

# CHEM 1400 General Chemistry 1, Section E, Fall 2023

## 1.) Lecture

**Lecturer:** James Zahardis, PhD

**Email:** [James.Zahardis@uvm.edu](mailto:James.Zahardis@uvm.edu)

**Office:** Innovation E329

**Office Hours:** TWR 12-2 pm (other times by appointment)

**Class Time:** TR 4:25-5:40 pm

**Class Location:** Innovation E102

**Textbook:** “**Chemistry: Atoms First, 5<sup>th</sup> Edition**”, (ISBN-13 978-0-13-429393-6) by Julia Burdge and Jason Overby.

**What is covered in Lecture:** We will cover Chapters 1 through 12 in the textbook in a linear manner.

**Lecture.** This will be an active participation classroom, with the introduction of new ideas and solving problems going hand-in-hand. Prior to beginning a new chapter in lecture, I'll post a set of notes on Brightspace that I will lecture off of for that chapter. You should have these notes available to you at the time of class. I will introduce ideas and then we will immediately work on problems that are both numerical and conceptual (similar to homework and, ultimately, *what may appear on exams*). I suggest coming to lecture, with the notes available, and *bringing your calculator*, because working along with me might be very helpful to you.

**Homework Assignments from the Book:** You are expected to read all the assigned chapters. Lists of suggested homework problems will be posted on Brightspace. I do not grade these problems but from experience I believe that student success in General Chemistry strongly correlates with the effort they make in working problems. The answers to most assigned problems from the textbook are in the back of the book. You should strive to do as many problems as possible, including those assigned as well as those within the chapter.

**Homework Assignments not from the Book:** I have identified some of the areas and skills associated with Chemistry that tend to give students problems in mastering the material. I will provide pre-test and, if needed, post-test worksheets on Brightspace that I call Skill-Builders that, as the name implies, are designed to build skills. After a few days of being posted online, I will post solutions on Brightspace and/or work the problems in class. While I do not grade these, I think working on these assignments would benefit most students.

**Test “Wrap-Ups”:** these so-called wrap-ups are questionnaires that will be posted on Brightspace after I hand back exams. They will include questions designed to have you go back over the exam, consider any mistakes that you made and discuss strategies in improving your performance—and if your performance is perfect, sharing with me how you studied! These wrap-ups will be handed in, assessed for completeness and count for a small portion of your grade.

**“Keeping Chemistry Real” assignment:** This assignment is designed to begin to address two problems I see in teaching General Chemistry:

One of the challenges in teaching General Chemistry is overcoming the hesitancy some students have towards this discipline: students from outside of the Chemistry major often express that they don’t see how chemistry is applicable to their major and/or real life. One of the project choices will be looking into sources of information, such as peer-reviewed publications or webpages from university-based scientists from your major, and find an example of how chemistry is relevant to your discipline. For example, if you are a Computer Science major, have you heard of time crystals that are being developed for quantum computing? The synthesis and characterization of such crystals along with the quantum chemistry that happens on an atomic scale within the material are all under the umbra of chemistry. Are you into Exercise Science? What’s the relation between arginine and other amino acids (and their derivatives) and nitric oxide production that leads to increased blood flow in exercise? That’s chemistry...who researches that topic? What’s new in interesting in that area of research? There are countless other examples...

Secondly, being a course that really focuses on the foundation of chemistry, a lot of the material described in General Chemistry textbooks (and subsequently in

lectures) was derived from science first described from the mid-19<sup>th</sup> Century through the age of quantum mechanics (~1920s-30s), which gave rise to (what I would argue) is the modern age of chemistry (e.g., rigorous descriptions of what the chemical bonds are, being able to describe atomic periodicity and trends in rigorous terms.) Because of the nature of the world in this timeframe (roughly the Victorian Age to the time of the Second World War), chemistry and other natural sciences were dominated by Western Europeans that were overwhelmingly male. However, according to the NSF, there's a significant increase of women, minorities and persons with disabilities in STEM studies over the last decade (reference below). So, the second choice of projects is designed to have you research a person that is a member of a historically underrepresented group in modern chemistry and report briefly on what that individual does in research.

You may combine these two divisions into one project: research in your discipline that is done by a member of a historically underrepresented group in modern chemistry.

The project sketch provided will be elaborated on in detail late in the semester. In brief, it will be a short, written document in the form of an essay or completed questionnaire.

Reference: <https://nces.nsf.gov/pubs/nsf23315/>

**Office Hours and Recitations:** If you need to meet me beyond my regular office hours, please email me and we can work on finding a good time for both of us. I will also answer questions to the best of my ability by email. If there is an interest in having recitations, I am open to affording time to that activity.

**Mid-term Exams:** There are four mid-semester exams and a final exam. (Exam dates below.) There are no scheduled make-up dates. However, if you must miss an exam due to medical reasons, family emergency or other reasons, contact your Dean's Office and/or the Center for Health and Wellbeing and get an excused absence. In the case of an excused absence, I will allow you to retake the exam up until I return the exams or post the solutions (whichever comes first). (It typically takes me about 1 week to grade and return the exams, and I typically post results online shortly thereafter.) If you cannot make-up the exam in that timeframe, I will

be averaging the 3 highest midterm exam scores into your total points—the lowest exam score is dropped, so your missed exam would count as that lowest score.

The mid-term exams are given during normal lecture time in our lecture hall (Innovation E102). The exams are *mainly* multiple-choice questions that are designed to assess your basic understanding of general chemistry, ability to perform chemistry calculations, analyze graphic information and other skills we will be developing in this class. The mid-term exams are relatively concise—typically 15 to 20 questions, and are designed to be done in 45 minutes or less. Students that have ACCESS accommodations will take their exams at the Exam Proctoring Center and get the full time recommended by ACCESS. To get your full time on the exam you would want to start at 4:30 pm, so if you can get to the class on time or a couple minutes early that would be great. Calculators are needed for exams. **I will not allow any access to the internet during the exams so you cannot perform calculations on any phone or laptop or any device that connects to the internet.** No playing music during the exams, including in any type of an earphone or earbud, because that can disturb other students. Tests must be filled out in blue or black ink, no pencil or bright colors (hard to grade). Any other details about the midterm exams, both in terms of content or formatting, will be posted on Brightspace well in advance of the exams. I also reserve the right to modify the format of the exams by my professional judgement.

All exams except for the final exam will be returned within about 1 week.

**Final Exam.** The final exam time and location is set by the registrar and listed below. The final exam will be approximately twice the length of a mid-term exam, so it will have approximately 30 to 40 questions, all (or mainly) multiple choice. It will be a comprehensive exam. All the aforementioned rules regarding taking exams described in the above section are applicable to the final exam. I neither return the final exam nor post a solution key to the exam, but I will post the score on Brightspace. I will retain the exams for 1 year in my office if you want to look at it there if you schedule an appointment with me.

### **Exam Locations, dates and times:**

**All mid-terms are in Innovation E102 during normal lecture times of 4:25-5:40 PM**

**Mid-term 1: Tues September 19<sup>th</sup>**

**Mid-Term 2: Thurs October 12<sup>th</sup>**

**Mid-Term 3: Thurs November 2<sup>nd</sup>**

**Mid-Term 4: Thurs November 30<sup>th</sup>**

**Final Exam: Mon December 11<sup>th</sup>, Innovation E102, 4:30-7:15 PM.**

Note: Exam dates are subject to rescheduling as per the discretion of the instructor.

**Final Exam Policy:** The University final exam policy outlines expectations during final exams and explains timing and process of examination period.

<https://www.uvm.edu/registrar/final-exams>

## **2.) Laboratory**

The information on the lab below is presented to consolidate the information on lab and lecture components of this class. Christine Cardillo, Undergraduate laboratory Supervisor, will make a more extensive syllabus for the laboratory portion of the class, which will be available on Brightspace.

**Required Lab Materials: Safety Glasses, Lab Coat, and Lab Notebook.** All are available in the UVM Bookstore, or can be purchased from their retailer of choice. All the lab procedures will just be posted online on the lab Brightspace pages.

**Lab Attendance Policy:** Students must attend the lab section they are assigned to. If more than two labs are missed, they will receive an F for the entire course. Only the academic dean of a college may grant an incomplete. All unexcused absence will result in a ZERO grade for the missed laboratory experiment. Official documentation of from a dean's office is require for excused absences. If there is a need to reschedule your lab time to one that is not your regularly assigned time

you must obtain permission from the **laboratory coordinator, Christine Cardillo (Christine.Cardillo@uvm.edu)**.

**Lab Points:** Lab is worth 250 points (25% of the course grade). There are 10 experiments worth 25 points each as follows:

Lab quizzes - 8 points each

Pre-labs - 3 points each

Post-labs - 14 points each

**Lab Schedule:**

**Fall 2023 CHEM 1400 General Chemistry 1 Laboratory Schedule:**

Week	Dates	Laboratory Schedule
1	Aug 28 – Sept 1	<b>No Labs.</b>
2	Sept 4 – Sept 8	<b>No Labs.</b>
3	Sept 11 – Sept 15	<b>Experiment 0:</b> Laboratory introduction & Lab Safety Review
4	Sept 18 – Sept 22	<b>Experiment 1:</b> Measurement and Density
5	Sept 25 – Sept 29	<b>Experiment 2:</b> Flame Emission Spectra of Metals
6	Oct 2 – Oct 6	<b>Experiment 3:</b> Periodic Trends
7	Oct 9 – Oct 13	<b>Experiment 4:</b> Determination of a Chemical Formula
8	Oct 16 – Oct 20	<b>Experiment 5:</b> Molecular Models
9	Oct 23 – Oct 27	<b>Experiment 6:</b> Evaporation and Intermolecular Forces
10	Oct 30 – Nov 3	<b>Experiment 7:</b> Chemical Reactions of Copper

11	Nov 6 – Nov 10	<b>Experiment 8:</b> Acid Content in a Food Product
12	Nov 13 – Nov 17	<b>Experiment 9:</b> Heat Capacity and Enthalpy
<i>Fall Break</i>	<i>Nov 20 – Nov 24</i>	<i>Fall Break (No Labs)</i>
13	Nov 27 – Dec 1	<b>Experiment 10:</b> Gas Law Determination of Molecular Weight
14	Dec 4 – Dec 8	Laboratory <b>Clean-up</b> & Laboratory <b>Check-Out</b>
Finals	Dec 11 – Dec 15	Final Exams <i>Good Luck!</i>

### 3.) Point Breakdown and grading

**Total points = 1000** (750 from lecture + 250 from lab)

- Mid-Term Exams = 375 Points (3 x 125 points, with the lowest score midterm exam score dropped of the 4 total mid-terms)
- “Keeping Chemistry Real” project = 50 points
- Test “Wrap-Ups” = 50 points (points distributed over 3 or 4 post-exam questionnaires)
- Final Exam = 275 points
- Laboratory = 250 points

Grading will be on a standard academic scale: 90-100% is in the A range, 80s is B range; 70s is C range; 60s is D range; below 60 is an F. Delineation within a grade range (e.g., B vs. B<sup>+</sup> vs. B<sup>-</sup>) will be decided by the instructor at the end of the semester, taking into account class score trends and other factors. Any curve, if applied, is at the instructor’s discretion.

## 4.) Additional Information

Offenses against the Code of Academic Integrity (i.e., cheating) are deemed serious and insult the integrity of the entire academic community. Any suspected violations of the code are taken very seriously and will be forwarded to the Center for Student Ethics and Standards for further investigation.

<http://www.uvm.edu/policies/student/acadintegrity.pdf>

**Important Dates:** <https://www.uvm.edu/registrar/uvm-academic-calendar-2023-2024>

### ACCESS Accommodations

Student Learning Accommodations Statement: *In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact ACCESS, the office of Disability Services on campus. ACCESS works with students to create reasonable and appropriate accommodations via an accommodation letter to their professors as early as possible each semester.*

Contact ACCESS: A170 Living/Learning Center - 802-656-7753 - [access@uvm.edu](mailto:access@uvm.edu).

ACCESS Office: <http://www.uvm.edu/~access/>

Policy on disability certification and student support:

<http://www.uvm.edu/~uvmppg/ppg/student/disability.pdf>

### Other Resources:

#### Diversity, Equity, and Inclusion Resources

The Division of Diversity, Equity, and Inclusion believes excellence should be inclusive of the entire University of Vermont (UVM) community and is steadfastly committed to this belief. Every day, our Division strives to make our work accessible, affirming, and action-oriented to help ensure excellence is inclusive of everyone. <https://www.uvm.edu/diversity>

#### UVM Prism Center

The Prism Center serves the diverse queer and trans communities at the University of Vermont. We support and empower lesbian, gay, bisexual, transgender and queer students, as well as students whose identities fall in between or expand beyond those categories, and work to create a campus community where people of all sexual and gender identities can thrive.

<https://www.uvm.edu/prism>



### **Mosaic Center for Students of Color**

The Mosaic Center for Students of Color (MCSC) Vision is to create a diverse and rich community of empowered, engaged, and enthusiastic students of color at UVM. <https://www.uvm.edu/mcsc>

### **Interfaith Center**

No matter how you make meaning of your life, you are welcome at the Interfaith Center for reflection, spiritual practice, education, and community building. <https://www.uvm.edu/interfaithcenter>

### **Women & Gender Equity Center**

The UVM Women & Gender Equity Center cultivates joyful community while advancing gender equity across identities. We envision a brave, diverse, and equitable learning environment for all members of the UVM community. We strive to provide programming and events that connect our community through the exploration of the intersections of their gender and other identities. <https://www.uvm.edu/wagecenter>

## **Important University Policies**

### **Academic Integrity**

Offenses against the Code of Academic Integrity are deemed serious and insult the integrity of the entire academic community. Any suspected violations of the code are taken very seriously and will be forwarded to the Center for Student Ethics and Standards for further investigation. Violations of the Code of Academic Integrity—including any inappropriate collaboration, collusion, cheating, corroboration, plagiarism, or any other related offense—will be fully investigated according to the rules set by the UVM Academic Integrity Office and may be punishable with a score of zero for the assignment in question. Details can be found at <http://www.uvm.edu/policies/student/acadintegrity.pdf>.

### **Grade Appeals**

If you would like to contest a grade, please follow the procedures outlined in this policy: <https://www.uvm.edu/policies/student/gradeappeals.pdf>

### **Code of Student Conduct**

<http://www.uvm.edu/policies/student/studentcode.pdf>

### **FERPA Rights Disclosure**

The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974.

<http://catalogue.uvm.edu/undergraduate/academicinfo/ferparightsdisclosure/>

### **Promoting Health and Safety**

The University of Vermont's number one priority is to support a healthy and safe community:

**Center for Health and Wellbeing:** <https://www.uvm.edu/health>

**Counseling & Psychiatry Services (CAPS):** Please call 802-656-3340 for assistance.

**C.A.R.E.** If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at <https://www.uvm.edu/studentaffairs>

### **General statement regarding potential changes during the semester:**

<http://catalogue.uvm.edu/>

The University of Vermont reserves the right to make changes in the course offerings, mode of delivery, degree requirements, charges, regulations, and procedures contained herein as educational, financial, and health, safety, and welfare considerations require, or as necessary to be compliant with governmental, accreditation, or public health directives.

### **Intellectual Property Statement/Prohibition on Sharing Academic Materials**

Students are prohibited from publicly sharing or selling academic materials that they did not author (for example: class syllabus, outlines or class presentations authored by the professor, practice questions, text from the textbook or other copyrighted class materials, etc.); and students are prohibited from sharing assessments (for example homework or a take-home examination). Violations

will be handled under UVM's Intellectual Property policy and Code of Academic Integrity.

### **Student Learning Accommodations**

In keeping with University policy, any student with a documented disability interested in utilizing ADA accommodations should contact Student Accessibility Services (SAS), the office of Disability Services on campus for students. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly recommended to discuss with their faculty the accommodations they plan to use in each course. Faculty who receives Letters of Accommodation with Disability Related Flexible accommodations will need to fill out the Disability Related Flexibility Agreement. Any questions from faculty or students on the agreement should be directed to the SAS specialist who is indicated on the letter.

#### **Contact SAS:**

A170 Living/Learning Center;

802-656-7753

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