CHEM 1161 General Chemistry for Science Majors
Northeastern University
Fall 2023

Instructor: Professor Dan Matthew, a.k.a. "Dr. Dan" **Office**: EXP, Rm 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.

- Tuesdays: 2:00 – 3:00 PM and Wednesdays: 3:00 – 4:00 PM in my office
- 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
13087	01	10:30 AM – 11:35 AM	MWTh	Snell Engineering Center, Rm 168
13452	03 (HON)	4:35 PM – 5:40 AM	MWTh	Cargill Hall, Rm 097

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, 3rd 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) Access code for SmartWork5 on-line homework system. This code comes with any new copy of the textbook, or you can purchase SmartWork5 access (bundled with or without an eBook) through a link posted on Canvas. Activation codes may be available at the University bookstore with a small markup.

3) 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 calculators such as cell phones and advanced scientific calculators (such as the TI-Nspire) will not be allowed for use on exams.

5) A Wi-Fi-capable device (*e.g.*, 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/ and through the Canvas link in your myNortheastern account. Please check the course's Canvas site regularly for announcements, course materials, and other useful resources and information.

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 **Sections 1.1 - 1.8 and 2.1 – 2.5 of the textbook**. These fundamentals were also taught in the Chemistry Ramp Up course made available at the start of the semester on Canvas, which many of you hopefully participated. This course provides various readings, videos, and assignments to help you brush up on these crucial topics. The link to access this course can be found on the CHEM 1161 Canvas page and was emailed out prior to the semester starting. All students are encouraged to participate in Chemistry Ramp Up 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. 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 online homework, and/or through posted videos. 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 your instructor 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. These free absences are in addition to the Wellness Days offered by the University (see below for more details on this).

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 the instructor.

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 violation of the course's academic integrity policy, and the minimum consequence will be a final grade of "F" for the course.***

Classroom recording

This course, or parts of this course, may 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. Since there is no guarantee that class will be recorded, students should plan to attend every class synchronously.

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 lectures. **Make sure that you are enrolled in one of the recitation sections listed below for your lecture section!** *Registering for one that isn't associated with YOUR lecture will likely result in you getting a zero for the recitation portion of your grade in this class!*

CHEM 1163 Recitations Sections Associated with CHEM 1161 Section 01:

CRN	Section	Day & Time	Room	TA
13453	01	Tues 1:35 PM – 2:40 PM	Richards Hall, Rm 165	Tina Dinh
13068	03	Tues 3:25 PM – 4:30 PM	Richards Hall, Rm 165	Benjamin Liebson
13070	05	Wed 3:25 PM – 4:30 PM	Shillman Hall, Rm 415	Tina Dinh
13071	07	Mon 11:45 AM – 12:50 PM	Richards Hall, Rm 231	Tina Dinh
14540	10	Tues 11:45 AM – 12:50 PM	EXP, Rm 310	Benjamin Liebson
14541	11	Mon 1:35 PM – 2:40 PM	International Village, Rm 022	Tina Dinh

CHEM 1163 Recitations Sections Associated with CHEM 1161 Section 03 (HON):

CRN	Section	Day & Time	Room	TA
13693	08	Wed 11:45 AM – 12:50 PM	Kariotis Hall, Rm 011	Liana Annable
13692	09	Wed 3:25 PM – 4:30 PM	Shillman Hall, Rm 325	Liana Annable

Recitations begin meeting during the second week of the semester, starting Monday September 11, 2023. Recitations are taught by Graduate Student Teaching Assistants (TAs).

TA Contact Information

- Tina Dinh - dinh.ti@northeastern.edu
- Benjamin Liebson - liebson.b@northeastern.edu
- Liana Annable - annable.l@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. The intent is for the laboratory experiments to track and reinforce the lecture material.

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 SmartWorks5 online homework system. Questions in these assignments have been selected to assess your mastery of key learning objectives. For ***some*** questions you will be allowed multiple attempts to get the question correct. However, incorrect attempts ***may*** result in a fractional deduction on your score for that question to discourage random guesses**.** 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 try helping you work through incorrect answers. **The first SmartWork5 online homework assignment is due Wednesday, September 13th 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 three 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.

Requests for re-grades of exams must take place **within one week** of the exams being handed back.

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. **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, there is a death in the family, etc.) and you can't make it up (see "Absences and Make-Ups" below).
- You have a huge project or some other important other-class 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 three midterm exams but 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 come back to bit you. Besides, you may decide to skip the easiest exam and you wouldn't know it!

Absences and Make-Ups

- Extensions of due dates for homework assignments, make-ups for missed exams, and excused absence from recitation will only be offered at the discretion of the instructor. If you wish to make up a recitation in another section, then you must obtain approval from the TAs involved and work with them to ensure your attendance is recorded.

- A missed midterm exam can only be made up the week the exam is scheduled, and arrangements must be made with the instructor *prior* to the scheduled exam time in order 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 take advantage of the exam replacement policy outlined above to replace the zero with your final exam score.
- 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 Day

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 utilize 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]Three Midterm Exams – each contributing equally at 15%	45%
Final Exam	20%
Homework (SmartWork)	15%
[b]Recitation Participation	10%
[c]In-Class Participation/Attendance (Aktiv Chemistry)	10%
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."

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 are more than welcome to 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 Resource Center (DRC) (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 bring paperwork to Dr. Dan.

Unforeseen Circumstances

The instructor reserves 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 having completed the previous week's online homework.
- 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, immediately notify your TA to try to work out attending another section that week. If you can't make it up, still take the time to work through that week's worksheet.
- If you miss lecture, discuss what you missed with a classmate, TA, and/or Dr. Dan.
- 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 Dr. Dan, TA, 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 Dr. Dan, TA, and academic advisor.
- Participate in the end-of-semester TRACE survey.

Tentative Lecture Schedule

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 11. 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	9/4 – 9/8 **First Day of Class: 9/6**	**Sections 1.1-1.8 and 2.1 – 2.5: Independent Review/Ramp Up Chemistry Course** Chapter 3
2	9/11 – 9/15	Chapters 3 & 4
3	9/15 – 9/22	Chapter 4
4	9/25 – 9/29	Chapter 5
5	10/2 – 10/6	Chapters 5 & 6 Exam 1 Review Session: Tuesday, Oct. 3; Time: TBD **Exam 1: Thursday, Oct. 5 (Chapters 1 – 5)**
6	10/9 – 10/13 **Indigenous Peoples Day (10/9): No Class**	Chapters 6 & 7
7	10/16 – 10/20	Chapters 7 & 8
8	10/23 – 10/27	Chapters 8 & 10
9	10/30 – 11/3	Chapter 10 Exam 2 Review Session: Tuesday, Oct. 31; Time: TBD **Exam 2: Thursday, Nov. 2 (Chapters 6, 7, 8, and 10)**
10	10/6 – 10/10	Chapters 12 & 13
11	11/13 – 11/17	Chapters 13 & 14
12	11/20 – 11/24 **Fall Break (11/22 – 11/26): No Class**	Chapter 14
13	11/27 – 12/1	Chapter 15 Exam 3 Review Session: Tuesday, Nov. 28; Time: TBD **Exam 3: *WEDNESDAY*, Nov. 29 (Chapters 12 – 15)**
14	12/4 – 12/8 **Last Day of Class: 12/6**	Chapter 16

Final Exam Schedule:

Final Exam Week is scheduled for Friday, December 8 through Friday, December 15. The date, time, and location of final exams will be posted to myNortheastern a few weeks into the semester. I will make an announcement in class and on Canvas once I know this information, too. **Do NOT schedule any travel plans for this week until you know your final exam schedule for all of your classes!**