General Chemistry III **(Chemistry 1C)**

De Anza College

Term: Spring 2026

Instructor: Rachael Richards

Class Meeting Times

Lecture	**Tues and Thurs:** 6:00-7:15 PM	S46
Laboratory	**Tues and Thurs:** 7:30-10:20PM	SC2208

Course Description

This is the third and final course in the year-long General Chemistry sequence. Topics include advanced equilibrium concepts related to solubility and buffers, followed by introductions to electrochemistry, the chemistry of transition metals, and nuclear chemistry.

Chemistry 1C is the capstone course of the general chemistry curriculum at De Anza College. Building on the foundations established in the first two quarters, this course deepens and expands your understanding of core chemical concepts. By the end of the course, you will have strengthened your ability to perform quantitative chemical calculations and developed a molecular-level perspective that you can carry into future coursework and everyday life. You will also sharpen your information literacy skills by engaging with a primary research article, evaluating its methodology and findings.

The course spans several key themes in general chemistry: (i) physical properties of matter, (ii) atomic structure and reactivity, (iii) transforming and harnessing energy, and (iv) atomic structure. In the lab, you will draw on the practical skills developed in Chem 1A and Chem 1B to tackle more complex physical problems, while also exploring real-world illustrations of lecture concepts.

Homework is structured to reinforce your grasp of molecular concepts and quantitative reasoning. Your mastery of these skills will be assessed through three midterm exams and a cumulative final. The lab section of the course will further develop your hands-on technique and information literacy.

Holidays and Important Dates

Date	Event
April 6	Spring classes begin
April 19	Last day to add 12-week classes

Date	Event
	Last day to drop classes without a W
May 29	Last day to drop classes with a W
June 22-26	Final exams
	Excused Withdrawal If circumstances beyond your control prevent you for completing the course, you may qualify for an excused withdrawal. Please see the following website for more information. https://www.deanza.edu/admissions/withdrawals.html

Course Webpage

The course webpage is through De Anza Canvas. You will be automatically added to the Canvas shell as a student when you enroll in the course. Students on the waitlist do not have access to Canvas. This course webpage is designed to be viewed on a web browser rather than the student app. ***Turn on Canvas notifications*** *to receive class announcements, Inbox messages, and comments/feedback on assignment submissions.*

Community Statement

Every person in this class, regardless of personal history or identity categories, is a welcome and important member of this group. Your experiences are important, and you are encouraged to share them as they become relevant. No person in this group is ever expected or believed to speak for all members of any group(s).

You have the right to determine your own identity, to be called by whatever name you wish, and to be referred to by your pronouns. You have the right to adjust these things at any point. If you find any aspects of facilitation, instruction, subject matter, or program environment that result in barriers to your inclusion, please let me know right away, privately and without fear of reprisal. We are all learning. It is my goal to continue learning and improving to support everyone in this class and, by extension, all my current and future students.

Syllabus Statement

This course syllabus is a contract. Please read it carefully and completely in its entirety before asking me any questions regarding the course schedule, content, requirements, grading, etc. You are expected to adhere to the De Anza College Student Code of Conduct Administrative Policy 5510 at all times. This syllabus is also a living document, and it may be necessary to make minor corrections or changes during the quarter. I will not

make major changes to the syllabus except in cases of force majeure or following class discussion. All corrections and changes to this syllabus will be announced through Canvas.

This class is divided into two separate instructional threads: a lecture portion devoted to the primary course material and a lab period for conducting lab experiments. At De Anza College, the lab and lecture may not be taken as separate courses under any circumstances

About Your Instructor

Contact Information

Instructor: Rachael Richards

E-mail: richardsrachael@fhda.edu

Email or Canvas Inbox is the best way to get in touch with me outside of class. In general, you can expect a reply from me in 24-48 hours. I try to read my emails and messages on weekends but the best time to contact me is during the week. If you haven't gotten a response from me in that timeframe, feel free to message me again!

Office Hours

In-person: Tuesdays | **Time:** 5:00-6:00pm | **Location:** S46

On Zoom: Mondays |**Time:** 9:30-11:00am (or by appointment)

Tips for Success in Chem 1C

1. **Attendance** is everything!!!!! Practicing good attendance in lecture and discussion is directly correlated to success in this course.
2. Attending **office hours** is a great way to get some extra help on your homework. You can come to my office hours and sit and do your homework *(**you don't need to prep questions in advance**... just come on by!)*
3. PRACTICE, PRACTICE, PRACTICE! Working on your HW with time to "try another" and time to ask questions if needed. This course requires a lot of time to study and do the homework properly.
4. Communicate with me EARLY if there is a problem. If you are feeling behind, or you are having trouble with certain topics... do not let it snowball out of control! I am here to help!
5. Take a breath and let yourself think about it. It is okay not to know the answer right away. Try the following when solving a problem:
    1. Read the question a second time.
    2. What are they asking you for? What are you asked to find? What information do you have already? **(AKA: what do you have and what do you need?)**
    3. Take a moment to think about the concepts... make a plan to solve the problem.
    4. Write out the plan to solve the problem in steps
    5. take a deep breath! :)

Enrollment Requirements

Prerequisites

Chemistry 1B or 1BH with a grade of C or better.

Advisory

EWRT 1A or EWRT 1AH or ESL 5. All assignments and assessments are offered and graded exclusively in English.

Late Adds and Add Codes / Drops

I will only give out add codes if space is available during the first week of class. If you are interested in joining the class, you must attend lab and lecture during the first week of the quarter. Students who miss the first lab meeting will not be permitted to enroll in the course under any circumstances. Similarly, if you are enrolled in the course and miss the first lab, you will be dropped from the course during the lab period. I do not give out add codes after the first week of class, and I strongly encourage you to enroll in an open section if you are on the waitlist.

Lab Attendance

Lab attendance on the first day of class is strictly mandatory. Any student who is not present for lab safety and lab check-in will be dropped from the course. Students who miss two labs during the first two weeks of class will be dropped from the course. Missing three or more labs during the quarter may result in a failing grade pending the development of a personal improvement plan.

Supplies and Materials: Lecture

Course Material

1. Required Text: Chemistry: A Molecular Approach, Tro, 6th Edition eText + Mastering Chemistry

This is a high-quality text focused on clarity and student learning. Mastering Chemistry is an online platform used for class homework and includes an electronic version of the textbook with a ***14-week direct purchase price when registering with Pearson: $40.00***

SEE LAST PAGE FOR PEARSON DETAILS

2. Lab Equipment (Required):

- **Goggles**

Goggles are required for the entire lab, along with appropriate clothing such as long pants and closed-toe shoes. Full details on required safety gear will be covered on the first day of lab and are outlined in the lab safety sheet at the end of the syllabus. Goggles are the only required item beyond regular clothing. They must include a flex seal and indirect venting.

- **Lab Notebook**

A lab notebook is also required. It cannot be pocket-sized and must be permanently bound, so loose papers are not acceptable. Beyond those requirements, the format is flexible, and digital notebooks are permitted.

However, please note that electronic devices will not be allowed for referencing notes during the lab final, so any digital work will need to be printed.

- **Lab Manual**

The lab procedures for each lab will be posted as PDFs on Canvas. **You must print each lab and bring it with you to class.** Personal electronic devices are not permitted while hazardous materials are in use.

3. Scientific Calculator (Required):

Logarithm and exponential functions required. You are encouraged to bring your calculator each day to work through examples as they are presented. Phones will not be allowed for calculations during tests.

4. CamScanner or Camera Access (Required):

Much of your classwork will require you to photograph your work and submit it to Canvas. Using your phone is perfectly fine, and apps like CamScanner can be a helpful option for scanning and uploading documents cleanly. Please let me know as soon as possible if this presents any issues. Ask me about CamScanner!

5. **Molecular Modeling Kit (Recommended)**

Many types are available. I like this kit from Duluth Labs, and many dupes are available on Amazon and temu.
https://www.amazon.com/Duluth-Labs-Organic-Chemistry-Molecular/dp/B01N00GAPR?ref_=ast_sto_dp&th=1

Campus Resources

Math, Sciences, and Technology Resource Center (MSTRC) Tutoring.

The MSTRC offers tutoring for the Chemistry 1 sequence and is located in room S43 in the S-quad. I strongly recommend that you study in the MSTRC early and often. They have computers and it is a great place to study for your STEM classes. https://www.deanza.edu/studentsuccess/mstrc/

Disability Support Programs Services

The mission of DSPS is to ensure access to the college's curriculum, facilities, and programs. In particular, DSPS can help you get extended time on examinations. Please reach out to them directly if you have questions.
https://www.deanza.edu/dsps/

De Anza College Library

The library houses the Library West Computer Lab and group study rooms that may be reserved online.
https://www.deanza.edu/library/index.html

Resources for Students

Additional resources may be found at https://www.deanza.edu/services/ . If you need additional resources, I can put you in touch with support services through De Anza Connect. Please give me explicit permission to share any personal information with them.

Student Help Hours

Instructor office hours are the best time to ask questions related to course content in-person. This time is *for you, the student*. Please come!

Time Commitment

This is a five-unit course: each week consists of three scheduled lecture hours and six scheduled lab hours. In addition to in-class time, you should expect to spend an additional **20 hours** a week studying and working on class assignments to excel in this class.

Course Objectives and Learning Objectives

Course Objectives

1. Investigate the behavior and characteristics of solutions.
2. Examine advanced concepts in equilibrium pertaining to buffers and solubility.
3. Explore transition metal chemistry.
4. Apply fundamental principles of equilibrium to electrochemical systems.
5. Investigate nuclear chemistry.

Learning Objectives

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

Active Course Outline

You can find a copy of the active course outline of record for this class at:
https://www.deanza.edu/catalog/courses/outline.html?cid=chemd001c

Attendance Policy

- Notify your instructor via Canvas message as soon as possible if you will be absent or late.
- Documented emergencies (hospitalization, court appearance, car crash) may result in an excused absence, handled case by case.
- Our lecture notes will be posted on canvas. But it is your responsibility to get notes from a classmate if you miss class.

Late Work Policy

- Extensions and exceptions must be asked for and granted in-person.
- Late labs are generally not accepted under any circumstances.
- If you know you will miss a dry-lab day, contact your instructor in advance about submission requirements.

Laboratory Safety

All chemistry laboratories inherently come with associated risks and hazards. It is inevitable that some accidents will occur during your chemistry course work. When a minor accident occurs, ***inform your instructor immediately*** and ***do not attempt to clean-up any broken glassware or spilled chemicals by yourself.*** In order to ensure that the lab is as safe as possible, we must (1) ***Recognize hazards***, (2) ***Assess the risks of hazards***, (3) ***Minimize the risks of hazards***, and (4) ***Prepare for emergencies***.

You have the right to advocate for yourself. If you feel a particular procedure or chemical is unsafe, or a specific accommodation will enhance your lab experience, I welcome your feedback. I may not have an answer or solution for you right away, but I will work on your behalf to make sure that you can complete the labs safely.

From the American Chemical Society Safety In Academic Laboratories Guidelines, 7th Ed., the following mandatory minimum safety requirements must be followed by all students and be rigorously enforced by all chemistry faculty:

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.

Reckless behavior will not be tolerated. If your actions endanger the health and safety of yourself or another person, you will be asked to leave and you will receive a zero for the lab and related assignments. In extreme cases, you may lose your lab privileges for the remainder of the quarter and/or fail the course.

Academic Integrity Policy

The process of learning requires physical changes to occur in your brain. *Cognitive research demonstrates that consistent practice and learning to recognize mistakes are key aspects of the learning process*. As such, all students should be aware of the De Anza College policy on academic integrity outlined at https://www.deanza.edu/policies/academic_integrity.html. The following text is reproduced from the De Anza College manual: *the college is committed to providing academic standards that are fair and equitable to all students in an atmosphere that fosters integrity on the part of student, staff and faculty alike. The student’s responsibility is to perform to the best of his or her potential in all academic endeavors. This responsibility also includes abiding by the rules and regulations set forth by individual faculty members related to preparation and completion of assignments and examinations.*

All submitted work must reflect your own understanding and be written in your own words. Cheating, copying, and plagiarism will not be tolerated. Stick to required readings and instructor-approved sources, and have any outside sources vetted by the instructor before using them. Tutoring services are permitted for homework as long as they guide you toward solutions rather than simply providing answers. Chegg, CourseHero, Reddit, and similar answer-providing sites are explicitly forbidden for all assignments, and posting assignments to these sites is considered intent to cheat. When in doubt about a resource, ask the instructor.

You may collaborate with classmates on lecture homework, but all submitted work must reflect your own understanding. Never share your work with another student. If asked, direct them to the instructor instead. Identical submissions from two students will result in an academic dishonesty violation for both. Suspected cheating on a quiz will require a face-to-face meeting with the instructor.

Any incident of cheating or plagiarism, no matter how minor, will be reported to the Dean of Student Development and the Dean of Physical Sciences, Mathematics, and Engineering, and additional grade penalties will apply beyond any administrative consequences (see Grading Specifications Table). Academic dishonesty discovered within two years of course completion will result in a grade change. Widespread violations may also result in major course restructuring, including the addition of an oral exam or exit interview. The instructor is committed to supporting your learning and encourages you to ask questions and raise concerns early.

Grading Policies and Assignment Types

Lecture	**60% of total grade**
Homework	10%
Quizzes (3 total)	15%
Exams (3 total)	35%
Laboratory	**40% of total grade**
Pre-lab Lab Notebooks	8%
Safety/In-Lab Participation	2%
Post-Lab Assignments	20%
Lab “Midterm” Assignment	10%

Description of Assignments

Homework

Homework can range from readings to problem sets. Problem sets will be assigned weekly and graded/returned within the week they are submitted.

Quizzes

There are three quizzes in this course. **These quizzes are all take-home.** These quizzes will act as practice exams and are made up of questions that reflect the type of questions you might see on the exams. These quizzes are a great way for you to gage your understanding of the material before the exams. You will receive feedback and time to work out any problems before test day!

Exams

There are two midterm exams and one final exam. 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.

Lab Notebooks: Pre- and Post-Lab Assignments

Pre-lab assignments

To receive credit for your prelab assignment, you must have the following with you when you arrive to lab: (1) print out of the lab procedure from the lab manual (2) "NB-DTs" – your notebook data tables. We will discuss this on the first day of lab 4/7.

Post-lab assignments

Posted to canvas, in the lab "*Post-lab assignments"* section, you will find your post-lab assignments. These are due one week from the day the lab was performed.

Lab "Midterm" Assignment

This assignment will be discussed on the first day of classes, 4/7.

Grading Scale

This rubric is subject to change throughout the quarter.

Grade Percentage

Grade	Range
A+	>95
A	90-95
A-	88-90
B+	86-88
B	83-86
B-	80-83
C+	76-80
C	70-76
D	60-70
F	<60

Note that grades for individual assignments will be entered in Canvas; however, the gradebook and assignment types may not be finalized until the end of the quarter. I encourage you to make your own spreadsheet to keep track of your letter grade throughout the quarter. The student-facing gradebook in Canvas is limited and may not be an accurate representation of your grade throughout the quarter. I will try to update grades every Sunday, but please come talk to Rachael during office hours if you have questions about your grade.

Lecture Schedule

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

Week Number	Tuesday	Thursday	What is Due?
1	Welcome! Introduction to Chem 1C policies and procedures.	Chapter 18	No HW first week
2	Chapter 18	Chapter 18	**Homework 1** Sun 4/19 at 11:59pm
3	Chapter 18	Chapter 14	**Quiz #1** Sun 4/26 at 11:59pm
4	Exam #1 Review*	**Exam #1**	**Homework 3** Sun 5/3 at 11:59pm
5	Chapter 14	Chapter 14	**Homework 4** Sun 5/10 at 11:59pm
6	Chapter 14	Chapter 20	**Homework 5** Sun 5/17 at 11:59pm
7	Chapter 20	Chapter 20	**Quiz #2** Sun 5/24 at 11:59pm
8	Exam #2 Review*	**Exam #2**	**Homework 7** Sun 5/31 at 11:59pm
9	Chapter 20	Chapter 26	**Homework 8** Sun 6/7 at 11:59pm
10	Chapter 26	Chapter 21	HW catch up
11	Chapter 21	Final Exam Review*	**Quiz #3** Wed 6/18 at 11:59pm
12	**FINAL EXAM** (see official De Anza schedule)		

*= we may need to change this based on our pace.

Laboratory Schedule

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

WEEK	TUESDAY	THURSDAY
1	CHECK-IN	pKa of indicator (1)
2	pKa of indicator (2)	Buffers(1)
3	Buffers (2)	Freezing point (1)
4	Freezing point (2)	Ksp and Common Ion Effect (1)
5	Ksp and Common Ion Effect (2)	Anions (1)
6	Anions (2)	Electrochem (1)
7	Electrochem (2)	Cations (1)
8	Cations (2)	Cations (3)
9	Cations (4)	Cations (5)
10	Cations (6)	Cations (7)
11	CHECK-OUT	CHECK-OUT
12	FINALS	FINALS

Pearson | Mastering | Chemistry

Student Registration Instructions for Canvas

First, open your Pearson content

1. Log in to Canvas as a student and enter your course.
2. Depending on your course setup, do one of the following. Don't know your setup?
   - Select **MyLab and Mastering** or **Access Pearson** in Course Navigation.
   - Select a Pearson link in a module.
   - **Barnes & Noble, Follett Willo, RedShelf, and VitalSource:** Select the Course Materials link and then check your opt status. If applicable, select **Launch Courseware** or **Access Courseware**.
3. If prompted, select **Open Pearson**.
4. Select **Open MyLab & Mastering** to go to the course home page or select a link under Student Links.

Next, get access to your Pearson content

1. Link your student Canvas and Pearson accounts. In some cases, your Pearson account might be automatically created and linked for you.
2. If prompted, select an access option:
   - Enter a prepaid access code that came with your textbook or from the bookstore.
   - Buy access using a credit card or PayPal account.
   - If available, get temporary access without payment.
3. Select **Go to my course**.

We recommend you always enter your Mastering Chemistry course from Canvas.

Need assistance?

Browser requirements

Student Help

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:

TH	5:00 PM - 6:00 PM	S46
M	9:30 AM - 10:30 AM	Zoom