# General Chemistry for Scientists and Engineers I

# CHEM 1411

**This syllabus may need to be changed or corrected over the course of the semester. You will be notified when any changes are made by email or eLC announcements.**

# Course Overview

## Instructor

Dr. Jessica Jensen

Chemistry Annex, 407F

Email: jmjensen@uga.edu  
Office Phone: 706-542-0393

**Student Drop-In Hours (for content questions):**

Monday & Wednesday 2:50-3:50pm, Cedar St Building D (Chemistry Annex) 414

Wednesday & Friday 10:15-10:45am, Cedar St Building D (Chemistry Annex) 414

**One-On-One Office Hours (for discussion of personal matters, course standing, etc.):**

By appointment – email for availability

# Course Co- and Pre-requisites

Pre-requisite: MATH 1113; Co-requisite: CHEM 1411L

## Course Welcome

Welcome to General Chemistry for Scientists and Engineers I! This course is designed toprovide the foundational knowledge needed for scientists in fields like chemistry, materials, biochemistry, and biochemical engineering. In this course, we will build our skills and knowledge through active learning. As scientists, we rely on the larger body of scientific research, and educational research shows active learning is the best way to learn and retain concepts and skills. We will engage individually and as groups inproblem-solving activities to develop deep understanding and foster a scientific community. We will also try to develop a growth mindset – another thing research shows fosters student success. People with a growth mindset believe they can learn with enough effort – even when it’s hard – which is supported both by our available educational research and by my own experience teaching chemistry for over a decade.

It will not be all work and no play! Where possible, assignments will prioritize real life applications, choice, and creativity. It will be hard work sometimes, but engaged students will achieve a deepunderstanding of foundational chemical concepts that will help them throughout their career. I will also be there for you at every step, providing feedback, guidance, and a personal cheering section. I’m so excited to share my knowledge and love of chemistry with you and to support you as you become scientists. Never hesitate to reach out with questions or concerns. I understand that life can throw up roadblocks sometimes, both big and small. While there are some things I can’t change, like content expectations, I am here to help you navigate both the field of chemistry and campus bureaucracy. Together, I know we will achieve great things!

## Course Description

This is an in-depth, two-part course which gives students a solid introduction to the discipline and covers the nature of matter, stoichiometry, basic chemical reactions, thermochemistry, atomic structure, the periodic table, chemical bonding, the scientific method, and the application of skills to solving problems involving multi-step mathematical sequences.

## Course Learning Outcomes

At the completion of the course, you will be able to:

1. Synthesize concepts from multiple fundamental areas of chemistry to solve complex problems
2. Explain the behavior of, and interactions between, matter and energy at the atomic, microscopic, and macroscopic domains using appropriate models and symbols
3. Interpret chemical nomenclature, notation, and symbols
4. Predict chemical and physical behavior from three-dimensional models of molecules and ions
5. Predict macroscopic characteristics of materials based on atomic and molecular structures using appropriate models
6. Evaluate how chemical reactions obey various fundamental laws of the universe, such as the law of definite proportions or the laws of thermodynamics

## Course Topical Outline

Chapter 1: Basic Concepts of Chemistry

Chapter 2: Atoms, Molecules, and Ions

Chapter 3: Chemical Reactions

Chapter 4: Stoichiometry: Quantitative Information About Chemical Reactions

Chapter 5: Principles of Chemical Reactivity: Energy and Chemical Reactions

Chapter 6: The Structure of Atoms

Chapter 7: The Structure of Atoms and Periodic Trends

Chapter 8: Bonding and Molecular Structure

Chapter 9: Bonding and Molecular Structure: Orbital Hybridization and Molecular Orbitals

Chapter 10: Gases and Their Properties

## Required Materials

An internet connected device like a laptop, phone, or tablet is required for the course to access TopHat, a polling website free to UGA students and Gradescope, also free for student use. Additionally, you will need any non-programmable, scientific calculator such as the Ti-3x series or the Casio ClassWiz series (The TI-36x Pro is recommended). Programmable or graphing calculators (eg. TI-83 or similar) are not permitted. *Chemistry and Chemical Reactivity, 11th Edition* (John C. Kotz, Paul M. Treichel, John R. Townsend, David Treichel) is an optional textbook for the course. I may reference tables in the text and there are some good practice problems at the end of chapters. Feel free to find the lowest price option!

## What About Lab (CHEM 1411L)?

CHEM 1411 and 1411L are individual courses that are administered and graded separately. You will receive separate and independent grades for these two courses. However, CHEM 1411 and 1411L must be taken concurrently. You should be registered for both lecture and lab. Dr. Suggs (dwsuggs@uga.edu) is the faculty member in charge of the lab.

## Communication

I will communicate with the class in two ways: email and announcements on the course eLC site. You may login to eLC at http://elc.uga.edu using your UGA myID and password. I highly recommend that you forward your eLC e-mail to your preferred e-mail address. Remember that official communication is through eLC e-mail and/or UGA mail, and you are expected to check your email and eLC at least once every business day. I will never expect you to check emails on weekends, as I don’t either - I think we all deserve a built-in break from classes.

### Email Etiquette

I teach multiple courses and sometimes receive many student emails per day. To ensure your email is answered as quickly as possible:

* Check the syllabus and eLC for an answer before emailing – it will definitely be faster for you if your answer is already there, and you’re not waiting on me!
* Don’t send messages through eLC – email me at JMJensen@uga.edu. eLC messages don’t nest and make it difficult to keep track of conversations, so I will ask you to resend any messages as emails if you forget.
* Please give me 2 *business* days (MTWRF) to answer emails before following up. I often answer within a day, but I sometimes receive a large volume of emails.
* Tone is sometimes hard to read over email, so make sure your emails are written in a professional manner. Open with a greeting; keep the body coherent, concise, and cordial; and close with the name you preferred to be called.
* Include your course number and CRN or meeting time in every email, as I teach multiple courses.
* I have found it is often difficult to answer homework or concept questions via email. I will do my best, but I may direct you to my office hours for numerous or hard to answer questions.

# Course Requirements and Grading

## Course Assignments

### Pre-Class Assignments – 4% Overall Grade

Readings or videos will be posted for you to complete before the first class meeting of the week. These will generally include embedded questions to check your understanding of the video or reading. While these questions are graded on accuracy, I will drop three of these assignments to account for technical difficulties, illness, or anything that may occasionally affect your score.

**Academic Honesty Expectations:** You may work in groups on pre-class assignments while consulting outside resources; however, each of you must do your own problems.

### In-Class Activities – 6% Overall Grade

We will have in-class activities every day, ranging from TopHat questions to practice problems to case studies and more. You must be present to earn in-class activity points, but I know life happens, and we don’t always make it to class for a variety of reasons. I will drop six days of in-class activities at the end of the semester to account for any absences.

**Academic Honesty Expectations:** You must respond to your own questions and be present in class to attempt the activities. If you respond to class activities while you are not present in the classroom, a report will be made to the Office of Academic Honesty.

### Recitation Sessions – 10% Overall Grade

In addition to lectures, we will have a weekly in-person recitation session that is intended to promote a deeper understanding of concepts or introduce you to chemistry research. Recitations will also have Chemistry Learning Assistants (CLAs), other chemistry majors who have done well in general chemistry and can help you with your work. The assignments during recitation sessions may include practice problems, case studies, lab visits and presentations, etc. Assignments that must be turned in will have the due date clearly indicated and must be uploaded to Gradescope. Please make sure you read the Gradescope upload instructions on eLC as assignment *cannot* be graded if the pages in the PDF file are in an incorrect order or there are missing pages or other formatting issues. We will have a practice recitation (recitation 0) for you to practice creating and uploading the correct PDF file to Gradescope, but you should always check your upload after submission.

Certain recitations require attendance, like lab visits or case studies, and will be graded either wholly or partially on participation. Practice problems or related assignments will be graded on accuracy. I will try to indicate this clearly with either an eLC announcement or on the worksheet posted to eLC prior to recitation.

Because we all get sick or have an occasional lapse in memory, I will drop three recitations from the final grade at the end of the semester. Gradescope assignments will also have a built-in 24-hour grace period before the assignment closes to submissions.

**Academic Honesty Expectations:** You are generally expected to work in groups on recitations; however, you must do your own problems and submit your own PDF file to Gradescope when applicable. You may use outside resources (except AI).

### Homework – 5% Overall Grade

We will generally have homework assignments each week. These may be practice questions, mock exams, or assignments that will help you dive further into the world of chemistry. Homework for the upcoming week will be announced no later than Fridays either in-class or on eLC.

On exam weeks, we will have homework assignments called readiness quizzes. Readiness quizzes are *timed* mock exams designed to test your understanding of the course materials and simulate exam conditions. The points allocated to these quizzes are low that you can stumble on the readiness quiz and not severely hurt your grade in CHEM 1411. It is much better to find out what you’re struggling with on the readiness quiz instead of the exam! These will be available as quizzes in eLC and require LockDown browser. The timer on these cannot be stopped or reset, so make sure not to open them before you’re ready to try the quiz! Three attempts will be given on each quiz, with the best attempt counting toward your final grade.

The three lowest scoring homework assignments will be dropped to account for any absences or technical difficulties.

**Academic Honesty Expectations:** You may generally consult with other students on homework and use outside resources, but you must submit your own work. AI may be used for *help* depending on the assignment, but it should not play a larger role in completing your assignment than another student might. When in doubt, ask me before using AI, and I’d be happy to talk about your specific use. You are expected to work on your own when completing thereadiness quizzes. You should not use *any* outside resources, including your own notes. This is your opportunity to see what you need to work on before the exam! Don’t share or post readiness quiz questions while the quiz is open.

### Content Projects – 15% Overall Grade

Content projects are group projects of 4-6 students that are meant to provide you with a different way to showcase your knowledge outside of exams. During the semester, we will have two of these projects, each worth 7.5% of your course grade, based on a pre-approved lists of learning objectives that students often struggle with. These will be scheduled in the weeks between exam to allow more time for you and your groupmates to work on them. Groups can create short videos, podcasts, papers, interactive presentations, infographics or a project of your own design. Before each project is due, groups will submit a proposal with the five learning objectives their project covers and a paragraph describing what they will create. For each chapter project, we will switch groups and give group feedback that will be taken into consideration for the final grade of each group member. Science is generally a group project, so we are going to practice the soft skills that will make you successful!

**Academic Honesty Expectations:** You should work with your group and use outside resources on chapter projects. AI may be used for brainstorming or writing *help* depending on the project, but it should not play a larger role in completing your project than another student might. When in doubt, ask me before using AI, and I’d be happy to talk about your specific use.

### Midterm Exams – 40% Overall Grade

Four 90-minute examinations will be given on Thursday evenings. Each exam will be worth 10% of your overall grade, adding up to 40%. Because we can continue learning and developing skills even after an exam, your exam grade with the lowest percentage score will be replaced with your final exam percentage value if it is higher. Department policy is that makeup exams require official documentation (e.g. a doctor’s note) of an unavoidable absence *specifically* on exam day. You must email me as soon as you know you will be absent, at least 24 hours in advance except in case of sudden emergencies. I will work with you to reschedule your exam as soon as possible so that your classmates can get their own scores back in a timely manner.

Because this is a course with evening exams, there are a few rules that you should be familiar with before entering the exam room. These rules will be enforced by the exam proctors.

* Personal belongings are to be left at the front or sides of the room and electronic devices turned off *before* you take a seat.
* You are not allowed to have any electronic device, including a cell phone, smart watch, or ear buds, on your person during the exam.  All electronic devices must be left with your belongings or the proctors at the front of the room. Any student found with an electronic device will be referred to the Academic Honesty office. If you need your cell phone for things like monitoring medical devices, please sign up with Accessibility and Testing as soon as possible!
* You should make use of bathroom facilities before you enter the exam room. Once in the exam room you cannot leave until you have finished the exam. If you have a medical reason this is not possible, please sign up with Accessibility and Testing.
* Bring your ID - we can accept any government issued *photo* ID but your UGA ID is preferred.
* You may only use a non-graphing calculator (see Required Materials) with the back cover removed and left in your backpack.
* You will not be given extra time to bubble or fill in answers after time is called, so make sure all answers have been transferred to the answer sheet before time has elapsed. Continuing to write beyond the allotted time will result in a zero on the exam.

### Final Exam – 20% Overall Grade

The final exam will be the (multiple-choice) First-Term General Chemistry Exam from the American Chemical Society (ACS) Examinations Institute. Because we have to purchase each exam from ACS, you will not be allowed to write on this exam. Doing so will result in a fee of $25 and a hold being placed on your account – you will be reminded several times of this policy as the exam comes up so you can avoid this fee. If your percentage grade on this exam is higher than your lowest midterm exam percentage grade, the final exam percentage grade will replace it.

#### **Exam Schedule:**

Exam 1 Thursday, 5:30-7:00 PM September 11, 2025

Exam 2 Thursday, 5:30-7:00 PM October 2, 2025

Exam 3 Thursday, 5:30-7:00 PM October 23, 2025

Exam 4 Thursday, 5:30-7:00 PM November 20, 2025

Final Exam Friday, 7:00-8:50 PM December 5, 2025

## Course Grades

Course grades in CHEM 1411 will be calculated based on these components:

|  |  |
| --- | --- |
| **Assignment** | **Percentage** |
| Midterm Exams (10% each) | 40% |
| Final Exam (ACS) | 20% |
| Chapter Projects (7.5% each) | 15% |
| Pre-Class Assignments | 4% |
| Homework | 5% |
| In-Class Activities | 6% |
| Recitation | 10% |

If you score below 50% on the final exam, you will receive an ‘F’ for the course. If you score 50% or higher on the final exam, your final grade will be based on the scale below:’

A = ≥ 90%

A - = 88 – 89.9%

B+ = 86 – 87.9%

B = 80 – 85.9%

B- = 78 – 79.9%

C+ = 75 – 77.9%

C = 65 – 74.9%

D = 50 – 64.9%

F = ≤ 49.9%

Course letter grades are delivered via eLC prior to being entered into Athena to check for accuracy.

### Regrade Requests

Make sure you are keeping up with your returned work – I encourage you to look at graded work as soon as possible to learn from it. To prevent a rush at the end of the semester, requests for regrades on any assignment, including exams, must be submitted no later than one week after the score or key is posted, whichever is later.

Regrade requests for anything on eLC or TopHat should be emailed to me, citing the assignment and question. Regrade requests for anything on Gradescope must be submitted using the regrade request function on Gradescope. I’m always happy to fix errors, just make sure that you are looking at returned work within the regrade window!

# Policies and Procedures

## This is a Core IMPACTS course that is part of the STEM area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students’ broad academic and career goals.

This course should direct students toward a broad Orienting Question:

* How do I ask scientific questions or use data, mathematics, or technology to understand the universe?

Completion of this course should enable students to meet the following Learning Outcome:

* Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems, and explain natural phenomena.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

* Inquiry and Analysis
* Problem-Solving
* Teamwork

## Withdrawal Policy

The last day to withdraw from CHEM 1411 is **Wednesday November 12, 2025**. A grade of ‘W’ is assigned to all withdrawals made prior to the withdrawal deadline. You can withdraw yourself through Athena - go to the withdrawal section of Athena and follow the instructions. Remember that CHEM 1411 and CHEM 1411L are corequisite courses. Per department policy, you cannot remain enrolled in CHEM 1411L if you withdraw from CHEM 1411. After the withdrawal deadline, the only available withdrawal is in the case of an approved hardship withdrawal that is authorized by the Office of Student Care and Outreach (http://reg.uga.edu/policies/withdrawals).

Before withdrawal, I always suggest consulting with me or your academic advisor or both. We both want you to do what’s best for you and can help point you to resources or give you perspectives you may not be seeing.

## Incomplete Policy

Per university policy, an incomplete grade, “I”, may be assigned to students that have finished most of CHEM 1411 with a passing grade but are unable to complete all university coursework during the current semester due to unforeseen personal and/or medical circumstances. I cannot assign an incomplete grade to students who are not passing the course at the time of the request or who do not have major extenuating circumstances.

## Disability Accommodations

If you plan to request accommodations for a disability, please register with Accessibility and Testing. Accessibility and Testing can be reached by visiting Clark Howell Hall, by calling 706-542-8719 (voice) or 706-542-8778 (TTY), or by visiting http://accessibility.uga.edu. Accommodations can sometimes take a few weeks or months to get in place, so please start the process as soon as possible. Accessibility and Testing discourages instructors from granting accommodations outside their official process, so I will need official accommodations on file to grant them, except in the cases of acute illness or injury. And I want you to have the support you need to succeed!

## Academic Honesty

UGA Student Honor Code: "I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at honesty.uga.edu.

As a University of Georgia student, you have agreed to abide by the University’s academic honesty policy, “A Culture of Honesty,” and the Student Honor Code. All academic work must meet the standards described in “A Culture of Honesty” found at: www.uga.edu/honesty. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to me before you start working on them.

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# FERPA Notice

The Federal Family Educational Rights and Privacy Act (FERPA) grants students certain information privacy rights. See the registrar’s explanation at reg.uga.edu/ general-information/ferpa/ FERPA allows disclosure of directory information (name, address, telephone, email, date of birth, place of birth, major, activities, degrees, awards, prior schools), unless requested in a written letter to the registrar.

# UGA Well-Being Resources

UGA Well-being Resources promote student success by cultivating a culture that supports a more active, healthy, and engaged student community.

Anyone needing assistance is encouraged to contact Student Care & Outreach (SCO) in the Division of Student Affairs at 706-542-8479 or visit sco.uga.edu. Student Care & Outreach helps students navigate difficult circumstances by connecting them with the most appropriate resources or services. They also administer the Embark@UGA program which supports students experiencing, or who have experienced, homelessness, foster care, or housing insecurity.

UGA provides both clinical and non-clinical options to support student well-being and mental health, any time, any place. Whether on campus, or studying from home or abroad, UGA Well-being Resources are here to help.

* Well-being Resources: well-being.uga.edu
* Student Care and Outreach: sco.uga.edu
* University Health Center: healthcenter.uga.edu
* Counseling and Psychiatric Services: caps.uga.edu or CAPS 24/7 crisis support at 706-542-2273
* Health Promotion/ Fontaine Center: healthpromotion.uga.edu
* Accessibility & Testing: https://accessibility.uga.edu/

Additional information, including free digital well-being resources, can be accessed through the UGA app or by visiting https://well-being.uga.edu.