

De Anza College-Spring 2022 (4/6-6/24)

Chemistry 1C, General Chemistry and Quantitative Analysis

Course Meeting Times and Dates Spring 2022:

Live, In person Lab at De Anza Campus SC2202

Tuesdays & Thursdays 2:30pm- 5:20pm

Online, Synchronous Lecture Tuesdays & Thursdays 12:00pm- 1:15pm

This class will cover the principles of solutions, buffers, electrochemistry, transition metals, and nuclear chemistry and completing a basic study of the fundamentals of inorganic chemistry.

This course is divided into two separate instructional periods; the lecture and laboratory sections. The lecture portion is devoted to discussing concepts and practicing the related calculations, while the laboratory portion gives a chance for students to use their acquired knowledge in a lab setting. Scores for both parts will be combined for one final grade in the class, with laboratory representing about a third of the class total.

Intended Audience:

This is a rigorous class is aimed at science majors, pre-health, and pre-medical students. In addition, it is appropriate for returning students interested in chemistry and professionals in other disciplines considering a career change to the sciences.

Prerequisites:

It is recommended that students have completed the Chemistry 1B or equivalent with a grade of 'C' or higher.

Instructor:

Diane Wakeham, Ph.D. wakehamdiane@fhda.edu

<https://orcid.org/0000-0001-9893-372X>

Office hours: Wednesdays, 1:00- 2:00pm via zoom.

Course Requirements:

- A bound **laboratory notebook** with carbonless duplicate pages is required (sold in the [bookstore](#) or elsewhere)
- **Scientific Calculator.** Logarithm and exponential functions required, NO GRAPHING CALCULATORS. 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.
- **Lecture Text:** CHEMISTRY: The Molecular Nature of Matter and Change, Silberberg and Amateis, ge. Other editions will be essentially the same and will work great to study, and problem sets will NOT be taken from the textbook so **any** edition may be used. Although there are online text options, we will NOT be using CONNECT or ALEKS this quarter. There are multiple options to obtain the text for this course, depending on your specific needs.
 - a. **Option 1** – Hard copy text. This can be a used copy of any edition. This is the way to go if you prefer hard copies and is a great choice if you want a quality chemistry textbook to reference in the future.
 - b. **Option 2** – go day access to an electronic text specifically for CHEM 1C. This is a great, cheap option that will give you go day access to an electronic text for the chapters in this class (CHEM 1C) only. At the De Anza online book store has this option with ISBN: 9781307600971.
- **Safety Goggles.** Proper eye protection is required for every lab. Goggles must seal to the face with an elastic strap and be specifically for chemistry.
- **Internet Access** – The laboratory manual is available online at <https://www.deanza.edu/chemistry/Chem1C.html>. For much of your work, you will need to either take a picture of your work or type in a document and submit to CANVAS.

Technical Requirements and Access to Online Resources:

Please check your computer specifications. This course uses the Learning Management System (LMS) called CANVAS to turn in some assignments. In order to use CANVAS, your computer will need to meet the technical specifications and follow instructions as per the [Canvas Student Guide](#). Please review our online classroom orientation resource to learn more about CANVAS.

- CANVAS 24/7 Help Support (for technical issues):
- Phone: 855-308-2758
- Email: support@canvas.com

Class Registration. We are limited by the space in the lab and COVID crowding protocols. The class will be filled based on the official roster provided by the De Anza Admissions and Records, including an official waitlist. Students on this waitlist are welcome to come for the lecture. Since these will be through Zoom, I will make sure to create a waitlist mailing list to give invites to lecture for the first two weeks. To maintain their spot on a waiting list, the students must attend the lecture.

Laboratory Safety

Safety in the laboratory is our top concern. A student who disregards safety rules might be asked to leave the room, therefore earning zero points for the experimental observations. See laboratory safety guidelines link for a full list of safety rules. You do not have a lab partner and all experiments are expected to be done individually. Duplicate data on two students lab reports or falsification of data to obtain the "right" result are considered cheating. Students will not be penalized for errant data as long as a good faith effort was made to follow directions, it was collected safely and carefully, experiment was completed, and they can recognize and explain the most probable errors in the laboratory report.

Attendance

Please note that good attendance is critical. Laboratory absences usually cannot be made up due to constraints on available laboratory space (limited under covid rules), materials, and time. A missed experiment or portion thereof will earn zero points.

Grade Weighting:

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|---|---------|
| • Laboratory Reports- (5 labs x 25 pt ea) | 125 pt |
| • Lab Report C6 x 75 pt | 75 pt |
| • Worksessions (10 pts x 7) | 70 pt |
| • Homework (10 pts x 8) | 80 pt |
| • Quizzes (2) | 150 pt |
| • Midterms (2) | 300 pt |
| • Final Lab Practical | 50 pt |
| • Final Examination | 150 pt |
| • TOTAL | 1000 pt |

This class (Chem 1C) will cover chapters 13, 19, 21, 23, and 24 from the assigned textbook. All lectures will be held through Zoom during the indicated time period with a live instructor (**synchronous**). The zoom link will also be on CANVAS under "syllabus". The PowerPoint lecture slides will be posted before the lecture on CANVAS under "modules", and a link to the recording of the lecture will be posted after under "modules".

Midterm Exams. This quarter, there will be a total of 2 midterm exams (150 points each). Questions will range from easy to difficult. Midterm questions will be multiple choice, short answer, or free calculation. If you are having difficulty completing the homework questions for that chapter, I urge you to get help *before* taking the test.

Midterms will be done in person during the laboratory period. A reference page of equations and a periodic table may be provided for all exams and quizzes.

Lecture Quizzes. Quizzes will be given between the exams to make sure everyone is keeping up with the material throughout the quarter. The quizzes are worth **75 points** each, will take about 15-20 minutes, and will be given in person at the beginning of lecture, so late attendance may result in missing time for the quiz. Quizzes will be short answer or simple calculation.

Lecture Final. The lecture final is worth **150 points** and will cover all chapters but will have about 60% of the questions from chapters 23 and 24 (semi-comprehensive final). The date and time for the final exam will be Friday June 24 from 11:30AM to 1:30PM. Note that this is a change as they cannot take place on previously arranged June 20 due to the new federal Juneteenth Day holiday. Delivery is the same as the other exams. Final exam questions will be multiple choice, short answer, and multi-step calculation.

Homework.

Homework problems will be assigned and due weekly, and are not necessarily drawn from the textbook. You will be graded based on effort, or problems credibly attempted and work shown, and spot checked at random for correctness of answers. I will also give a solution key so you can check your own work. Test questions will be similar to some homework questions, so it is important to practice each problem. Late work may be accepted with a penalty until an answer key is posted.

Additional ungraded recommended practice problems will sometimes be from the end of chapter and will cover calculations as well as conceptually based problems. Doing all of the suggested problems is recommended and you are strongly encouraged to go beyond the listed problems and try other problems throughout the book.

Worksessions

Worksessions differ from homeworks, in that worksessions are intended to be collaborative and completed during lab time together, and homework is done individually at home. If you are to attend a lab remotely rather than in person, you will be given a worksession to complete. Such assignments can be done in a zoom room, through in person collaboration with a study group, or individually, as you prefer. Each person shall turn in their own worksession even if it represents a group effort. You will be graded based on effort, or problems credibly attempted and work shown, and spot checked for correctness of answers. I will also give a solution key and strongly recommend that you check your own work. Late work may be accepted with a penalty until an answer key is posted. If a worksession is not completed within a 3 hour lab period, the student can either finish the rest individually or submit a record of how long they spent completing the given problems, with whom they worked, and which were the most difficult/ time consuming.

Laboratory Reports

The majority of your lab grade will come from your laboratory reports. This has a specific required formatting with three general sections.

- **Prelab (done before you come to lab, duplicate pages are due as you walk into lab)** You read through the experimental procedure and prepare for lab by writing relevant sections in your notebook.
 - Prelabs must include
 1. Purpose of experiment (one or two sentence summary)
 2. Hazards (looking up MSDS for all chemicals used)
 3. Procedure, summarized briefly
 4. Hypothesis (what do you think the results will be like?)
 5. **Blank Tables** to hold the collected data.
- **Experimental Observations (due as you walk out of the laboratory** when the experiment is finished)
(All laboratory work/data must be handwritten DIRECTLY into the lab book (not on a printout of the lab manual) in ink. Electronic recording is not acceptable. I reserve the right (and will occasionally exercise it) to discard any lab information not written directly into the lab book; I will not accept work that does not reflect

the actual observation of the student. Safety violations may result in expulsion from that laboratory experiment with no opportunity to make up the grade. Experimentals must include

1. Raw data collected in the lab
 2. Observations, a written note about what you saw or noticed while you did the lab, especially notes if something maybe went wrong.
- **Analysis and Results (due at the beginning of the next in person lab period)**
This may be done on duplicate pages or a Canvas scan/ photo of lab manual, or in your own electronic document. Analysis must include
 1. Calculations and calculated data tables. You must show one example (the long way, what was multiplied by what) for each type of calculation. I understand that for multiple trials, you may enter the data straight into your calculator or even use a computer program, so I do not need to see every single calculation, but please include the result of all trials when reporting a final average.
 2. Sources of Error: A paragraph discussion on probable sources of error in your results. This description should go beyond simple factors like human error and should connect an aspect of the experimental design or procedural step to any discrepancies between the experimental and expected values. That is, explain thoughtfully how an error could have affected your result by following this error through the calculation process.
 3. Conclusions, as appropriate. Restate the key results (only include the values or conclusions that directly relate to the experimental goal) and a sentence or two about how they were obtained.

NOTE you are NOT penalized for weird lab results. You might be penalized for not following instructions, for not properly recording your data (sig figs are a big deal), or for failing to explain a weird result with a source of error.

Lab Quiz

I anticipate only one lab quiz. The final Quiz may be given during classtime or may be assigned to be done at the student's convenience before a due date/ time.

A lab quiz is closed book, closed note, and is an individual's independent work. It may be written or practical work (ie. Make a solution...)

This class is not curved. Standard grades (0-59% F, 60-69% D, 70-79% C, 80-89% B, 90-100% A) will be assigned.

Important deadlines:

April 16- last day to add classes

April 17- last day to drop without a W

April 29- last day to request P/NP grading option

May 27- last day to drop with a W

Tentative Schedule:

Wk #	Date	Tu Lec	Th Lec	Tu Lab	Th Lab
1	4/3/2022	Flex Day	Acid-Base Equilibrium Review Ch18	Flex Day	Check-in
2	4/10/2022	IMFs Ch13	Colligative Properties Ch 13	C1- Freezing Point	C1- Freezing Point
3	4/17/2022	Solubility Ch 13	Buffers Ch 19	C2- Buffers	C2- Buffers
4	4/24/2022	Ksp Ch 19	Titrations Ch 19	C3- Common Ion	C3- Common Ion
5	5/1/2022	Ch 19 wrap up	Exam 1 Review	C5- Anions	C5- Anions
6	5/8/2022	Redox Ch 21	Voltaic cells Ch 21	Exam 1 C4 Electrochemistry	Exam 1 C4 Electrochemistry
7	5/15/2022	Electrical work Ch 21	Electrolytic cells Ch 21	C6-Cations (1)	C6- Cations(1)
8	5/22/2022	Transition Elements Ch 23	Exam 2 Review	C6- Cations(2)	C6- Cations(2)
9	5/29/2022	Radioactivity Ch 24	Kinetics of Radioactive Decay Ch 24	Exam 2 C6- Cations (3)	Exam 2 C6- Cations (3)
10	6/5/2022	Health effects/ applications of Nuclear Chem Ch 24	Quarks and Leptons	C6- Cations (4)	C6- Cations (4)
11	6/12/2022	$E= mc^2$; Fission and Fusion Ch 24	Final Exam Review	Check-out Lab Final Quiz	Check-out Lab Final Quiz
12	FINAL EXAM June 24, 2022; 11:30AM – 1:30 PM				

Standards of Student Conduct

Each student has the right and shares the responsibility to exercise the freedom to learn. Each student is expected to conduct himself/ herself appropriately, treating the instructor and fellow classmates with respect. Pursue your coursework with integrity and honesty.

Academic misconduct is any action or attempted action that may result in creating an unfair academic advantage for you or any other members of the academic community. This misconduct includes a wide range of behaviors such as cheating, plagiarism, altering academic documents or transcripts, gaining access to materials before they are intended to be available, and helping another student to gain an unfair advantage.

As a student at De Anza College, you are encouraged to reach out to your fellow students to avoid isolation, to discuss materials, and to work together on problem sets and studying. There are limits to this collaboration. Please review the following link on [Academic Integrity](#). This clearly defines what constitutes cheating, plagiarism, and other forms of academic misconduct. Students are also responsible for informing themselves about FHDA [Code of Student Conduct](#) and its grounds for discipline.

De Anza College takes academic misconduct very seriously. Depending on the nature of the incident, the academic disciplinary sanction may vary but can result in consequences such as a failing grade for the assignment, for the course, or even probation, suspension and expulsion.

During quizzes all notes, books must be closed, and electronic devices must remain with volumes off and not visible from any student's seat. Cheating during an exam/quiz or copying/using work other than your own for a lab will result in a zero for the entire assignment, regardless of what percentage of the work is from cheating, and a report 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. Students observing academic dishonesty are encouraged to report it confidentially to the instructor.

You will be assigned a laboratory locker. You will be responsible for broken or missing equipment. Failure to properly check out of the lab may result in additional costs.

Student Disability Services

De Anza College has the policy to accommodate all individuals regardless of disabilities. All students who have special needs can and should receive appropriate accommodations. The DSPS office must determine or verify these accommodations before they can be offered. Students requesting accommodations are responsible for contacting DSPS before the term begins or immediately upon the start of the course. Students who are seeking support from the Disability Support Programs and Services (DSPS) should contact them directly at their office in LCW 110 or at (408) 864-8839 or via www.deanza.edu/dsps. Any students are welcome to come and speak with me privately regarding any accommodations necessary. Please plan to bring your Accommodation Memo from the DSPS. Anything discussed will be kept in strict confidence and will not influence or affect your grade.

Reasonable Accommodation for Religious Beliefs, Observations, and Practices

In compliance with the Education code, Section 92640(a), I will permit any student to complete an exam, quiz or lab, without penalty, at a time when that activity would not violate the student's religious creed, unless administering the examination at an alternate time would impose an undue hardship which could not have been reasonably avoided. Please contact me for more information, and notify me as soon as possible before a conflict to arrange an alternative.

Other Policies

I am personally committed to creating an inclusive, safe learning environment for all students. We all benefit from a diversity of shared life experience and points of view. De Anza College is committed to nondiscrimination, freedom from sexual harassment, and to securing your privacy, safety, and security. Please see [official policies](#) for further details and do not hesitate to contact me if you have a specific concern.

Below are four helpful tips that make learning much easier this quarter.

- 1. Preview the material *before* attending the lecture.** Previewing the material could include reading the section in the textbook, reviewing the lecture slides, or glancing at the homework. This will help you develop a stronger and more personal connection to the topics and make the presented material much easier to understand.
- 2. Complete all homework problems and worksession problems *and* the textbook in-chapter reviews and suggested problems.** Extensive practice is the best way to

ensure concept mastery. The more you practice, the more comfortable you will be, and the better you will perform on exams. Beyond the minimum of the assigned worksessions and homework, you are encouraged to do the in-chapter problems as well as end of the chapter problems that are recommended.

3. Don't fall behind. In chemistry, each new topic will build on the previous, so it is essential to stay caught up with the class material. Following a lecture when you do not understand the previous material is not an effective learning method and will lead to further problems.

4. Get help. If you are having a difficult time with a topic, it is your responsibility to get help. There are plenty of resources for aiding in material comprehension, but it all starts with you making an effort to get this help. You are also encouraged to find a study group or come to office hours.

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/studentssuccess/mstrc/>.

Additionally, you are encouraged to email me with class questions and come to office hours.

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.