Chem 1C Syllabus Spring2025
De Anza College
Liezel Lumangtad, PhD

INSTRUCTOR INFORMATION

Lecture Instructor: **Liezel A. Lumangtad, PhD** (she/her)
Email: lumangtadliezel@fhda.edu
Office hours: Online via Zoom: https://fhda-edu.zoom.us/j/3936617913
W: 2:00 PM – 3:00 PM
Laboratory Instructor 1 (AM): Guibo Zhu (zhuguibo@fhda.edu)
Laboratory Instructor 2 (PM): Christopher Deming (demingchristopher@fhda.edu)

CHEM 1C: GENERAL CHEMISTRY III Course Information

Class Meeting Times

CRN 48841 and 48842
Lecture: MW 11:30 AM – 12:45 PM in DA-S34
Laboratory (AM): 8:30 AM – 11:20 AM in SC2208
Laboratory (PM): 2:30 PM – 5:20 PM in SC2208

Required Materials

1. Textbook

OPTION 1: **Tro, Chemistry: A Molecular Approach, 6th edition**, Pearson (please check De Anza College library for available physical copies. Mastering Chemistry is an online platform we will use mostly for the class homework and comes with an electronic version of the text. Options to acquire the materials are as follows:

a. 14-week direct purchase price when registering with Pearson - $40.00

b. 14-week net price to the bookstore for an access code - $35.00 (final price to student will be determined by their margin) ISBN: 9780135402306

c. 24-month direct purchase price - $105.00 (final price to student will be higher if purchasing through the bookstore)

NOTE: If you use a physical textbook, you will still need to get a subscription to Mastering Chemistry for the class homework, but do not need to get a 6th edition textbook.

OPTION 2: Chemistry Atoms First 2e from OpenStax the accompanying Student Solutions Manual which is FREE and with several options for access:

- Online viewer
- Downloadable PDF
- Print copy order (cost applies)

Supplemental Textbook: **Chemistry: The Central Science (Brown, Bursten, LeMay)**

2. Calculator
   You will need a scientific or graphing calculator. Contact De Anza College Library about checking out a calculator for the quarter.
3. Laboratory Manual
   PDF versions of the lab experiments are available on Canvas. Printed copies are recommended to minimize the risk of damaging your digital device(s).
4. Safety Goggles

UV sterilized shared safety goggles will be provided! You can also purchase your own safety goggles but they must meet "ANSI Z-87.1-1989R" specifications.

5. Laboratory coat
   A lab coat is *recommended*. Please check if you can buy it at the student center. You may also want to purchase on Amazon (about 20$). Laboratory coats are *recommended* to minimize the risk of chemical contamination of your clothing.
6. Camera linked to the internet – For some of your classwork, you will need to take a picture of your work and submit to CANVAS. Phones are 100% okay. Please let me know if this is an issue as soon as possible.
7. Canvas
   You will need access to a computer and Internet for this course. Lecture slides and other course materials will be posted on Canvas. You may download the Canvas Mobile App to your phone or use the MyPortal to access it.

Prerequisite: C*HEM 1B or CHEM 1BH with a grade of C or better*

Advisory: *EWRT 1A or EWRT 1AH or (EWRT 1AS and EWRT 1AT) or ESL 5*

Grade type: *Letter Grade (see Letter Grade assignments)*

Course Description

The key topics that will be covered in this course include principles of solutions (Chapter 14), buffers (Chapter 18), electrochemistry (Chapter 20), transition metals (Chapter 26), and nuclear chemistry (Chapter 21). The course is divided into two separate instructional periods: the lecture and laboratory sections. Lecture and lab sections must be taken together to pass Chem 1C and will both go towards a single grade. One registration code will enroll for the lecture and lab sections.

Academic Integrity

By enrolling in classes at De Anza College, you are agreeing to the academic integrity policy and are held to all standards. Specifics can be found at https://www.deanza.edu/policies/academic-integrity.html. All forms of cheating (cheating during an exam/quiz or copying/using work other than your own) will result in a 0 for the entire assignment. Academic dishonesty is reported to the disciplinary committee. Academic consequences of a failure of academic integrity may include receiving a lowered or failing grade on a particular piece of academic work, which may lead to receiving a lowered or failing grade for the course. Administrative consequences may include being placed on disciplinary probation, suspension, or expulsion.

Disability Service Support

De Anza is committed to providing support for all students. Please contact me as soon as possible if you would like to use any accommodations and I will be happy to do what I can to help. For more information, visit Disability Service Support at https://www.deanza.edu/dsps/dss/.

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Classroom Conduct

I believe that the role of an educator is to create an atmosphere where students feel valued, are free to express themselves, are enthusiastic about learning, and able to take ownership of their education. I encourage you to ask questions whether in class or by email/Canvas.

Late Work Policy

Late prelab write-ups are not accepted since preparation for safe lab work is mandatory. Prelabs are due by 11:59 the day before the laboratory period. You cannot perform an experiment if you do not submit a prelab. Other late work is accepted, but once an assignment has been graded, submissions of that assignment will be worth half credit maximum. If you anticipate not meeting a deadline for an assignment, please contact me or your lab instructor and we can work together to make an alternate schedule.

Course Schedule.

The tentative laboratory and lecture schedule is found at the end of the syllabus. For lecture final exam schedule, please check the De Anza College website.

Grading Policies

Letter grades are calculated from the percentage of total points accumulated according to the grade distribution shown below:

A: ≥ 93 % A-: ≥ 90% B+: ≥ 87 % B: ≥ 83% B-: ≥ 80% C+: ≥ 77% C : ≥ 70%

Please Note: I will not give any 'W' drops after the drop deadline so be sure to watch for that date and drop the class if you must withdraw. It is your responsibility to officially drop the class. If you do not withdraw before the deadline, you will receive a letter grade (A-F). I will not make any exceptions to this rule.

A grade of 'C' or better is required to pass Chem1C at De Anza College. No artificial curve will be used in grading, meaning the final letter grade is based solely on the number of points earned. Your grade reflects the total points you earned based on the grade distribution shown below:

Lecture Assessment (70% of total grade)

Final exam: 30% Midterm exam: 25% Quiz 1: 12.5%

Quiz 2: 12.5% Problem sets/Homework: 20%

Your mastery of lecture content will be evaluated through written assessments spaced throughout the quarter. DRC arrangements for extended time or other accommodations must be scheduled 1 week in advance for quizzes and midterm exams and 2 weeks in advance for the final exam. This class will cover chapters 14, 18, 20, 21 and 26 from the assigned textbook. All lectures will be held in person from 11:30 AM to 12:45 PM on Mondays and Wednesdays in Room DA-S34. The power point lecture slides will be posted before the lecture on CANVAS.

Quizzes – There are two quizzes worth 80 points each. The first quiz focuses on aqueous equilibrium (buffers, titration, Ksp) and the second quiz focuses on transition metals and electrochemistry.

Exams – There is one midterm exam during the regular quarter, worth 150 points, and a final exam, worth 250 points. The midterm exam focuses on solutions and aqueous equilibrium and the final exam is cumulative, requiring mastery of material covered throughout the entire course. Exam and quiz dates are firm, and no early exams or quizzes will be given. In case of an emergency, please contact me ASAP about the possibility of a make-up exam or quiz. No make-up exams or quizzes will be given after handing exams back to the rest of the class.

Problem sets and homework – Your understanding of general chemistry principles does not end in the classroom. In-class sample problems are part of lecture and are designed to be done in small groups. They are due at the end of the lecture period and submissions are accepted until 11:59 pm that day. They are designed to provide a quick evaluation of your understanding of the lecture material and an opportunity to ask questions while in class. Problem sets or homework are assigned from the textbook or from other sources to give you additional practice with lecture material. The number of points for each problem set homework is assigned on Canvas and varies depending on complexity. After they have been assigned, problem sets/homework are due before the start of the next lecture class (10:00 AM) and are submitted on Canvas individually. A deduction of 10% for every day that the submission is late will be implemented.

Laboratory Assessment (30% of total grade)

Notebook preparation	10%	Data Submission	10%
Laboratory Reports	40%	Laboratory Quiz	35%
Safety/In-lab Participation	5%		

Safety – Labs offer an opportunity to have hands-on learning and extra practice for key chemistry topics/concepts. Critical to this, however, is lab safety. The prelab lecture at the start of lab will discuss important safety hazards, handling chemicals safely, and proper chemical waste disposal. During week 1, there will be a safety review and students will sign a safety contract. Failure to submit the safety contract by the beginning of week 2 will result in being dropped from the course.

Notebook Preparations/Prelabs (10 points each) – Submit a picture of your page 1 Notebook Prep on Canvas on or before 11:59 PM the day before the lab. Notebook preparations are required to ensure that you are prepared for the lab. Students who fail to submit the notebook preparations on time risk not being able to participate in the lab and count as 1 of the 3 lab absences. For multi-day experiments, you are only required to submit one prelab but this should be turned in based on the deadline specified above. In your prelab, please include the following information:

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1) TITLE OF THE EXPERIMENT and DATE STARTED

2) OBJECTIVE – Please write the goal of the experiment in your own words. You may include more than one objective/goal.

3) BACKGROUND – You are expected to make the connection between the relevant lecture material and the lab experiment. Briefly write in your own words the theory behind the experiment you are going to perform. You may include the relevant chemical reactions and formulas.

4) LIST OF REAGENTS - Include a list of necessary STOCK reagents. Make sure all concentrations are noted.

5) SAFETY – Consult the Safety Data Sheet (SDS) that you can find online for the more hazardous chemicals that you will be using in the experiment. You should also include the most hazardous part of the experiment (example is using concentrated HCl) and the safety precaution that you need to follow.

6) EXPERIMENTAL SET UP AND DIAGRAMS – Draw and label the relevant set ups and diagrams for the experiment.

7) DATA COLLECTION – You are expected to write meaningful observations and data as part of the experiment. Have your instructor initial your collected data at the end of the lab period.

8) WASTE DISPOSAL– Specify the expected waste that you will generate in the experiment. Make sure you know where and how to dispose each type of waste material. This will be discussed during the first day of lab.

In-Lab (5 points each) –Critical to successful labs are prompt arrival on time and safe conduct during the lab. After finishing the experiment, clean up, and wipe down your bench to receive the full points, less any lost points for being late and/or safety violations.

Data Submission (10 points each) –Students will be collecting and sharing data for many labs. Each student is responsible for submitting their own data even if you work in small groups in the lab. Data/observations are submitted on Canvas and are typically due by 11:59 pm on the same day as the completion of the lab. Please have your instructor initial your data/observations at the end of the laboratory period.

Lab Reports (15 points each) – To demonstrate understanding of the experiment, labs have data analysis, graphs, and some follow-up questions to be completed. Lab reports are submitted on Canvas and are typically due by 11:59 pm one week after the completion of the lab. For multi-day experiments, the deadline is a week after the last day of the experiment. Lab reports submitted late but within 1 week of the deadline will receive a nominal deduction of 10%. After one week, submissions will lose 20% for each additional week that they are late. When in doubt, contact your lab instructor to discuss your situation to see if there is any way to make-up missing or late assignments. Ideally, contact them before you miss an assignment, but contact them no later than 1 week after the missed assignment for possible options (if any). Make-up or supplemental assignment, however, cannot be guaranteed.

Check-In/Check-Out – Each student will have access to a lab drawer with the lab equipment required to complete the labs. Students will check-in and check-out of these drawers during the first and last lab periods, respectively.

Lab quiz – The lab quiz is a comprehensive quiz covering key lab content. The lab quiz will be given during the last lab period

Lab Attendance

It is department policy that any student with **3 or more lab absences** cannot pass Chem 1C. If you anticipate missing a lab, please contact your lab instructor ASAP to see if any options are available. To make room for students on the waitlist, unexcused lab absences during the first 2 weeks of lab risk being dropped from the course. Missing the prelab lecture at the beginning of an experiment presents unnecessary safety risks to you and your colleagues. For these reasons, lab attendance is critical and will be recorded at the beginning of lab. Up to 5 points can be lost if you do not arrive within the first 15 minutes and arriving more than 15 minutes late risks not being able to complete the lab and receiving a zero for in-lab and lab report points for that experiment. In the event of an emergency and/or extenuating circumstances, please contact your lab instructor as soon as you can about possible options. Unfortunately, make-up options/labs cannot be guaranteed.

Clean Up

Part of your grade is to maintain any common work areas as well as your own laboratory bench at all times. Clean up any minor spills immediately, close all chemical containers, put away all equipment and wipe up your work area upon completion of the lab. Failure to clean up after yourself will cost you lab points and can result in safety hazards so please act responsibly. If you are unsure about how to clean-up a spill, please seek assistance from your instructor.

Rules of Conduct (Laboratory)

- You are expected to be well prepared for the lab, as evidenced by your notebook preparation and your safety awareness (chemical handling, goggles, gloves, etc.)
- You are encouraged to seek help before and during the lab in order to ensure a safe and positive outcome.
- You must adhere to the safety/ hazardous material handling precautions outlined in the Laboratory Contract and the experimental procedure. Failure to do so will result in failing grades and possible dismissal.
- Attendance in the lab is mandatory. Labs cannot be made up. If an illness or other event necessitates that you miss more than two lab meetings, your grade will be compromised.

Academic Support

Academic support can be found at the Learning Resources Division https://www.deanza.edu/learningresources/. Information about tutoring can be found at

the Math Science and Technology Resource Center
https://www.deanza.edu/studentsuccess/mstrc/.

Student Support Services

De Anza College offers a variety of services to help you succeed. For a complete list of services, please visit https://www.deanza.edu/services/.

Tentative Laboratory Schedule Spring 2025

CHEM 1C **SPRING 25**
LAB MEETS TWICE A WEEK

WEEK OF	WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
4/6/25	1	CHECK-IN	CHECK-IN	pKa of INDICATOR(1)	pKa of INDICATOR(1)
4/13/25	2	pKa of INDICATOR(2)	pKa of INDICATOR(2)	BUFFERS (1)	BUFFERS (1)
4/20/25	3	BUFFERS (2)	BUFFERS (2)	BUFFERS (3)	BUFFERS (3)
4/27/25	4	FREEZING POINT (1)	FREEZING POINT (1)	FREEZING POINT (1)	FREEZING POINT (1)
5/4/25	5	Ksp & COMMON ION EFFECT (1)	Ksp & COMMON ION EFFECT (1)	Ksp & COMMON ION EFFECT (2)	Ksp & COMMON ION EFFECT (2)
5/11/25	6	Ksp & COMMON ION EFFECT (3)	Ksp & COMMON ION EFFECT (3)	ANIONS (1)	ANIONS (1)
5/18/25	7	ANIONS (2)	ANIONS (2)	ELECTROCHEM (1)	ELECTROCHEM (1)
5/25/25	8	**MEMORIAL DAY**	ELECTROCHEM (2)	ELECTROCHEM (2)	CATIONS (1)
6/1/25	9	CATIONS (1)	CATIONS (2)	CATIONS (2)	CATIONS (3)
6/8/25	10	CATIONS (3)	CATIONS (4)	CATIONS (4)	CATIONS (5)
6/15/25	11	CATIONS (5)	CHECK-OUT	CHECK-OUT	JUNETEENTH
6/22/25	12	FINALS	FINALS	FINALS	FINALS

Instructor: Deming, Martinovic and Zhu * EXTRA DAY

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Tentative Lecture Schedule (Schedule is tentative, and dates/topics are subject to change in the event of extenuating circumstances)

Week No.	Monday	Wednesday
1	Welcome, Introduction, **Chapter 18** (Aqueous Equilibrium)	**Chapter 18** (Aqueous Equilibrium)
2	**Chapter 18** (Aqueous Equilibrium)/Quiz 1 Review	**Quiz 1**
3	**Chapter 14** (Solutions)	**Chapter 14** (Solutions)
4	**Chapter 18** (Aqueous Equilibrium)	**Chapter 18** (Aqueous Equilibrium)
5	**Chapter 14** (Solutions)	**Chapter 14** (Solutions)/Midterm Exam Review
6	**Midterm Exam**	**Chapter 20** (Electrochemistry)
7	**Chapter 20** (Electrochemistry)	**Chapter 20** (Electrochemistry)
8	**Memorial Day**	**Chapter 20** (Electrochemistry)
9	**Chapter 26** (Transition Metals)	**Chapter 26** (Transition Metals)
10	**Chapter 26** (Transition Metals)/Quiz 2 Review	**Quiz 2**
11	**Chapter 21** (Nuclear Chemistry)	**Chapter 21** (Nuclear Chemistry)/Final Exam Review
12	**Final Exam (please see De Anza site for schedule)**	

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Laboratory Safety Contract

Adapted from the American Chemical Society Safety In Academic Laboratories Guidelines, 7th edition. These minimum safety requirements must be followed by all students and rigorously enforced by all chemistry faculty.

Instructions: All students must read and sign this contract prior to commencing lab activities or checking in to a lab drawer.

Enrollment Limits: Due to safety concerns and space limitations, enrollment for Chem 1ABC, Chem 10, Chem 25, and Chem 30AB is limited to no more than 30 students. Organic Chemistry (12ABC) is limited to no more than 26 students.

In case of an emergency, dial 911 from a classroom phone. If you must use a cellphone, the FHDA police emergency number is 408-924-8000.

Please see https://www.deanza.edu/collegeops/emergencies/evacuation.html for evacuation procedures and other emergency preparedness information.

The following rules must be followed at all times in the lab rooms, regardless of the activity.

1. Shoes that completely enclose the foot are to be worn at all times; NO sandals, open-toed, or open-topped shoes, or slippers, even with socks on, are to be worn in the lab
2. Shorts, cut-offs, skirts or pants exposing skin above the ankle, and sleeveless tops or tops that expose the abdomen may not be worn in the lab: ankle-length clothing must be worn at all times.
3. Eating, drinking, or applying cosmetics in the laboratory is forbidden at ALL times, including during lab lecture. Food and drink containers must be stored outside the lab.
4. Use of electronic devices requiring headphones or earbuds in the laboratory is prohibited at ALL times, including during lab lecture.

The following rules must be followed anytime students have glassware or chemicals out and in use. Note that if some students finish their experiments, they must keep their PPE on while others have chemicals and glassware out.

5. Chemistry Department-approved safety goggles (NOT safety glasses) must be worn at all times once laboratory work begins. Safety goggles must include a flex seal and indirect venting, and carry ANSI Z87.1+ and CSA Z94.3 certifications. Appropriate goggles may be purchased from the De Anza College bookstore.
6. Goggles must be worn at all times after lab lecture, including when obtaining equipment from the stockroom or removing equipment from student drawers, and may not be removed until all laboratory work has ended and all glassware has been returned to all student drawers.
7. Nitrile gloves should be worn when handling chemicals and glassware and removed prior to handing any personal electronic devices.
8. Hair reaching the top of the shoulders must be tied back securely

9. Loose clothing must be constrained
10. Chemically-resistant and flame-retardant lab coats are strongly recommended.
11. Shoes made out of leather or polymeric leather substitute are strongly recommended.
12. Wearing "...jewelry such as rings, bracelets, and wristwatches in the laboratory..." is discouraged to prevent "...chemical seepage in between the jewelry and skin...".
13. Students with a medical condition or disability (e.g. learning, sensory, mental health, or physical condition) that may hinder their ability to participate or succeed in the class safety should contact DSPS to coordinate accommodations. You may also communicate necessary accommodations directly to your instructor, and you are under no obligation to reveal private details.
14. If you are pregnant or experiencing a related condition, you are advised to contact the campus Title IX coordinator (Laureen Balducci, balduccilaureen@fhda.edu) to arrange necessary accommodations.
15. Students are required to know the locations of the eyewash stations, emergency showers, and all exits.
16. Backpacks and other trip hazards must be stored under a desk and walkways must remain clear.
17. Students may not be in the lab without an instructor being present.
18. Students on the waitlist may not participate in lab activities until and unless enrolled in the course.
19. Except for soapy or clear rinse water from washing glassware, NO CHEMICALS MAY BE POURED INTO THE SINKS; all remaining chemicals from an experiment must be poured into the waste bottle provided by your instructor.
20. You may only perform experiments as instructed.
21. At the end of each experiment, all glassware should be cleaned with water and detergent prior to storage.
22. Any chemical spills or broken glassware must be cleaned up immediately. Broken glassware must go in the sharps waste and not in the regular trash.
23. Students are required to follow the De Anza College Code of Conduct at all times while in lab: “horseplay”, yelling, offensive language, or any behavior that could startle or frighten another student is not allowed during lab.
24. Reckless behavior will not be tolerated. If your actions endanger the health and safety of yourself or someone else you will be asked to leave and you will receive a zero for the day.

By signing below, I, _____ _____

(first name) (family/last name)

Acknowledge that I fully understand and agree to abide by the laboratory safety rules listed above. Further, I acknowledge that my failure to abide by these rules will result in my being dropped from this chemistry class immediately.

_____ _____

Signature Date

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Student Learning Outcome(s):

• Apply the principles of equilibrium and thermodynamics to electrochemical systems.
• Apply the principles of transition metail chemistry to predict outcomes of chemical reactions and physical properties.
• Evaluate isotopic decay pathways.
• Demonstrate a knowledge of intermolecular forces.

Office Hours:

M,W	2:00 PM - 3:00 PM	Zoom
M,W	2:00 PM - 3:00 PM	Zoom