

CHEM 1161 General Chemistry for Science Majors
Northeastern University
Fall 2026

Instructor: Professor Dan Matthew, a.k.a. “Dr. Dan”

Office: EXP 370C

Preferred Contact: DM me on Microsoft Teams or email at d.matthew@northeastern.edu

Student Help Hours (i.e., Office Hours): Whenever you find yourself stuck or need help with *anything* in this class, do not hesitate to reach out to me. Student Help Hours are periods of time where I am reliably available for you to drop by no appointment needed.

- Wednesdays: 1:00 – 2:30 PM in EXP 370
- If these times don’t fit your schedule, reach out to me and we can setup another time to meet!

Lecture Time and Location

CRN	Section	Time	Days	Room
11650	01	10:30 AM – 11:35 AM	MWTh	Shillman Hall, Rm 135

***A tentative lecture schedule is located at the end of this document.**

Co-requisites

CHEM 1162: Lab for CHEM 1161

CHEM 1163: Recitation for CHEM 1161 – see page 3 for more details

Course Materials

- 1)** Textbook: Gilbert, Kirss, Bretz, & Foster. Chemistry, an Atoms-Focused Approach, 4th ed. W.W. Norton. A digital version of this textbook can be purchased through a link posted on Canvas. Physical copies of the textbook should also be available in the University bookstore, likely at a higher price.
- 2)** Paid subscription to Achieve account for online homework. You can purchase your subscription through a link posted on Canvas. Activation codes may be available at the University bookstore with a small markup.
- 3)** Paid subscription to Aktiv Chemistry. You can purchase your subscription through a link posted on Canvas. Activation codes may be available at the University bookstore with a small markup.
- 4)** A calculator capable of handling logarithms and exponents. Be sure to bring it to every class and exam! **Wi-Fi capable and AI-assisted calculators such as cell phones and advanced scientific calculators will not be allowed for use on exams.**
- 5)** A Wi-Fi-capable device (i.e., a smart phone, tablet, or laptop) allowing you to use a web browser to participate in the in-class response software we will be using (Aktiv Chemistry).

Course Canvas Website

Accessible via <https://canvas.northeastern.edu/>. Please check the course's Canvas site regularly for announcements, course materials, and other useful resources and information. **Communication from me will largely be via Canvas, so be sure to double check your notification settings on there.**

Course Description and Learning Objectives

CHEM 1161 and its accompanying recitation and lab are designed to help you understand the structure and properties of substances at the particulate (molecular) and macroscopic levels, and to develop, deepen, and broaden your understanding of connections between the particulate nature of matter, the energetics of chemical transformations, and chemical and physical properties of substances. This course introduces the principles of chemistry, including atomic and molecular structure, chemical bonding, and intermolecular interactions that provide a particulate-level view of the chemical reactions and interactions that take place in nature including living systems and other aqueous environments. The chemical kinetics, thermodynamics, and equilibrium states of these chemical reactions will be explored. You will also build your competencies in scientific reasoning, problem solving, and data-driven decision making.

Preparation

The topics covered in CHEM 1161 build on chemistry fundamentals that you are expected to have encountered in your previous (*e.g.*, high school) chemistry courses. These fundamentals are not covered in CHEM 1161 lectures but are described in detail in **Chapters 1 and 2 of the textbook**. Most of these fundamentals were also taught in the Ramp Up Chemistry course that you should have been added to on Canvas. This course provides various readings, videos, and assignments to help you brush up on these crucial topics. All students are encouraged to participate in Ramp Up Chemistry and read the covered sections from the textbook. Everyone will have the opportunity to test their mastery of these fundamentals in the first online homework assignment. If you were not added to Ramp Up Chemistry, email me and I will add you.

In later chapters, there may also be some topics that you are expected to know, which will not be covered in lecture, but you will have an opportunity to review during recitation, through the online homework and textbook, through posted videos, and/or your own personal research. These topics will be announced in lecture when they are encountered.

Attendance

You are expected to attend every lecture and recitation in person. Permission to attend class remotely can only be granted by the University, not by me nor your TA. Many times, announcements are made in lecture; you are responsible for these announcements even if you are not present. An in-class response system, called Aktiv Chemistry, will be used to take attendance, and provide problems for you to work on during lecture. For any problems we do in class, the grade will be based on 80% participation and 20% correctness. If you miss a lecture, you will not be able to make-up the missed attendance points, but *your lowest 4 scores will be dropped at the end of the semester*. So, basically, you have 4 "free" absences to use in whatever fashion you choose. Whether the absence is "excused" or not, your lowest 4 scores will be dropped. So, this means there is no need to worry about whether your absence is excused or not. Wellness Days offered by the University will be accounted for via these dropped scores (see below for more details on Wellness Days).

Lectures will not be recorded or made available to attend remotely, unless there is an extenuating circumstance that requires it. If you miss any lecture, be sure to utilize the posted lecture notes, your

fellow classmates, and your textbook to catch up on the missed material. If you have questions over anything you missed, after having reviewed the relevant resources, do not hesitate to reach out to me and/or the TAs for further help!

Lecture

During lecture, material will be explained, sample problems will be solved, interactive questions will be administered, and chemistry demonstrations may be performed. There will be opportunities to ask questions and interact with me and your fellow classmates.

Always bring your calculator and Wi-Fi capable device to lecture. You do not need to bring your textbook to lecture or recitation.

When working on in-class problems, you are allowed and encouraged to collaborate with other students before submitting answers. Details on how attendance and in-class questions are counted towards your final grade are described in the Course Grading Scheme below. **You must be attending class in-person when submitting answers to these questions. Only students with University permission to attend remotely are allowed to answer questions from outside of the classroom. Any violation of this policy is a violation of the course's academic integrity policy, and the minimum consequence will be a final grade of "F" for the course.**

Technology Use in Classroom

Unless you are checking in for attendance or actively solving problems on Aktiv, all technology (except calculators) should be put away during class. It is critical that you have undivided attention during lecture, therefore all distractions need to be put away. This includes phones, computers, and any tablets, unless hand-written notes are taken on it. Essentially any vertical screen. **All course notes should be taken by hand and not typed**, unless necessary due to a DAS accommodation. Studies have shown that hand-writing things results in better retention of what is written. **Frequent violation of this policy will result in losing attendance/participation points during lecture.**

Generative AI Use

Generative AI use is NOT permitted! It is a valuable tool for many purposes, but in this course, we will be learning skills that you will need to be able to apply on your own before you can succeed with more advanced work in your career and future courses. You will also need these skills to spot and correct errors in the output of the AI tools. Therefore, **AI is not permitted in this course except when explicitly stated.**

Unauthorized Recording and Distribution of Activities and Materials

Massachusetts is a two-party state, which means that you cannot record without both parties' permission. In this course, you cannot audio- or video-record my lectures without my permission. My lecture materials are my intellectual property (copyright protected), and you do not have my permission to distribute my materials for any reason to anyone outside of this course. **Under no circumstances may you post or share my materials (e.g., lecture notes, exam questions, exam review questions, etc.) on websites including CourseHero, Chegg, ChatGPT, Claude, etc.**

Classroom Recording

This course, or parts of this course, may occasionally be recorded for educational purposes. These recordings will be made available only to students enrolled in the course, instructor of record, and any teaching assistants assigned to the course. The class will be informed each day prior to recording. If any student objects, then that class will not be recorded. Only students who have arranged an accommodation with the Disability Resource Center may use their own recording device in the classroom.

Due to privacy rules and possible technology limitations, it may not be possible to record any or all lectures. As mentioned above, the general expectation is for lectures to not be recorded, therefore students should plan to attend every class synchronously, in-person.

Recitation

This course has a co-requisite course called recitation. Recitations have a separate course number, CHEM 1163, and a separate CRN. Below is a list of all the recitation sections that belong to my lecture.

Make sure that you are enrolled in one of the recitation sections listed below! Registering for one that isn't on this list will result in you getting a zero for the recitation portion of your grade in this class!

CHEM 1163 Recitations Sections Associated with Dr. Dan's CHEM 1161 Lecture:

CRN	Section	Day & Time	Room	TA
11646	3	Tues 3:25 PM – 4:30 PM	Ryder Hall 247	Michael Xiao
11649	7	Mon 11:45 AM – 12:50 PM	Ryder Hall 159	Michael Xiao
12218	10	Tues 11:45 AM – 12:50 PM	Snell Library 031	Michael Xiao

Recitations begin meeting during the second week of the semester.

TA Contact Information

- Michael Xiao (xiao.mic@northeastern.edu)

Recitation is an integral part of the course, and you are expected to attend it weekly. Recitation provides you with the opportunity to work on problems and ask questions in a smaller group setting. Most weeks an online homework assignment is due at the start of the week to help ensure that you arrive to recitation prepared (see below for more information on homework). During recitation, concepts and skills introduced in lecture and the reading will be reinforced by working on problems from the textbook and/or worksheets with the help of your fellow classmates and TA. Participation in recitation is factored into your overall course grade (see course grading scheme below). At your first recitation meeting, your TA will discuss their expectations and describe how your participation will be graded. **You are allowed one free recitation absence.** Use this as you see fit. More information, including how to make up any additional absences, can be found in the Recitation Information document on Canvas.

Laboratory

A separate, required laboratory (CHEM 1162) accompanies CHEM 1161. Details of the laboratory are explained in a separate syllabus provided by your laboratory instructor. The intent is for the laboratory experiments to track and reinforce the lecture material. If you have any questions on anything in the lab, reach out to your lab TA and/or Prof. Ed Witten (e.witten@northeastern.edu).

Homework

One way to be successful in chemistry, or any technical class, is to develop skills in critical thinking and problem solving through practice. During the semester you will be required to complete weekly homework assignments available through the Achieve online homework system. Questions in these assignments have been selected to assess your mastery of key learning objectives. You will be allowed multiple attempts on all problems with no penalty for incorrect answers. This is meant to ensure your first attempts at learning course topics are low stakes. **Do NOT just put the questions into Google or some AI tool! Having someone/something else answer these problems is not how *you* learn!** Information on how a question will be graded and the number of points for that question will be provided at the start of each question. Make sure to read this information closely before attempting the question so that you understand how you will be assessed. For some questions, hints and feedback are provided in real-time, after each attempt helping you work through incorrect answers. **The first Achieve online homework assignment is due Monday, September 21st at 10:00 AM. Unless otherwise announced, every subsequent homework assignment will be due on a Monday at 10:00 AM EST/EDT.** Each assignment will be open for at least one week before it is due. **Your two (2) lowest homework grades will be automatically dropped from your course grade at the end of the semester.**

Exams

There will be four midterm exams and a comprehensive (cumulative) final exam, all taken *in-person*. Exams will assess both conceptual and quantitative understanding of material from lecture, recitation, and homework assignments. For each exam you will be provided with an equation sheet that will include relevant equations and constants and a periodic table (when needed).

Requests for re-grades of exams must take place **within one week** of the exams being handed back. Regrade requests can be made through Gradescope, the website used to grade your exams.

Important: Regrades are for correct answers mistakenly marked as incorrect, not opportunities to wage arguments on point allotment.

Midterm exams will be administered **in-person** during lecture, and the dates are noted in the course schedule at the end of this syllabus. The final exam will also be **in-person** and the University Registrar's office will announce the date and time of the final exam a few weeks after the semester starts. **Do not make end-of-semester travel plans until you know your final exam schedule.**

Exam Replacement Policy

I know that sometimes life gets in the way of being able to (a) take a scheduled exam or (b) stop you from preparing for an exam to your fullest ability. Acknowledging this, I have a blanket policy that I will automatically replace your lowest midterm exam score with your final exam score at the end of the semester, given the final exam score is higher. This replacement will only happen once! So, if you somehow miss two exams, one of the zeros will remain.

Examples of when to take advantage of this policy:

- Something happens that physically stops you from taking the exam (i.e., a car accident, you get really sick – especially if you're contagious, there is a death in the family, etc.) and you can't make it up in a timely manner (see "Absences and Make-Ups" below).
- You have a huge project or some other important other-class or life related obligation that stops you from studying for one of my exams. (I recommend you still take my exam; you may surprise yourself with the results!)

- **Most likely scenario for most of you:** You take all four midterm exams and one of them just wasn't as good as the others, but your final exam ends up being better, improving your overall grade.

Example of when NOT to take advantage of this policy:

- You just don't feel like taking one of the exams. It is in your best interest to make an honest attempt on all exams as they also prepare you for the final exam. Additionally, a lot of the material builds upon itself and so if you don't take the time to prepare for one of the exams, that may result in difficulties on future topics. Besides, you may decide to skip the easiest exam (for you) and you wouldn't know it!

Absences and Make-Ups

- Extensions of due dates for homework assignments, make-ups for missed exams, and excused absences from recitation will only be offered at my discretion. *If anything comes up in your life that makes you worry about an upcoming deadline, reach out to me ASAP and I will work with you the best I can.*
- A missed midterm exam can only be made up the week the exam is scheduled, and any arrangements must be made with me prior to the scheduled exam time (if possible) for a make-up to be allowed. If a make-up is not able to be accommodated, for one reason or another, you will have to utilize the exam replacement policy outlined above to replace the zero with your final exam score. This class is fast-paced, and I like to hand back the exams as soon as I can so that we can keep going in the material.
- Students who misuse or abuse requests for excused absences or extension of due dates for homework will be subjected to the appropriate disciplinary action per university policies.

Student Wellness Days

Northeastern University has recently employed a new policy allowing students to take a "Wellness Day" when they need some time off for mental health, emotional wellbeing, physical illness, or personal circumstances. There is a system in place that allows you to easily notify your instructors of you taking a Wellness Day. **Important:** You must use this system to request a Wellness Day. You can't just email your professors telling them that you are taking one.

Note that there are several restrictions on when you can take a Wellness Day, including not being able to take them on scheduled exam days (see tentative schedule at the end of the syllabus for exam days) and a Wellness Day doesn't automatically grant you any sort of extensions (you are responsible for being in communication with your instructors for things like this). For more information on Wellness Days, check out: <https://wellnessdays.studentlife.northeastern.edu/overview/>.

Course Grading Scheme

Component of Course	Percentage of Grade
^a Four Midterm Exams – each contributing equally at 13%	52%
Final Exam	20%
Homework (Achieve)	12%
^b Recitation Participation	8%
^c In-Class Participation/Attendance (Aktiv Chemistry)	8%
Total	100%

^a If the final exam score exceeds the lowest midterm exam score, then the final exam score will be substituted in place of that midterm exam score.

^b Recitation Participation. More details are provided in the Recitation Information Sheet on Canvas.

^c As mentioned above, you can miss up to 4 days of lecture without it affecting your grade.

Final grades for the course will be assigned based on the following final percentages:

	A: 93-100%	A- : 90-92%
B+ : 87-89%	B: 83-86%	B- : 80-82%
C+ : 77-79%	C: 73-76%	C- : 70-72%
D+ : 67-69%	D: 63-66%	D- : 60-62%
F: 59% and below		

Students taking the course Pass/Fail, must earn a final course average of at least 70% to receive a final grade of "Satisfactory."

Note: I do not round grades at the end of the semester. So, any requests to do so will be ignored.

Resources for Success

There are a variety of resources that are available to help you succeed in this course. Please take advantage of any/all of them:

- Your first source of help is the weekly recitation meeting, which appears as CHEM 1163 on your course schedule.
- You can see your recitation TA for help during their office hours and/or during recitation. TA office hours will be posted on Canvas by the second week of classes. Your TA will also announce their office hours during your first recitation meeting.
- You can see Dr. Dan for help during his office hours which are listed at the top of this syllabus. You can also set up an appointment with him to meet at another time. You may seek individual help or may come as a group.
- You can go to Chem Central (EXP, Rm 301) and get help from whoever on duty. Chem Central is a general resource provided by the Chemistry Department for students seeking extra help and is staffed by Chemistry Faculty and Teaching Assistants. Chem Central is also a good place for you and friends to do homework and study together. Chem Central is typically open Monday through Friday from 10:00 am to 4:30 pm. Note that while your TA will host their office hours in Chem Central, you don't have to only go there when your TA is there. There should always be someone there to help, whether they are your TA or not!
- Northeastern University's Peer Tutoring Program has a list of upperclassmen who did well in general chemistry who are available to assist you with one-on-one peer tutoring. To set up an appointment go to their website <http://www.northeastern.edu/csastutoring/>.
- We Care offers support for students during times of personal and/or academic challenge. You can find We Care at 226 Curry Student Center Monday – Friday from 8:30 am to 5:00 pm, call at 617-373-7591, or email wecare@northeastern.edu.

Special Accommodations

If you have a disability that you believe may require special accommodations for this course, including the taking of exams, contact the Disability Access Services (DAS) (<http://www.northeastern.edu/drc/>). They can offer information and assistance to help manage any challenges that may affect your performance in coursework. Should you require an accommodation, you will be asked to send out an

instructor notification letter that tells me which accommodations you require while keeping the reasons for such accommodations private.

Unforeseen Circumstances

I reserve the right to make changes in the scheduling of all elements of the course (e.g., dates for exams, homework assignment due dates, etc.) in response to any unforeseeable circumstance.

University Academic Integrity Policy

Northeastern University is committed to the principles of intellectual honesty and integrity. The NU Academic Integrity Policy can be found on the website of the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#). Depending on the severity, any instance of violating the Academic Integrity Policy will result in a minimum of a zero on the assignment/exam up to receiving an 'F' for the course, along with a report filed with OSCCR to be placed on your academic record. *If you receive a zero on a midterm exam due to cheating, its score is not eligible to be replaced by your final exam score.*

Expectations

You are expected to:

- Arrive on time for every lecture class prepared to participate in all in-class discussions and questions.
- Arrive on time for every recitation class, actively participate, and work with those around you.
- Work on the weekly homework assignment a little bit at a time throughout the week, making sure you complete it on time.
- In the event of an absence from recitation, still take the time to work through that week's worksheet and ask questions, if needed.
- If you miss lecture, discuss what you missed with a classmate, TA, and/or me.
- Check the course's Canvas site regularly for announcements and other useful resources.
- Take responsibility for your learning: Seek help when you need it, organize into study groups if you find it useful.
- Treat me, the TA(s), and other students in the class with respect.
- All cell phones, laptops, and other electronic devices should be placed on silent during class.
- Observe and abide by the rules of ethical behavior outlined in the Student Handbook and Northeastern University's Academic Integrity Policy.
- Respond in a timely fashion to all written and/or oral requests from me, the TA(s), and your academic advisor.
- Participate in the end-of-semester TRACE survey.

Tentative lecture schedule located on next page.

Tentative Lecture Schedule

Very Important: As this schedule is ‘tentative,’ it is subject to change. I may go faster or slower in some places depending on how students are grasping the material. **What chapters are covered on the exams will depend on what we actually cover in lecture up through the Monday before each exam.** As you can see in the schedule below, in lecture we will cover Chapters 3 through 16, in order, skipping Chapters 9 and 12. Chapters 1 and 2 are expected to be reviewed independently before or as the semester starts. Note that not all sections in each chapter will be covered. Any specific/important omissions will be announced.

WEEK	DATE	LECTURE MATERIAL AND EXAM DATES
1	9/7 – 9/11 First Day of Class: 9/9	Sections 1.1-1.8 and 2.1 – 2.5: Independent Review/Ramp Up Chemistry Course Chapter 3
2	9/14 – 9/18	Chapters 3 & 4
3	9/21 – 9/25	Chapter 4
4	9/28 – 10/2	Chapters 4 & 5 <u>Exam 1 Review Session:</u> Tuesday, Sept 29; Time: TBD Exam 1: Thursday, Oct 1 (Chapters 1 – 4)
5	10/5 – 10/9	Chapters 5 & 6
6	10/12 – 10/16 Indigenous Peoples Day (10/12): No Class	Chapters 6 & 7
7	10/19 – 10/23	Chapter 7 <u>Exam 2 Review Session:</u> Tuesday, Oct 20; Time: TBD Exam 2: Thursday, Oct 22 (Chapters 5 – 7)
8	10/26 – 10/30	Chapter 8
9	11/2 – 11/6	Chapters 8 & 10
10	11/9 – 11/13 Veterans Day (11/11): No Class	Chapter 11 <u>Exam 3 Review Session:</u> Tuesday, Nov 10; Time: TBD Exam 3: Thursday, Nov 12 (Chapters 8 & 10)
11	11/16 – 11/20	Chapter 13
12	11/23 – 11/27 Fall Break (11/25 – 11/27): No Classes	Chapter 14
13	11/30 – 12/4	Chapters 14 & 15 <u>Exam 4 Review Session:</u> Tuesday, Dec 1; Time: TBD Exam 4: Thursday, Dec 3 (Chapters 11, 13, 14)
14	12/7 – 12/11 Last Day of Classes: 12/13	Chapter 16

Final Exam Schedule:

Final Exam Week is scheduled for Monday, December 14 through Sunday, December 20. The date, time, and location of final exams will be posted to Banner a few weeks into the semester. I will make an announcement in class and on Canvas, too. **Do NOT schedule any travel plans for this week until you know your final exam schedule for all your classes! I do not allow final exam makeups so you can leave early!** It is possible for exams to be scheduled on the weekend!