 19, 21, 85,	Q19-1	#9 Kinetics by Initial Rates: Iodination of Acetone (TW)
10	Mar 27	19.5-19.6	19.7-19.8	19.25, 37, 49, 56, 63, 98, 123	Q19-2 Q19-3	#10 Kinetics and Integrated Rate Laws
11	Apr 3		UNIT 3 EXAM			#11 K _{sp} by Titration
12	Apr 10	18.1	18.3-18.6	18.15, 17, 23, 31, 44, 45, 46, 49, 65	Q18-1	#12A Synthesis of a Coordination Complex
13	Apr 17	18.7	Chap 20	20.5, 21, 22, 23, 25, 34, 35, 65, 71	Q18-2 Q20	#13 Electrochemistry (CT2, CT3)
14	Apr 24		UNIT 4 EXAM			#12 B Analysis of a Coordination Complex (EQS)
15	May 1	22.1-22.2	Review for Final	22.13, 14, 15, 16	Q22	LAB EXAM
	May 8	Final Exam Thurs May 12, 8:00-9:50 am				

Methods of Evaluation

Lecture Exams

Five (5) exams will be administered throughout the semester (including final) during the lecture portion of the course. All exams will be cumulative throughout the course and will consist of multiple choice and short answer questions. If the final exam is higher than the lowest previous exam grade, it may be used to replace that lowest exam grade.

One (1) exam will be given at the end of the laboratory portion of the course. This exam will consist of questions primarily related to laboratory procedures and calculations and may not be replaced by the lecture final.

There are no makeup exams! If you know you will be unable to take a test during the assigned time, contact me **PRIOR** to the test to make arrangements to take the test at another time. Decisions concerning alternative testing times are strictly the discretion of the professor.

Students must bring a scantron and scientific calculator to every exam. Cell phones may not be used as calculators. If a graphing calculator is used, the memory must be cleared prior to the exam.

Exam grades will be posted in Canvas. Students may view their exams after grading, but the instructor will keep all exams and scantrons.

Success in chemistry is strongly linked to completing homework and reading assignments. Homework problems, in-class work sets and Connect quiz grades will be factored into an overall homework grade, which will be equal to a unit exam grade in value. Connect quizzes must be completed weekly; typically, by Sunday at 11:59 pm. Homework assignments will be collected at each unit exam. Extensions on assignments are at the discretion of the instructor.

Laboratory reports

Weekly lab report grades will be averaged together and will be equivalent to 2 exam grades

The points allotted to each laboratory report are as follows:

Pre-Lab Assignment	10 pts
Actual Lab work	60 pts.
Results (Precision and Accuracy)	Up to 30 pts

Report Sheets for every experiment are posted in Canvas. The student is responsible for printing the correct report sheet **BEFORE** coming to lab. A 10 % penalty will be issued for not using the correct lab sheet

Pre-Lab Assignments are posted on each lab sheet in Canvas and must be completed **BEFORE** the beginning of the laboratory period.

Precision and Accuracy grades will be applied to experiments with quantifiable results.

Laboratory reports are to be handed in at the end of the scheduled lab period, unless specified otherwise by the instructor. **EACH STUDENT MUST TURN IN HIS/HER OWN INDIVIDUAL REPORT.** A penalty of at 10 points per week will be assessed to lab reports turned in late. Lab reports will be returned to the student in a timely manner.

A student must earn an average grade of at least 50% on lab reports to receive a passing grade for CHEM 1312/1112. If a student's lab report average is below 50 %, they will receive an F grade for the entire course, regardless of the actual course grade calculated below.

To determine student's final grade:

If the final exam grade is greater than any lecture exam grade

1. Add up points earned on 2 highest scoring lecture exams
2. Add the final exam grade x 2
3. Add the points earned on the laboratory final
4. Add the average points earned on weekly lab reports x 2
5. Add the combined points earned on homework and quizzes (points will be posted in Canvas)
6. See chart below

If the final exam grade is the lowest exam grade

1. Add up points earned on all 3 lecture exams
2. Add the final exam grade
3. Add the points earned on the laboratory final
4. Add the average points earned on weekly lab reports x 2
5. Add the combined points earned on homework and quizzes (posted in Canvas)
6. See chart below

Final Grade

Grades are based on total points earned. Percentages are for comparison purposes only

<u>percent</u>	<u>Points earned</u>	<u>Letter grade</u>
90-100%	830-900	A
80-89%	720-829	B
70-79%	630-719	C
60-69%	540-629	D
<60%	<539 pts or < 50 % in lab	F

Methods of Instruction

Lecture: Face-to-Face course, 75 minutes/DAY (Mon/Wed or Tues/Thurs) on campus

Lab: Face-to-Face course involving hands-on experimentation 3 hrs/week on campus,
Students will work both individually and in small groups to complete laboratory experiments

Testing conducted on campus in class

Course & Instructor Policies

Students, who drop the Chemistry 1312 lecture course, must also withdraw from the Chemistry 1112 lab course.

Laboratory Safety Policies:

Chemical splash goggles must be worn in the chemistry laboratory anytime chemicals, glassware or heat are used. **NO EXCEPTIONS.** Safety “glasses” are not acceptable. This includes during lab cleanup or when any group, regardless of location, is still conducting an experiment. Students will be given only 1 warning during a laboratory period. If the student is caught without goggles later in the period, they will be dismissed from the lab and receive a grade of 0 for the experiment.

Students are not allowed to wear flip-flops, sandals or open toed shoes in the laboratory. **Shoes must cover the top of the foot.** Students without proper footwear will be sent home to change. Students will not be given extra time to complete labs due to coming in inappropriate footwear.

It is strongly recommended that students wear long pants or long skirts and refrain from shorts and short skirts. Laboratory coats and aprons are permitted, but will not be provided.

Students with long hair are encouraged to pull their hair back or put it up. Loose hair can be a serious hazard.

Although “accidents” do happen in the laboratory, glassware breakage is generally preventable. If laboratory equipment is damaged or broken due to carelessness, the student will be charged up to 10 points on the daily lab report grade for each item broken or damaged.

In order to protect our local water supply, students are required to follow all chemical waste disposal guidelines given by the instructor. Failure to comply with proper waste disposal will result in a 10 point penalty for each infraction.

Class Attendance

Academic success is closely associated with regular classroom attendance and course participation. Any student missing more than 20% of the class meetings (more than 5 absences) or excessively tardy to lecture or lab (routinely more than 10 minutes late) will have their final class grade lowered by 1 letter grade. Any student missing more than 50 % of class meetings (14 or more absences) will receive an automatic F grade, regardless of actual earned grade.

STUDENTS ARE REQUIRED TO ATTEND THE LABORATORY SESSION THEY ARE ENROLLED IN. If a student must be unavoidably absent from lab, they must secure permission **IN ADVANCE** from the instructor to make up the lab at another time. Unexcused absences will receive a grade of 0 for the experiment. Decisions concerning alternative laboratory times are strictly the discretion of the instructor.

All successful students, whether on campus or online, are expected to be highly self-motivated.

All students are required to participate in courses regularly and are obliged to participate in class activities and complete and submit assignments following their professors’ instructions. Students taking courses during compressed semester time frames such as mini-mester, summer sessions, and mid-semester should plan to spend significantly more time per week on the course. Responsibility for work missed because of illness or school business is placed upon the student. More than two (2) absences are considered to be excessive. In addition, students’ eligibility to receive financial aid or live in a College dormitory can be affected by withdrawal from courses. When withdrawal occurs, any tuition refund would be made in accordance with state regulations.

Student Conduct & Discipline

All cell phones and other electronic devices must be turned off or to silent before entering the classroom. Texting during class means you are not paying attention and is unacceptable behavior. Cell phones may be used during class for legitimate educational purposes (accessing periodic tables or other chemistry apps)

Students may use laptop computers or tablets during class but are expected to be using them for chemistry classwork only. Students using laptops for other purposes will be asked to turn them off or leave the classroom.

Student Responsibility

You have already made the decision to go to college; now the follow-up decisions on whether to commit to doing the work could very well determine whether you end up working at a good paying job in a field you enjoy or working at minimum wage for the rest of your life. Education involves a partnership that requires both students and instructors to do their parts. By entering into this partnership, you have a responsibility to show up for class, do the assignments and reading, be engaged and pay attention in class, follow directions, and put your best effort into it. You will get out of your experience here exactly what you put into it – nothing more and nothing less.

TITLE IX

GC policy prohibits discrimination on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex, sexual orientation, spousal affiliation and protected veterans status. Furthermore, Title IX prohibits sex discrimination to include sexual misconduct: sexual violence (sexual assault, rape), sexual harassment and retaliation.

For more information on Title IX, please contact:

- Dr. Regina Organ, Title IX Coordinator (903-463-8714)
 - Dr. Dava Washburn, Title IX Coordinator (903-463-8634)
 - Dr. Kim Williams, Title IX Deputy Coordinator- South Campus (903) 415-2506
 - Mr. Mike McBrayer, Title IX Deputy Coordinator (903) 463-8753
 - Ms. Marilyn Power, Title IX Deputy Coordinator (903) 463-8625
 - Website: <http://www.grayson.edu/campus-life/campus-police/title-ix-policies.html>
 - GC Police Department: (903) 463-8777 Main Campus
(903) 415-2501 South Campus
 - GC Counseling Center: (903) 463-8730
 - For Any On-campus Emergencies: 911
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Grayson County College is not responsible for illness/injury that occurs during the normal course of classroom/lab/clinical experiences.

These descriptions and timelines are subject to change at the discretion of the Professor.

Grayson College campus-wide student policies may be found at the Current Student link on the Grayson Website
<http://grayson.edu/current-students/index.html>