

**DeAnza College**  
**Chemistry D001C-07 (CRN: 13493)**  
**Course Syllabus**  
**Summer-2023**

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<b>Laboratory Instructor:</b>	<b>Nayereh Rezaei</b>		
Lecture:	MTWTh	11:30 AM – 12:45 PM	Room S34
Laboratory	MTWTh	08:30 AM - 11:20 AM	Room SC2208
<b>Prerequisites:</b>	<b>C or better in chemistry 1B</b>		

**Course Description:**

Chemistry1C is a continuation of chemistry 1B and covers principles of solutions, buffers, aqueous ionic equilibrium, oxidation-reduction chemistry, electrochemistry including the thermodynamics of voltaic cell, coordination chemistry (transition metals) and nuclear chemistry.

**Required Materials:**

- Textbook: Chemistry: The Molecular Nature of Matter and Change, Silberberg and Amateis, 9<sup>th</sup> Ed.
- **Lecture** slides are available on my Canvas Site
- Lab Experiments for Chem1C are available at:
- <https://www.deanza.edu/chemistry/Chem1C.html>
- Online access and printing capabilities.
- Scientific calculator:( TI-83, -84 or -89 recommended)

**Homework: (On-Line):**

“**Aktiv**” is a web-based tutorial/homework program used to assign homework for this class. A portion of your overall grade will be based upon the use of this software. **Therefore, access code is required!** Your access code for chem 1C homework is: **LCRUNZ**.

A key factor for your success in this class is to do the assigned homework independently, and to understand the methodologies in problem solving. Not only are you rewarded for doing the homework, but the greater rewards come with the skills you've acquired from the homework to help you perform much better in midterm exams.

**In order to do and receive credit for the homework, you must enroll in my online homework class:**

**Homework:**

**Reading Assignment:**

The key to success in chemistry is regular study. It is important to study regularly, preferably daily.

**Homework Exercise:**

Graded online assignments facilitated through “Aktiv Chemistry.”

## Grading:

Two midterm exams will be given during the quarter. Grading will be based upon two midterm exams, a final, and laboratory work. When computing course grades, each student's overall percentage will be determined from the following:

2 midterm exams (15% each)	30%	<b>65% Lecture</b>
Final exam	25%	
Online assignments	10%	
3 Laboratory Tests (5% each)	15%	<b>35% Laboratory</b>
Laboratory Reports	20%	

Letter grades will be assigned on a percentage scale as tentatively listed below:

<b>A+ &gt; 96%</b>	<b>B+ &gt; 85%</b>	<b>C+ &gt; 73%</b>	<b>D+ &gt; 62%</b>	
<b>A &gt; 90%</b>	<b>B &gt; 80%</b>	<b>C &gt; 65%</b>	<b>D &gt; 58%</b>	
<b>A- &gt; 88%</b>	<b>B- &gt; 78%</b>		<b>D- &gt; 55%</b>	<b>F &lt; 55%</b>

If your average lecture exams score is less than 50%, or your average laboratory assignments/reports score is less than 50% you will not receive a passing grade.

### Lecture Exams Dates:

**Exam # 1: Wednesday (07/19)**

**Exam # 2: Wednesday (08/02)**

**Final Exam: Thursday August 10 (11:30-1:30 PM)**

***Incomplete grades*** are only given for extenuating circumstances; for example, VERIFIED illness or legitimate emergencies. If an incomplete is given all exams and lab work prior to the incomplete are still counted in your grade, only material that has not yet been completed can be made-up in the future. **YOU MUST BE PASSING THE COURSE TO RECEIVE AN INCOMPLETE GRADE.**

### Lab Tests Dates:

**First Lab Test: TBA**

**Second Lab Test: TBA**

**Third Lab Test: TBA**

### Make-up Exams:

Make-up exams will **NOT** be given.

## Lecture Content

COURSE TOPICS	TEXT COVERAGE	RECOMMENDED TEXT PROBLEMS
Chapter 13 Properties of solutions	All sections	
Chapter 19 Aqueous Ionic Equilibrium	all sections	,
Chapter 21 Electrochemistry	all sections	
Chapter 23 Chemistry of Coordination Compounds	all sections	
Chapter 24 Nuclear Chemistry	Time permitting	

### **Resources:**

**Your instructor:** See me regularly for help, do not wait until the week or day of a test.

**Other students:** Help each other to learn (not copy)

Resources: 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/>.

**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/studenthandbook/academic-integrity.html>.

Cheating during an exam/quiz or copying/using work other than your own for a lab will result in a 0 for the entire assignment, regardless of what percentage of the work is from cheating. Worse than a 0 on an exam, I am required to report such incidents to the disciplinary committee, who will make a note of the incident on your transcript, which then becomes visible to 4-year colleges upon reviewing your transfer application.

## **SPECIAL ACCOMMODATIONS**

Disability Service Support: De Anza is committed to supporting all students. Please contact me as soon as possible if you require special 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/dss/>

## **CHEMISTRY 1C LABORATORY:**

**The laboratory is an integral part of the course; an F in the lab will result in an F for the final course grade.**

Since chemistry 1C is an experimental course, the presence of the student in the laboratory is essential for the understanding of the materials covered. A student may be dropped if **3** or more unexcused lab absences are counted. Missed labs cannot be made up unless you have my approval to make up the missed lab by attending an alternate lab meeting. You may miss one lab without penalty. I may allow for emergencies and other complications in life.

### **Required Materials for Lab:**

#### **Lab Materials (Required):**

**a. De Anza Lab Experiments: Available online at:**

**<https://www.deanza.edu/chemistry/Chem1C.html>**

**b. A Scientific Calculator**

**c. OSHA-approved Safety Goggles (Indirect Vent, Z87)**

**d. CAREFULLY read the attached De Anza Chemistry Department laboratory policies and safety and housekeeping rules. You must complete and turn in the Student Contract (provided by instructor) by the second lab meeting. You will not be allowed to attend lab until the Contract is signed and turned in.**

### **LAB POLICIES:**

#### **LABORATORY CHECK-IN**

Locker check-in will take place the first day of lab. It is your responsibility to make sure that all glassware is present and unbroken at the time you check in. If at any point after the first day of lab you need to replace an item in your locker, your student account will get charged for it. If you drop this course, then you must arrange to check-out your locker with your instructor during your regularly scheduled lab period. The stockroom technician or other instructors **WILL NOT** checkout lockers for any students. Any person who has not checked out by the end of the last scheduled lab period for the quarter will have an administrative fee added to their student account and a hold put on their registration.

#### **LABORATORY PROCEDURES AND POLICIES:**

All students are expected to arrive to lab on time and to come to lab prepared to carry out the experiment scheduled for that session. This means that you have studied the experiment for the day, have a basic understanding of its purpose and procedure, the chemistry involved your laboratory.

I ask that all students do a conscientious and thorough job of cleaning up after themselves, whether it is in their own work area in the lab, or shared areas such as the chemical supply table and balance room.

#### **LABORATORY SAFETY:**

Laboratory safety is an everyday assignment. Being safe in the lab is a top priority. The importance of safety in the laboratory will be reviewed the first day of lab. Any unsafe behavior, intentional or

not, will be noted and may be cause for dismissal from the class. For your protection, safety goggles with indirect ventilation and an ANSI minimum rating of Z87 must be worn AT ALL TIMES in the laboratory. ONE warning will be issued to any student that is observed wearing their goggles on their forehead, hanging them around their neck, etc... instead of wearing over their eyes. If the warning is disregarded, expulsion from the lab and a zero on the assignment may result.

#### **LABORATORY LECTURE:**

The beginning of each laboratory session is designated as a laboratory lecture period for which you must be on time in order to perform the scheduled experiment. The instructor will use this lecture period to outline important details of the procedure, overview theory and calculations, and to emphasize safety hazards and proper chemical disposal. If you are more than 10 minutes late for lab lecture, you will not be allowed to do the experiment for that day.

#### **ATTENDANCE:**

Attendance is required at all scheduled laboratory sessions. NEVER plan on missing a lab. You will receive a zero on the second lab you miss and will fail the course on the third. These absences include those in which you arrive too late for lab lecture and are thus not allowed to complete the experiment. I may allow for emergencies and other complications in life. Additionally, do not plan on leaving lab early. Labs will regularly take the total amount of time allotted. **CHEMICAL DISPOSAL** As a concern for the environment and to follow county, state and federal law, proper chemical disposal is essential. Students who do not comply with directed procedures may be expelled from the lab or failed in the course for repeated offenses. Check with the instructor if you have any questions.

#### **Lab Reports**

Lab reports are due one week after you finish the experiment. There will be 10% deduction for late lab reports up to one week. There will be 50% deduction for lab reports that are more than one week late.

#### **A complete lab report must consist of the following sections:**

##### **1) Pre-lab Includes the following**

- a) **TITLE:** One-line description of the title of the experiment
- b) **SUMMARY or objective:** This section will describe the purpose, goal and the experimental technique(s) used in the simulation. It must be somewhat expanded to include a summary of the important experimental observations/findings.
- c) **INTRODUCTION:** This part may consist of a paragraph describing the background theory, concepts and principles upon which the experiment is based.
- d) **EXPERIMENTAL METHOD:** This part must include the following:
  - (a) **Equipment & Method:** Consists of a list all equipment and reagents (with correct names and concentrations) that are used to carry out the experiment.
  - (b) **Experimental Procedure:** Must include a list of major experimental steps/sequence that must be followed to attain the experiment's final result.

##### **2) Final Lab Report: Includes the following**

- a) **RESULTS & DISCUSSION:** This must consist of all the data tables, Calculations, a brief discussion about the results obtained, whether they are consistent with your expectations,

and include comments/explanations on any interesting or unusual observations as well as potential sources of errors.

- b) **ATTACHMENTS:** All your experimental data, data tables, calculations, graphs and answers to post lab questions must be attached to this report.

**Important Notes:** Items 1-5 must be typed.

**Lab Tests:** Lab tests will be based on the laboratory experiments and exercises; and will cover the chemistry, calculations and conclusions of the experiments. Critical thinking is required.

**Important Dates:**

Last Day for Adds	July 10, 2023
Census Date	July 11, 2023
Last Day for Drops w/ Refund	July 05, 2023
Last Day for Drops w/o W	July 05, 2023
Last Day for Drops	August 01, 2023

**Chemistry 1CLaboraty**

**Summer 2023**

WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>1</b> (7/3)	<b>CHECK-IN</b>	<b>HOLIDAY</b>	FREEZING POINT (1)	FREEZING POINT (2)
<b>2</b> (7/10)	Pka OF INDICATOR (1)	Pka OF INDICATOR (2)	BUFFERS (1)	BUFFERS (2)
<b>3</b> (7/17)	Ksp & COMMON IONS EFFECT (1)	Ksp & COMMON IONS EFFECT (2)	ANIONS (1)	ANIONS (2)
<b>4</b> (7/24)	ELECTROCHEM (1)	ELECTROCHEM (2)	CATIONS (1)	CATIONS (2)
<b>5</b> (7/31)	CATIONS (3)	CATIONS (4)	CATIONS (5)	CATIONS (6)
<b>6</b> (8/7)	CATIONS (7)	<b>CHECK-OUT</b>	<b>LAB FINALS</b>	<b>FINALS</b>

## **Chemistry 1C Expected Outcomes!**

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

## **Rules for Safe and Efficient Chemistry Laboratory Operations**

### **Safety Rules:**

1. Prepare for each experiment by reading all of the directions before lab starts.
2. Locate the Safety Equipment. Know the locations of the eye wash, safety shower, fire extinguishers, fire blankets, first aid kit, fume hoods, telephone and all exits that are to be used in an emergency. Your laboratory instructor will describe the use of the safety equipment.
3. Protect your eyes. Wear approved eye protection at all times. Your laboratory instructor will inform you which of these you must have. Goggles provide maximum safety. Prescription glasses, if you need them, must be worn under approved eye protection. Contact lenses should not be worn in the laboratory because fumes may accumulate under the lenses and injure your eyes and the lenses make it difficult to flush chemicals from your eyes.
4. Tie long hair back. This precaution will keep your hair out of burner flames and harmful chemicals.
5. Do not wear clothing with loose, flowing sleeves. This precaution will keep your sleeves out of burner flames and harmful chemicals.
6. Wear shoes that cover all of your feet. Broken glass on the laboratory floor and spilled chemical reagents are all too common. Shoes that cover your feet completely will protect them from broken glass and chemical splashes. The best types of shoes are closed-toe made out of leather.
7. Wear clothes that cover your torso and your legs to the knees. Clothing will give your body needed protection. Good clothing can be protected with a lab apron or coat.
8. Do not eat or drink in the laboratory.
9. Do not taste any chemical reagent.
10. Do not smell chemical reagents directly. When you are instructed to smell a chemical, do so by gently wafting the vapors toward your face. Do not inhale deeply.
11. Do not pipette solutions by mouth. Use a rubber suction bulb to fill the pipette.
12. Do not work with flammable liquids near a flame.
13. Do not engage in games or horseplay in the laboratory. Never run in the laboratory.
14. Do not attempt unauthorized experiments in the laboratory.
15. Do not work in the laboratory in the absence of your instructor or his or her authorized representative.
16. Use a fume hood when required.
17. Handle glass tubing and thermometers carefully. When inserting glass tubing or thermometers through a rubber stopper, always hold the glass close to the stopper and use a lubricant such as glycerin to help the glass slide through the stopper. Do not continue to try to force glass through a stubborn stopper, get a new stopper and/or get help. When inserting a pipette into a pipette bulb, hold the pipette near the bulb and GENTLY insert the pipette.
18. When diluting, never pour water into concentrated reagents. Always pour the reagent into the water.

19. If you spill a chemical reagent on yourself, immediately flood the exposed area with water and then summon the laboratory instructor. Inform the instructor immediately about any other accidents or spills.
20. Take note of the following: Is anyone reading this? I somewhat doubt it. Let me know if you read this. I'll give you a bonus point for participation. And good direction following. Don't tell anyone else. I'll know.
21. Be aware of your neighbors. Are they obeying the safety rules? A neighbor's accident may injure you.
22. Avoid touching your face and rubbing your eyes while in the laboratory. If you must do so, first wash your hands.
23. Wash your hands before leaving the laboratory.
24. Never heat a closed container. Pressure builds up can cause the container to explode.
25. Assume any chemical is hazardous if you are unsure.
26. Do not violate any other safety rule issued by your laboratory instructor.

#### Housekeeping Rules:

1. Clean up broken glass immediately with a broom and dustpan. Do not use your hands. Dispose of broken glass in the special container that is provided, never in a regular trash can.
2. Chemical spills must be cleaned up immediately. Immediately notify your instructor who will advise you how to clean it up and/or assist you. Dispose of the collected contaminated chemical properly as instructed.
3. Do not pour any chemical down into the sink or in the trash without authorization. Clearly labeled disposal bottles will be provided when needed.
4. Take containers to the stock of chemical reagents. Do not bring stock chemicals to your laboratory bench.
5. Read the label on a reagent bottle carefully. Is it the correct chemical? Is it the correct concentration?
6. Do not insert your own pipette, medicine dropper or spatula into a stock bottle.
7. Use special care with stoppers or tops of stock bottles. Do not allow them to pick up contamination. Your instructor will provide additional instructions for handling the stoppers or tops found in your laboratory.
8. Always replace the stopper or top of a stock bottle when you are finished taking some of the reagent. Make sure that you put the stopper or top back onto the correct bottle.
9. When pouring liquid from bottles, hold the bottle with the label against the palm of your hand so that the liquid is poured from the side opposite the label. If any liquid runs down the outside of the label, immediately wipe off the liquid.
10. Do not take any more of a reagent than is required. Many of the chemicals used in the laboratory, including deionized water, are costly.
11. Never return any unused reagent to a stock bottle. If you take too much of a chemical, dispose of it as directed by your instructor or offer it to a classmate who needs it.
12. Set up your glassware and apparatus away from the edge of your laboratory bench.
13. Thoroughly clean the area around your laboratory bench and the top of your laboratory bench before leaving lab.
14. Keep shared areas of the laboratory clean. This includes areas such as the balance room and where the stock bottles are stored. It is especially important to keep the balances clean and free of chemical spills.
15. Keep your laboratory equipment clean. Good results depend on clean equipment.
16. If a piece of equipment containing mercury is broken, inform your laboratory instructor immediately. Keep the area blocked off to avoid scattering the mercury.
17. Follow any other housekeeping rules given by your laboratory instructor.



**Student Learning Outcome(s):**

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

**Office Hours:**