Course Snapshot

Mathematical Introduction to General Chemistry CHEM 1310 002

Term: 2026 Fall

Modality: In Person

Meeting Information: TR, 11:10AM-12:20PM, SAGE 230

Instructor Information

Name: Stephanie Liu
Preferred Name: Dr. Liu
UNT Email Address: Stephanie.Liu@unt.edu
Office Hours and Location
T/Th 12:45 - 2:15 PM at CHEM 272 or by appointment and via ZOOM.
Office or Department Phone Number: 9402494891
Preferred Contact Method: Please indicate you are in Chem 1310 in your email because I teach multiple courses and multiple sections.
Expected Response Time: During busy times, my inbox becomes rather full, so if you contact me and do not receive a response within two business days, please send a follow up email. A gentle nudge is always appreciated.

Course Description

1310. Mathematical Introduction to General Chemistry. 3 hours. Scientific calculation, significant figures, conversion factors, atomic structure, periodicity, compounds, stoichiometry, solutions and molarity, dimensional analysis, and Ideal Gas Laws. Intended for students who need additional math preparation in order to succeed in General Chemistry. Recommended for BA Biology majors and other students whose degrees

require General Chemistry but not Calculus. Prerequisite(s) : Texas Success Initiative (TSI) math compliant.

Course Structure

Lecture: T/Th 11:10 AM – 12:30 PM @ SAGE 230

All course materials are posted on Canvas in Chem 1310.002, including lecture PPT as PDF files, in-class worksheets for each chapter, a link to each chapter in the etext and a link to the online homework assignment for each chapter.

Out of the 30 class meetings, 24 will be used to cover 13 chapters in the textbook. For each of the 13 chapters, there will be one or two lectures, and one in-class worksheet for you to complete in groups of four.

Four class meetings will be used to give four lecture exams.

The last lecture exam will be given on the Thur before the Thanksgiving week. After the thanksgiving week, there is one instructional week left and we will use the last two class meetings to do final reviews.

Instructor Welcome and Course Orientation

Hello everyone,

Greetings to all! This is Dr. Liu and I will be working with you this semester to hone some specific math skills that are important when you take general chemistry in the future.

In this announcement, I want to orient you on what I recommend you do for this course in the first two days of the semester:

- **If you haven't, please read the syllabus by clicking on "Simple Syllabus" in the course navigation menu in Canvas to learn the course polices.**
- **When you click on a homework assignment in Canvas for the first time, it will take you to the publisher's website to purchase the etext and its online homework program (Smartwork). Smartwork access for 360-day with etext costs $36.95, without etext costs $31.00. You**

need to purchase it to do homework assignments.

- **Note that Smartwork homework 1 is due on Fri. in the first week.**
- **Please print out Chapter 1 worksheet and bring it to class on Thur in the first week.**

Let me know if you have any questions!

Dr. Liu

Learning Outcomes and Alignment

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

1. Solve mathematical calculations with moving decimals, using exponential notation and prefixes.
2. Solving chemical calculations with correct significant figures and conversion factors.
3. Understand and explain atomic structure, and its influence on the periodic properties.
4. Name binary molecular compounds and ionic compounds.
5. Understand moles, mass and molar mass, and know how to balance chemical equations.
6. Perform stoichiometric calculation and identify limiting reactants and theoretical yield.
7. Define molarity and perform molarity calculation.
8. Set up and solve problems in unit dimensional analysis.
9. Relate a theory on molecular behavior in the gas phase to the Ideal Gas Law.

Define temperature, pressure, volume, and mole in Ideal Gas Law, and perform calculations using Ideal Gas Law.

Course Materials

Calculations in Chemistry: An Introduction
ISBN: 9780393614367
Authors: Donald J. Dahm, Eric A. Nelson
Publisher: W. W. Norton & Company
Edition: 2nd

Cost Notes

Smartwork5 access for 360-day with Ebook costs $36.95, without Ebook costs $31.00.

Course-Specific Technology

All course materials are posted on Canvas and all assignments are submitted in Canvas. Hence, **a computer** and **internet access to Canvas** is mandatory.

Lecture attendance is taken according to your responses to iClicker questions during lectures. Please bring a device that can run **iClicker Student App** to each class, such as a smartphone, a laptop, and etc.

You will also need **a scientific calculator** without graphing capability. Most common models like TI 30X IIS or Casio FX 300ES Plus are $15-$25. You can find them on Amazon, Walmart, Target, Staples, or a campus bookstore.

I will provide scantrons, the periodic table of elements and a formula sheet at all five exams.

You need to bring a **pencil**, an **eraser**, a scientific calculator and **your 8-digit student ID** to all five exams.

Major Assignments and Assessments

There are four lecture exams and a cumulative final exam.

Exams	Scope	Date	Location	# of questions	Time allowed
Exam 1	Chap. 1-3	9/08 Tue. 11:10 AM – 12:10 PM	Sage 230	20	60 mins
Exam 2	Chap. 6, 7, 4, 8	10/13 Tue. 11:10 AM – 12:10 PM	Sage 230	20	60 mins

Exam 3	Chap. 9-12	11/03 Tue. 11:10 AM – 12:10 PM	Sage 230	20	60 mins
Exam 4	Chap. 16-17	11/19 Thur. 11:10 AM – 12:10 PM	Sage 230	20	60 mins
Final Exam	Cumulative	12/08 Tue. 10:30 AM – 12:30 PM	Sage 230	50	120 mins

There are 13 online homework assignments and 13 in-class worksheets, one for each chapter.

In-class worksheets

After I finish the lecture on a chapter, you are to work in groups of four in class to finish a chapter worksheet. The time allowed could be an entire class meeting or part of a class meeting. Please print out the 13 worksheets and bring them to classes. When your group finishes, Dr. Liu or the graduate TA will randomly choose a person in the group and check just his/her answers. Everyone in the group receives the same score. This is to encourage you to work with your group. Everyone in the group should be both a teacher and a student. One learns the best when one teaches. During group time, free feel to raise your hands for Dr. Liu or the graduate TA to come to your table and answer your questions! Worksheets finished outside of class are not accepted. You only receive credit when you work on it in class with your group. Everyone can drop two lowest worksheet grades.

Online homework assignments

Smartwork5 is the online homework systems that is purchased with the etext. There is one homework assignment for each chapter, 13 in total. The link to each

Smartwork assignment is posted in Canvas, each below the worksheet for that chapter. Unlimited attempts are given and there is no time limit on any attempt. I set the due dates for you to gauge if you are on schedule. However, there is ***no*** late penalty If you submit a Smartwork assignment after the due date. However, no Smartwork assignment can be submitted after 11:59 PM of the reading day.

Grading and Feedback

Types of Assignments	Number of Assignments	Dropping the lowest	Total Weight
Lecture Exams	4	1	45%
Final Exam (cumulative)	1	none	15%
Attendance	17	2	10%
In-class worksheets	13	2	10%
Smartwork5 Homework	13	0	20%

How to Calculate Your Overall Grade

Your overall grade is a weighted average of the percentage you get on each type of assignment.

For example, if Michael received 85% on lecture exams, 75% on final exam, 95% on lecture attendance, 90% on in-class worksheets, and 95% on online homework, the overall percentage Michael got in this course would be calculated as follows.

85% * 45% + 75% * 15% + 95% * 10% + 90% * 10% + 95% * 20% = 87.00%

Grading Scale

A: 90% - 100%

B: 80% - 89%

C: 70% - 79%

D: 60% - 69%

F: 0% - 59%

I include two decimal places in the percentage number when I assign letter grades and look for a natural break when I decide on the cut-off value. In the following series of numbers - 90.00, 89.99, 89.89, 89.79, 89.49, 89.39, 89.29 - the natural break is at 89.79/89.49. Hence, in this example 89.79 and above gets an A.

Note that these numbers are just given as an example. It does ***NOT*** mean that the cut off value between A and B for this semester is 89.79.

To be fair to everyone, I won't reply to email requests to bump up grades.

Course Schedule

Date	Assignment Name	Type	Points
	Class 1 - Poll	Assignment	1
	Class 10 - Poll	Assignment	1
	Class 11 - Poll	Assignment	1
	Class 12 - Poll	Assignment	1
	Class 13 - Poll	Assignment	1
	Class 14 - Poll	Assignment	1
	Class 15 - Poll	Assignment	1
	Class 16 - Poll	Assignment	1

Date	Assignment Name	Type	Points
	Class 17 - Poll	Assignment	1
	Class 2 - Poll	Assignment	1
	Class 3 - Poll	Assignment	1
	Class 4 - Poll	Assignment	1
	Class 5 - Poll	Assignment	1
	Class 6 - Poll	Assignment	1
	Class 7 - Poll	Assignment	1
	Class 8 - Poll	Assignment	1
	Class 9 - Poll	Assignment	1
8/20/26	Chapter 1 Practice	Assignment	10
8/21/26	Smartwork: Getting Familiar with Smartwork5 Question Types	Assignment	0
8/21/26	Smartwork: HW1 - Numbers in Scientific Calculations	Assignment	10
8/27/26	Chapter 2 Practice	Assignment	10
8/28/26	Smartwork: HW2 - The Metric System	Assignment	10

Date	Assignment Name	Type	Points
9/3/26	Chapter 3 Practice	Assignment	10
9/4/26	Smartwork: HW3 - Atoms - and Significant Figures	Assignment	10
9/8/26	Exam 1	Assignment	100
9/17/26	Chapter 6 Practice	Assignment	10
9/18/26	Smartwork: HW6 - Atoms, Ions, and Periodicity	Assignment	10
9/24/26	Chapter 7 Practice	Assignment	10
9/25/26	Smartwork: HW7 - Writing Names and Formulas	Assignment	10
10/1/26	Chapter 4 Practice	Assignment	10
10/2/26	Smartwork: HW4 - Conversion Factors	Assignment	10
10/8/26	Chapter 8 Practice	Assignment	10
10/9/26	Smartwork: HW8 - Moles and Balancing Equations	Assignment	10
10/13/26	Exam 2	Assignment	100
10/16/26	Smartwork: HW9 - Stoichiometry	Assignment	10
10/20/26	Chapter 9 Practice	Assignment	10

Date	Assignment Name	Type	Points
10/22/26	Chapter 10 Practice	Assignment	10
10/23/26	Smartwork: HW10 - Molarity	Assignment	10
10/27/26	Chapter 11 Practice	Assignment	10
10/28/26	Smartwork: HW11 - Dimensions	Assignment	10
10/29/26	Chapter 12 Practice	Assignment	10
10/30/26	Smartwork: HW12 - Concentration Calculations	Assignment	10
11/3/26	Exam 3	Assignment	100
11/10/26	Chapter 16 Practice	Assignment	10
11/11/26	Smartwork: HW16 - Gas Laws I: Solving Equations	Assignment	10
11/17/26	Chapter 17 worksheet	Assignment	10
11/18/26	Smartwork: HW17 - Gas Laws II: Choosing Equations	Assignment	10
11/19/26	Exam 4	Assignment	100
12/10/26	Final Exam	Assignment	100

Course Calendar

The days highlighted green are the classes you need to bring the printed worksheets to finish in group of four in class.

Week	Tue	Wed	Thur	Fri
1	Course Intro and Chap. 1 Lecture		Chap. 1 Lecture and Worksheet	HW1 due
2	Chap. 2 Lecture		Chap. 2 Worksheet	HW2 due
3	Chap. 3 Lecture		Chap. 3 Worksheet	HW3 due
4	***Exam 1***		Chap. 6 Lecture (1)	
5	Chap. 6 Lecture (2)		Chap. 6 Worksheet	HW6 due
6	Chap. 7 Lecture		Chap. 7 Worksheet	HW7 due
7	Chap. 4 Lecture		Chap. 4 Worksheet	HW4 due
8	Chap. 8 Lecture (1)		Chap. 8 Lecture (2) and Worksheet	HW8 due
9	***Exam 2***		Chap. 9 Lecture	HW9 due
10	Chap. 9 Worksheet		Chap. 10 Lecture & Worksheet	HW10 due
11	Chap. 11 Lecture & Worksheet	HW11 due	Chap. 12 Lecture & Worksheet	HW12 due

12	***Exam 3***		Chap. 16 Lecture (1)	
13	Chap. 16 Lecture (2) & Worksheet	HW16 due	Chap. 17 Lecture	
14	Chap. 17 Worksheet	HW17 due	***Exam 4***	
15	Thanksgiving Holiday			
16	Final Review (1)		Final Review (2)	
17	***Final Exam at 10:30 AM – 12:30 PM***			

Authorized Absences Policy

An absence will be excused by the university for: a. religious holy day, including travel for that purpose; b. participation in an official university function; c. required military service, including travel for that purpose; d. pregnancy and parenting under Title IX; and e. when the University is officially closed.

For more details and procedures regarding UNT Authorized Absences, please see Policy 06.039.

Absences that do not fall under Title IX, Required Military Service, and Official University Absences (religious holy days, participation in an official university function, and when the University is officially closed), are deemed a matter between the student and their faculty member. If the absence is due to an illness or extenuating circumstance that exceeds 5 consecutive days, the faculty member may request for the student to provide documentation through the Dean of Students' office.

Course Level Absence Practice

Excusable absence includes recognized religious holy days, participation in official university functions such as student athlete events, pregnancy and parenting, required military service, and medical or other emergencies.

Absences at lectures or lecture exams are only excused if it is an ***excusable absence*** as described above **and** with ***written proof***. A make-up test can be scheduled with the graduate TA for an excused absence at a lecture exam.

Worksheets completed outside of class **cannot** be accepted. If it's an excused absence, then you can finish it individually outside of class and submit to get credit. Everyone drops **two** lowest worksheet grades.

Absences at lectures or exams because you forgot about it, remembered the wrong date, overslept, were too tired or too busy to take it, ***cannot*** be excused.

Merely showing up in class does not count as attendance, submitting answers through **iClicker** does. Your answers do not have to be correct. As long as you submit iClicker answers while **physically being present in the classroom**, you will get attendance credit. Everyone can have up to **two unexcused absences without penalty**. Attendance weigh 10%.

You do **not** need to request extensions on any homework because there is **no late penalty** when you submit an assignment after the due date. However, no assignment can be submitted after 11:59 PM on the reading day.

UNT Academic Integrity Policy

According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

Course Specific Academic Integrity Practice

There are two versions of tests at each of the five exams. Two students will share a desk at an exam. The colors of tests on the same desk must be

different, otherwise I have to ask you to either change your test version or change your seat.

Everyone needs to turn off your cell phone and place it at the upper right corner of your work space on your desk during an exam.

If you need to go to restrooms during an exam, you need to leave your cell phone with me, and leave anything in your pockets either with me or on your desk.

AI Use Practice

In this course, the use of GenAI tools is limited as directed by the instructor. Any additional use requires explicit permission, proper citation, and authentic student work.

Course Level Practices

You may use AI to assist you in learning the course material. However, using AI in completing assignments or even exams are strictly prohibited. The first offense results in zero grade in the assignment and exam. The second offense results in an F grade for the course.

Student Success Guidance

I recommend you follow the link to read the sections in the e-text before class. Print out the lecture PPT to make it easier for you to take notes during class. Work in groups on the in-class worksheets. Complete the homework assignments by the due dates to gauge your understanding.

When you have questions, please reach out for assistance by attending my office hours, the graduate TAs' office hours or CRC (tutoring service provided by graduate students in chemistry department at CHEM 231.

PLEASE PACE YOURSELF ACCORDING TO THE DUE DATES OF 13 HOMEWORK ASSIGNMENTS TO GO THROUGH THE COURSE MATERIAL.

Academic Support and Student Services

Technology Support

Part of working in the online environment involves managing the inconveniences and frustrations that can arise when technology breaks down or does not perform as expected. Here at UNT, we have a Student Help Desk that you can contact for help with Canvas or other technology issues:

- **Phone: 940-565-2324**
- **Email: helpdesk@unt.edu**
- **Current list of Student Help Desk hours**

Academic Support Services

- **The UNT Academic Resource Center provides links to the bookstore, registration and advising information, tuition information, financial aid, and more.**
- **The UNT Academic Success Center offers academic support services and free individual tutoring.**
- **UNT Writing Lab**
- **UNT Libraries**

Student Services

- **Counseling and Testing Services**
- **Student Affairs Care Team**
- **Student Health and Wellness Center**
- **Student Legal Services**
- **UNT Food Pantry**

Civil Discourse

As a leading public university, the University of North Texas has a fundamental responsibility to create enduring value for the public good. The fulfillment of our mission as a university depends upon the free exchange of ideas in the pursuit of knowledge. We bring these commitments into action by centering civil discourse in our culture and curriculum. We define civil discourse as the practice of constructive

dialogue to broaden understanding, grounded in our shared values and deep respect for each other's potential. By committing to this practice, we seek to equip every student with skills and mindsets to engage, contribute, and lead—at UNT and throughout your lives.

My role as an instructor is to introduce you to different ideas and scholarship and facilitate discussions that are credible, open, respectful, and relevant to this course. Our class brings together individuals with different backgrounds, experiences, and viewpoints. You may disagree with the views presented, and others may disagree with your views. But, you should expect to be listened to with respect and evaluated fairly based on the learning objectives of this course. Even when you disagree, engaging with other points of view can help you better understand both the issue at hand and your own perspective. While we may engage in vigorous debate about competing ideas, speech that violates the Student Code of Conduct, including speech that harasses a specific individual or disrupts the course is not acceptable and works against our educational mission.

University Policies

ADA Accommodation Statement: UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu.

Emergency Notification & Procedures: UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public

safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to the UNT Learning Management System (LMS) for contingency plans for covering course materials.

Retention of Student Records: Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Blackboard online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

Acceptable Student Behavior: Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at deanofstudents.unt.edu/conduct.

Access to Information – Eagle Connect: Students' access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail: eagleconnect.unt.edu/.

Student Evaluation Administration Dates: Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website at spot.unt.edu or email spot@unt.edu.

Survivor Advocacy: UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565-2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

Pregnancy Modifications Under Title IX and Parenting Resources: UNT is committed to supporting students who may need pregnancy and parenting modifications in compliance with Title IX. If you are a pregnant student or have a pregnancy related condition, please visit report.unt.edu and complete the 'Request Pregnancy/Parenting Modifications' form. Parenting

students who may need resources can seek support and guidance from the Dean of Students and the Eagle Engagement Center. Pregnant and Parenting Students Policy number 16.008.

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Web Accessibility & Privacy: Please find the web accessibility and privacy statements for UNT and Canvas.

UNT

- **Web Accessibility Policy**
- **Privacy Statement**

Canvas/Instructor

- **Accessibility Statement**
  Privacy Policy

University Resources

Chemistry Resource Center (CRC)
The Chemistry Resource Center (CRC) provides free tutorial instruction to students enrolled in undergraduate chemistry courses. The CRC is staffed by highly qualified chemistry graduate students.
CRC is located at CHEM 231 and open every weekday from 8 AM - 6 PM, except for Thursday, which closes at 3-4:30 PM for the Seminar.
For questions or comments about the CRC, please contact chemistry@unt.edu or 940-565-3524. You can check out the schedule at https://chemistry.unt.edu/undergraduate/instructional-resources.html