



General Chemistry I

CHEM 1020-04 Fall 2021

Instructor Info —



Laura de Sousa Oliveira



Office Hours:

Mon, Tues 1-2pm on Zoom:

uwyo.zoom.us/j/98863295597

Thurs 11am-12pm in AG 4041



Zoom/AG 4041



<https://de-sousa-oliveira.xyz>

*location subject to change



Ldesousa@uwyo.edu

Course Info —



Prereq: ACT Math score of 23 or above, or concurrent enrollment in Math 1400, or 1405 or 1450. *These will be checked the first week of class and students NOT meeting these requirements will be administratively dropped from the course.*



Tues & Thurs



9:35-10.50am



Agriculture Bldg AUDITORIUM

CLASS On Zoom: [https://](https://uwyo.zoom.us/j/99153390236)

uwyo.zoom.us/j/99153390236

Passcode: 043555

Attendance is expected. If you miss a class, you are responsible for any missed announcements or handouts.

Overview

Chemistry is the study of matter in its various phases, including composition, structure, properties, behavior and how and why substances combine or separate to form other substances. While chemistry dates back as far as the prehistoric times, it has continued to evolve through the years, alongside technology. In the modern world, chemistry is an essential discipline to the advancement of drug discovery, materials discovery, environmental science, and genetics, among other scientific and technological developments. This is the first semester of a one-year introductory series. This course provides a broad coverage of chemistry principles with inorganic and organic systems applications, with a focus on the microscopic scale, where astonishing material properties originate. We will survey the subject of chemistry broadly, with an emphasis on the physical concepts that unify our understanding of molecular structure and reactivity. The course will set high standards for learning the material, but it is also intended to be exploratory and fun. Science evolves through a process of observation, hypothesis, and experimentation. This course is structured to build your understanding of how chemical phenomena shape our world and develop your skills so you can participate in the scientific process.

I am excited to teach you about Chemistry!

Material

Required

- *Mastering Chemistry online homework.* (You need to purchase an access code)
- Lecture Notes Course Packet: for CHEM 1020, Spring 2020. (UW Bookstore)
- Lab Manual "General Chemistry I CHEM 1020, Spring 2020." (UW Bookstore)
- Full coverage safety goggles. Sunglasses or prescription eyeglasses are not acceptable.
- A non-programmable calculator with log, ln, and exponential notation. (You do not need log and ln for chem 1020 but if you plan to take chem 1030 you will need those two keys). An example of a permitted calculator is the TI30XIIS. **You will not be allowed to use a graphing calculator on any exams or quizzes.**

Recommended Textbook

- *Principles of Chemistry, A Molecular Approach*, by N.J. Tro. 4th edition.

! ANYONE WHO IS PREGNANT OR HAS A HISTORY OF ALLERGIES MUST SEE THE LAB COORDINATOR BEFORE ENTERING THE LAB TO DO WORK.**

Grading Scheme

20%	Laboratory
20%	Homework — best 8/11 assignments
10%	Quizzes (group) — best 8/11 quizzes
30%	Midterm Exams, 10% each — best 3/4 exams
10%	Research Proposal (group)
10%	Final Exam

Grades: A = 90-100; B = 80-89.9; C = 70-79.9; D = 60-69.9; F <60. Curving is at the discretion of the professor.

Lab Info _____



This is a 1 hour and 50 minute time period on Monday, Tuesday, or Wednesday. **Attendance is mandatory.**



**Lab coordinator:
Carla Beckett



johnson@uwyo.edu

Discussion Info —



This is a 50 minute time period on Tuesday. **Attendance is mandatory.** You will take quizzes, review lecture material, and work on the research proposal.

TA Info _____



Tasnim Ara (23A, 23E, 13A, 13H), Kira Kirkham (13F), Allison Saul (13E), Katelin Sheurman (23B, 13D), Madison Wilhelm (23C, 23G, 13C, 13G)



Office Hrs & email addresses can be found on WyoCourses (in Files), as well as tutoring hours!

SI Info _____



Emma Meese



Wednesday 3-4



Coe Library basement or
<https://uwyo.zoom.us/j/91824915767>



emeese@uwyo.edu

Learning Objectives

Comprehend and recall basic chemistry principles, and relate them to the real world. For instance: identify the interactions among nuclei, electrons, atoms and molecules, and how they determine the structures and properties of pure substances and mixtures, and determine the types and amounts of energy change accompanying reactions and phase changes.

Apply chemical knowledge and critical thinking to analyze and solve problems in the synthesis, measurement, and modeling of chemical systems, and evaluate and interpret the significance of scientific data.

Construct a scientific hypothesis and devise appropriate experiments to test and evaluate this hypothesis, and articulate conclusions supportable by data.

Communicate scientific research effectively in written and spoken form, and learn to critically read a paper, as well as review and provide helpful criticism of your peers' work.

Midterm Exams

- Exams are on Wednesdays from 5:10 – 7:00 pm. You will not need to keep every Wednesday evening free, but **you are required to reserve this time for the lab safety training, your 4 exams, and your lab final exam.** This time can also be used to make-up classes if necessary.
- There will be 4 midterm exams given during the semester. **I will drop your lowest midterm exam.** (The rooms for the exams will be announced in class and by email).
- If you have a university excuse and know in advance that you will miss an exam, you MUST let me know BEFORE you miss the exam. **See Make-up Policy section.**
- Exams will be returned during lecture or you may pick them up during office hours.
- Exam answers will be provided during discussion. If you find a grading error on an exam you must return the paper to me for adjustment within one week of when the exam papers were first returned to the class. On the front of the exam, write which problem needs to be re-graded and why. **Always check the scoring addition!**

Final Exam

- The final exam date will be announced in class. You can also find the finals schedule at http://www.uwyo.edu/registrar/Final_Exam_Schedule/. This exam will only be rescheduled if I am instructed to do so by the Office of the Registrar. **See Make-up Policy section.**

Homework

- There will be a homework assignment for every chapter. **I will drop your 3 lowest homework scores. LATE HOMEWORK ASSIGNMENTS WILL NOT COUNT TOWARDS YOUR GRADE.** Failure to understand this rule will not be regarded as an excuse for turning in the assignment late. Homework must be submitted online. **See Make-up Policy section.**

Quizzes

To encourage you to keep up with the material there will be 11 quizzes given throughout the semester. **Your lowest 3 quiz scores will be dropped.** The quizzes will be given during your discussion section. Remember: **attending the Discussion is MANDATORY.** The quizzes will be done in a group, and *everyone* is required to participate. You will not be allowed to make-up the quizzes. **See Make-up Policy section.** However, **your quiz grade will be the highest between your homework and the group quiz (provided you participated in the group quiz, otherwise your quiz grade will be zero), for any given chapter.**

Research Proposal

A Scientific American article¹ explored some of the questions that keep chemists awake at night. These are open-ended questions. Your research proposal will focus on the following question:

How do we make chemistry more environmentally friendly?

You will write a 10–15 page (single space, 12pt Times New Roman, with 1 inch margins) research proposal on how this question could be addressed. A research proposal is a formal document that explains **what** your research is about (i.e., research topic), **why** it's worth researching (i.e., your motivation), and **how** you plan to investigate it (i.e., your approach).² Most often, the purpose of a research proposal is to acquire funds to pay for researchers and instruments needed to research a topic. As such, you must convince the reviewers and funding agency that your research is worth pursuing, i.e., that your idea is interesting and attainable, and you and your collaborators have the knowledge to address the problem. At the end of the semester your group will form a committee to choose the winning proposal. The goal is to provide **constructive** criticism of your peers' works. 3% of the final grade will correspond to the written review of the other proposals: strengths of the proposal, things they could improve, any gaps that they did not address, etc.. More details on this project will be provided in class and discussion, and you will be given a rubric.

Laboratory

"Hands-on" laboratory work is an essential part of chemistry. In the lab you will experience directly some of the relationships discussed in the lecture, learn experimental techniques, and solve chemical problems. **Carla Beckett is the Lab Coordinator. Please contact her if you have any questions or concerns regarding the lab.**

You must have your safety goggles with you the first time lab meets in the laboratory. Safety goggles must be worn at ALL times in the lab.

Attendance is MANDATORY. You must attend in order to stay registered in the course. Lab Policy for Students Repeating Chem 1020: Students repeating this course are not required to repeat the lab if they did well in the laboratory during the previous semester. See the staff in the Chemistry office (PS 204) immediately to fill out the necessary paperwork. We do ask that you take care of this right away, as there may be people on the waitlist and if you transfer a lab grade it does open another seat for people on the wait list.

Make-up Policy

- **Please email me in the first week of class** if you have a time conflict you can absolutely not resolve.
- If you have a **university excuse** and know in advance that you will miss an exam, **you MUST let me know BEFORE you miss the exam. If you do not let me know of your absence until after the exam time it is likely that NO make-up will be permitted.** If it is an unexpected absence, you may let me know when you are able to, but you will still be required to show a university excuse (Dean of Students Office, 128 Knight Hall) to make-up the points.
- If you are ill or injured and therefore are absent from an exam, **you MUST provide a medical excuse stating clearly that you were too ill or injured to attend the exam.** Sending an e-mail without confirmation is not acceptable. These rules will be strictly enforced and NO exceptions will be made.
- **Under no circumstances will travel plans be considered an excuse for taking the final exam early. Read the Midterm Exams and Final Exam sections.**
- **LATE HOMEWORK ASSIGNMENTS WILL NOT COUNT TOWARDS YOUR GRADE.** You will not be allowed to make-up any homework assignments. However, your 3 lowest homework scores will be dropped.
- The discussion session is mandatory. **There will be no make-up quizzes, but if you miss a quiz, your homework assignment grade for that chapter will take its place.**

¹<https://blogs.scientificamerican.com/the-curious-wavefunction/five-questions-that-should-keep-chemists-awake-at-night/>

²https://en.wikipedia.org/wiki/Research_proposal

- Laboratory attendance is mandatory. **Three missed labs will result in an F in the entire course, regardless of the lecture grade.** A missed lab is one in which a student is physically absent from the lab period or has not submitted a lab report within the allotted time. Carla Beckett (766-2998, johnson@uwyo.edu) is the coordinator for the laboratory portion of the course and is the only person who can authorize lab make-ups.

Diversity and Inclusivity Statement

The University of Wyoming values an educational environment that is diverse, equitable, and inclusive. The diversity that students and faculty bring to class, including age, country of origin, culture, disability, economic class, ethnicity, gender identity, immigration status, linguistic, political affiliation, race, religion, sexual orientation, veteran status, worldview, and other social and cultural diversity is valued, respected, and considered a resource for learning. Everyone in this class is expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Accommodations for Students with Disabilities

If you have a physical, learning, or psychological disability that requires accommodations, please let me (Ldesousa@uwyo.edu) and Carla Beckett (johnson@uwyo.edu) know as soon as possible. You will need to register with, and provide documentation of your disability to University Disability Support Services (DSS) at 109 Knight Hall. You may also contact DSS at (307) 766-3073 or udss@uwyo.edu. Visit their website for more information: www.uwyo.edu/udss.

Resources for Help

If you have doubts on the materials or difficulty solving problems, get help from the instructor –or–

- Your discussion/lab teaching assistant (TA) or a TA in the tutorial room (STEM 350B, schedule TBA)
- Free drop-in tutoring, Student Learning Center, Lower level of Washakie, 766-3730 /6189
- STEP tutoring center. www.uwyo.edu/step/
- SI Leader – see SI module on the Wyocourses site

Success Tips

Probably the most important thing you can do to learn, and therefore improve your performance and grade, in this course is to keep up with the assigned reading and homework problems. In general:

- Read the textbook assignment before the lecture on that material.
- Attend lectures and take clear lecture notes.
- After lecture re-read the appropriate textbook pages and update/recopy your notes.
- Work the assigned problems promptly as the material is covered.
- Seek help if you do not understand the material or are unable to work a problem.
- Write summaries/make flashcards.
- Study for the exams by rereading the textbook material, going over the lecture notes/summaries, and reworking the problem assignments many times.

Required e-mail account

I will frequently send out e-mails to all students in the class. These emails will be sent to your “uwyo.edu” e-mail account. It is your responsibility to check this account regularly and obtain any information included in these emails.

Be sure to communicate professionally. Whenever you send class-related email or messages, please include a clear, specific subject line and use the body of the email or message to explain the purpose for the email and any attached materials. Conduct yourself professionally.

Class Schedule

General Chemistry I Lecture			Discussion
Week 1 (08/24, 08/26)	CH1	Matter, Measurement, and Problem Solving	N/A
Week 2 (08/31, 09/02)	CH2	Atoms and Elements	Self-assessment
Week 3 (09/07, 09/09)	CH3	Molecules and Compounds	Quiz 1
Week 4 (09/14, 09/16)	CH3	Molecules and Compounds	Quiz 2
	CH4	Chemical Reactions and Chemical Quantities	Part I of Research Proposal Due 09/17
Week 5 (09/21, 09/23)	CH4	Chemical Reactions and Chemical Quantities	Quiz 3
Week 5 (9/22)	EXAM 1	CH1, CH2, CH3	
Week 6 (09/28, 09/30)	CH5	Intro to Solutions and Aqueous Reactions	Quiz 4
Week 7 (10/05, 10/07)	CH6	Gases	Quiz 5, Part II of Research Proposal Due 10/08
Week 8 (10/12, 10/14)	CH7	Thermochemistry	Quiz 6
Week 8 (10/13)	EXAM 2	CH4, CH5	
Week 9 (10/19, 10/21)	CH8	The Quantum-Mechanical Model of the Atom	Quiz 7
Week 10 (10/26, 10/28)	CH8	The Quantum-Mechanical Model of the Atom	Part III of Research Proposal Due 10/29
	CH9	Periodic Properties of the Elements	
Week 11 (11/02, 11/04)	CH9	Periodic Properties of the Elements	
	CH10	Chemical Bonding I: The Lewis Model	Quiz 8
Week 11 (11/03)	EXAM 3	CH6, CH7, CH8	
Week 12 (11/09, 11/11)	CH10	Chemical Bonding I: The Lewis Model	Quiz 9
Week 13 (11/16, 11/18)	CH11	Chemical Bonding II: Molecular Shapes, Valence Band Theory, and Molecular Orbital Theory	Quiz 10 & Complete Research Proposal Due 11/19
Week 15 (11/30, 12/02)	CH11	Chemical Bonding II: Molecular Shapes, Valence Band Theory, and Molecular Orbital Theory	Research Proposal Panel Review
		Make-up or review	
Week 15 (12/01)	EXAM 4	CH9, CH10	
Week 16 (12/07, 12/09)		Make-up or review	Quiz 11 & Self-assessment, Research Proposal Reviews Due 12/03
Week 17 (TBD)	FINAL	CHAPTERS 1–11	

Academic Integrity

Academic dishonesty will not be tolerated in this class. Cases of academic dishonesty will be treated in accordance with UW Regulation 2-114. The penalties for academic dishonesty can include, at my discretion, an “F” on an exam, an “F” on the class component exercise, and/or an “F” in the entire course. Academic dishonesty means anything that represents someone else’s ideas as your own without attribution. It is intellectual theft—stealing—and includes (but is not limited to) unapproved assistance on examinations, plagiarism (use of any amount of another person’s writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person’s academic dishonesty is also considered academic dishonesty and will be treated identically.

What is an SI?

SI (Supplemental Instruction) is a series of out-of-class study sessions led by a student who has successfully taken the class before. It’s a great way to practice the material and work with other students to learn the content. SI will be offered in this class this semester (Days/times will be announced in-class).

Why go? Generally, 90% of students who attend SI at least 3 times receive a passing grade in the class. For students who do not attend SI, 69% receive a passing grade. What does this mean for you? SI makes a difference in grades, and works best if you attend regularly throughout the semester, not just before exams. Take advantage of this valuable resource!

Regrading

You have ONE WEEK after assignments are passed back in class, lab or discussion to return it for any grading errors. After one week has passed, they will no longer be considered for regrading. (This is one week from the time the assignment was passed back to the class so if you were absent you want to make sure you get your assignments as soon as possible). When you have an assignment regraded, you should write on the front page which parts in particular you think the error was made. The ENTIRE assignment will be looked over, but sure to specifically point out which area you were concerned with.

Classroom behavior policy

At all times, treat your presence in the classroom and your enrollment in this course as you would a job. Act professionally, arrive on time, pay attention, complete your work in a timely and professional manner, and treat all deadlines seriously. You will be respectful towards your classmates and instructor. Spirited debate and disagreement are to be expected in any classroom and all views will be heard fully, but at all times we will behave civilly and with respect towards one another. Personal attacks, offensive language, name-calling, and dismissive gestures are not warranted in a learning atmosphere. As the instructor, I have the right to dismiss you from the classroom, study sessions, electronic forums, and other areas where disruptive behavior occurs.

Be courteous to your fellow classmates. While pertinent questions are encouraged, talking and whispering during lecture are disruptive and annoying to nearby students trying to listen to the lecture. **Cellphones must be put away. This means absolutely no texting during class. You may be asked to leave the class if you use your phone during lecture.**

COVID-19 Policies

As a matter of public health and safety due to the COVID-19 pandemic, all members of the University of Wyoming community must follow university, state and federal requirements. Please check the UW COVID-19 website for University policies, guidelines, and resources. The current policy is provided for review on the UW website (<https://www.uwyo.edu/alerts/campus-return/index.html>).

As with other disruptive behaviors, **we have the right to dismiss you** from the classroom (Zoom and physical), or other class activities if you fail to abide by these COVID-19 policies. These behaviors will be referred to the Dean of Students Office using the UWYO Cares Reporting Form for Student Code of Conduct processes (https://cm.maxient.com/reportingform.php?UnivofWyoming&layout_id=5).

For the duration of the coronavirus pandemic, the attendance policy applies as noted below:

- Any student notified that they have tested positive for COVID-19 or that they have been exposed to someone who has tested positive for COVID-19 may need to self-isolate or self-quarantine. Contact the COVID Hub for more information and to verify if you need to self-isolate or self-quarantine: 307-766-COVID (2683), COVID19@uwyo.edu.
- Students will not be penalized for having to self-quarantine or self-isolate. Course materials and assignments will be available for completion in an alternative modality if needed.

- **Under no circumstances are students to attend in-person classes if they are experiencing any symptoms of COVID-19.** If you live off-campus you should not come onto campus unless instructed to do so by Student Health Service. Illnesses are covered under the Authorized Absence program managed within the Dean of Students Office (www.uwyo.edu/dos).

The University requires all students, faculty and staff to abide by the preventive guidelines established in the COVID Policy, including: not coming to campus if you are sick; minimizing contact with shared surfaces; washing your hands often with soap and water for at least 20 seconds. If soap and water are not available, use hand sanitizer; avoiding touching your eyes, nose, and mouth with unwashed hands; covering coughs and sneezes with a tissue or use the inside of their elbow.

COVID-19 Vaccination

The University strongly recommends all students, staff and faculty to voluntarily take the COVID-19 vaccine. If you receive the COVID-19 vaccinations, you should upload documentation to the Student Health Service patient portal as soon as your vaccine series is complete.

COVID-19 vaccines are FREE and readily available to the public and can be scheduled at Walmart, Walgreens, Pole Mountain Pharmacy, Ridley's, Stitches Acute Care, Laramie Pediatrics, Albany Community Health Clinic, Ivinson Medical Group, the Downtown Clinic and Family Physicians of Laramie. Please let me know if you have questions about the vaccine, including where you can get this free vaccine on campus. More information about vaccines can be found at: <http://www.uwyo.edu/alerts/campusreturn/vaccination/index.html>.

Facial Coverings

Face masks are required in indoor spaces, including classrooms, studios and laboratories. I will inform you of any changes to this requirement.

Duty to Report

UW faculty are committed to supporting students and upholding the University's non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, we encourage you to report it. While you may talk to a faculty member, understand that as a "Responsible Employee" of the University, the faculty member **MUST** report information you share about the incident to the university's Title IX Coordinator (you may choose whether you or anyone involved is identified by name). If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are people who can meet with you. Faculty can help direct you or you may find info about UW policy and resources at <http://www.uwyo.edu/reportit>.

You do not have to go through the experience alone. Assistance and resources are available, and you are not required to make a formal complaint or participate in an investigation to access them. However, please be aware that I have some reporting requirements that are part of my job requirements at UW.

For example, if you inform me of an issue of sexual harassment, sexual assault, or discrimination I will keep the information as private as I can, but I am required to bring it to the attention of the institution's Title IX Coordinator. If you would like to talk to those offices directly, you can contact Equal Opportunity Report and Response (Bureau of Mines Room 319, 766-5200, report-it@uwyo.edu, www.uwyo.edu/reportit). Additionally, you can also report incidents or complaints to the UW Police Department. You can also get support at the STOP Violence program (stopviolence@uwyo.edu, www.uwyo.edu/stop, 766-3296) or SAFE Project (www.safeproject.org, campus@safeproject.org, 766-3434, 24-Hour hotline: 745-3556).

Another common example is if you are struggling with an issue that may be traumatic or unusual stress. I will likely inform the Dean of Students Office or Counseling Center. If you would like to reach out directly to them for assistance, you can contact them by going to www.uwyo.edu/dos/uwyocares.

Finally, know that if, for some reason, our interaction involves a disruptive behavior or potential violation of policy, I inform the Dean of Students, even when you and I may have reached an informal resolution to the incident. The purpose of this is to keep the Dean apprised of any behaviors and what was done to resolve them.

Changes to the Syllabus

This syllabus is a guide. Circumstances may alter the reading and/or test schedules and other aspects of the syllabus. I will alert you to any possible changes in course requirements, including course format changes, in response to UW decisions about community safety during the semester. You are required to check WyoCourses and your email frequently.