

De Anza College-Summer 2020 (6/29-8/8)

Chemistry 1C, General Chemistry

Chem 1C - Section 01

Lecture MTWR 10:30AM - 11:45AM – **Synchronous**

Lab MTWR - **Asynchronous. Live check-in hours 9:00 AM – 10:20 AM**

Important Notes for Remote Delivery:

Lecture - All lecture will be held through Zoom during the indicated time period (**synchronous**), so please download this free application. A link to the ZOOM lecture conference room will be on CANVAS. The power point lecture slides will be posted before the lecture on CANVAS and a link to the recording of the lecture will be posted immediately after.

Laboratory – You will **not** be required to complete the lab activities during a set time period (meaning **asynchronous**). I will post the instructions for the activity on CANVAS and you will need to complete before a set time, but there are **no requirement** to complete the lab during the 7:30 AM –10:20 AM time slot.

I will be available from 9:00 AM – 10:20 AM Monday - Thursday for live meeting if there are any issue with the lab activity. A link to the lab help room will be on CANVAS as well. Please feel free to also send emails with any questions you may have.

Important –

1. I would like everyone to attend lecture and lab the first day (6/29). This will to be to inform everyone how the class will proceed this quarter and to make sure everyone enrolled is still planning to take the classes. There are a lot of people on the waitlist and I want to make sure those enrolled are serious about taking the class.
2. I want to individually meet with each of you through Zoom the first week of class. Working through the screen is very hard, so my hopes are that just a few minutes to meet with everyone at the beginning will make things better for both of us and hopefully bring some normalcy to the course. I will talk about scheduling these meeting times the first day of lab.

Instructor: Dr. Chris Deming, email: demingchristopher@fhda.edu

Course Description: This class will cover the principals of solutions, buffers, electrochemistry, transition metals, and nuclear chemistry.

This course is divided into two separate instructional periods, the lecture and laboratory sections. The lecture portion is primarily devoted to the material discussion while the laboratory portion gives a chance for students to use their acquired knowledge in a lab based

activity. One registration code will enroll for the lecture and lab sections. Lecture and lab sections must be taken together to pass Chem 1C and will both go towards a single grade.

Course Material:

- 1. Lecture Text:** CHEMISTRY: The Molecular Nature of Matter and Change, Silberberg and Amateis, 8e. Other editions will be essentially the same and will work great to study, but practice problems given in this syllabus correspond to the 8th edition. Please let me know immediately if you do not have access to the text.
- 2. Lab Work:** Lab instructions will be found on the CANVAS site for this class. Since we cannot meet in person, our lab activities will consist of a combination of virtual lab simulations, thought experiments, one hands-on lab, and a research project. Instructions for labs in general are provided toward the end of this syllabus.
- 3. Lab Notebook:** Permanently bound notebook. Although not by our own hands, we still will be collecting data and performing calculations, so a notebook is needed. Using what remains of your 1B notebook is okay.
- 4. Scientific Calculator.** Logarithm and exponential functions required. You are encouraged to bring your calculator to each lecture to work through examples as they are presented.

Class Registration. Although we are not limited by the space in the lab, the registration limit is strictly set at 30. The class is filled based on the official roster provided by the De Anza Admissions and Records, including an official waitlist. Students on this waitlist may 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 the first two weeks.

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/>. Additionally, you are encouraged to email me with class questions.

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 will not be tolerated and will result in 0 for that quiz/exam. Worse than a 0 on an exam, I am required to report such incidents which then become visible to 4 year colleges upon reviewing your transfer application. Original work must be turned in for homework credit.

For this new remote delivery, we will all need to be more honest with tests and quizzes. I am trusting all of you to adhere to this code.

Disability Service Support: De Anza is committed to providing support for students with disabilities. 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/>

Grade Assignment. This rubric is subject to change throughout the quarter.

Grade	Percentage
A+	>98
A	98-93
A-	93-90
B+	90-87
B	87-83
B-	83-80
C+	80-76
C	76-70
D	70-60
F	<60

Point Breakdown. Below lists the point values for all the assignments.

Assignment	Score	Percent
Quiz 1	40	6.15
Quiz 2	40	6.15
Exam 1	100	15.38
Exam 2	100	15.38
Final Exam	200	30.77
Lecture Total	480	73.85
Warm Up to CC – Making Solutions	10	1.54
Enthalpy of Solution	20	3.08
Freezing Point	25	3.85
Poison in the Well	15	2.31
Research Report	25	3.85
Buffer/Titration	25	3.85
Batteries R Us	15	2.31
Electrochemistry	20	3.08
Green Crystals Revisit	15	2.31
Lab Total	170	26.15
Class Total	650	100

Tentative Dates. All exam dates, quiz dates, and lecture topics/dates are listed on page 9. Lab topic/dates are listed on page 10 and are subject to change throughout the quarter. The final exam date will not change and is provided on page 9 as well as the De Anza finals schedule page.

Class Lecture

This class (Chem 1C) will cover chapters 13, 19, 21, 23, and 24 from the assigned textbook. The lecture will serve to cover the most important aspects of the chapter but students are still responsible for all material in the book chapter. Below are four helpful tips that make learning much easier this quarter.

1. Review the material before attending the lecture. This could include reading the section in the textbook, reviewing the lecture slides, or even 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 all of the in-chapter reviews. 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 problems, you are encouraged to do the in-chapter problems as well as the end of the chapter problems that were not assigned. I am serious when I say that I sometimes use problems from the book that I didn't assign as exam problems.

3. Don't fall behind. In chemistry, each new topic will build on the previous so it is essential to understand the topics as they are presented. Following a lecture when you do not understand the previous material is not an effective method for learning and will lead to further problems. To avoid falling behind.....

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, including myself, 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 coming to office hours.

Lecture Exams. There will be two lecture exams to test comprehension throughout the quarter. Exams will cover material from lectures, homework, and book chapters. If you are having difficulty completing the homework questions for that chapter, you are urged to get help *before* taking the test. Questions will range from easy to difficult and may require solving problems that have not been explicitly demonstrated before.

Each exam is worth **100 points** and the dates are given in on page 9. Please note that these dates are subject to change depending on the pace of the material. No late or early finals

will be administered. If you feel the grading of any exam is incorrect, please come and talk with me. I will release a key after the exam and I am very open to hearing what you have to say, but you must do so within **one week** of the day the exam key is released.

The way these will work during remote delivery, is I will post the test to CANVAS 5 minutes before the start of the lecture. You will print out the exam (if no printer, reading from the screen and doing on any paper is okay) and will have the entire lecture period (10:00 AM – 11:45 AM) to complete the exam plus an extra 10 minutes to load the files to CANVAS. Please let me know if you think there will be an issues with this way of testing *before* the test and we can make arrangements.

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 **40 points** each, will take about 25 minutes, and will be given at the beginning of class, so late attendance may result in missing time for the quiz. The day of the quizzes are given on page 9 but may change depending on how quickly we move through the material. Reminders for the quiz and any possible changes in the schedule will be announced through email and on CANVAS.

The delivery of these will be similar to the exams. Posted 5 minutes before, 25 minutes to take the quiz, then 5 minutes to upload to CANVAS.

Lecture Final. The lecture final is worth **200 points** and will cover all chapters. The date and time for the final are given on the following schedule and will not change. Delivery the same as the other exams.

Homework. Homework will not be turned in for credit, but will provide the practice needed for concept mastery. The homework problems will be from the end of the each chapter and will cover calculations as well as conceptually based problems. I will also give a solution key so you can check your work.

Doing all of the listed problems is highly recommended and represents the minimum needed to practice the topics, but you are strongly encouraged to go beyond the listed problems and try other problems throughout the book. Test questions will be similar to homework questions, so it is important to practice each problem and get help when you need it.

Laboratory

This course will require the completion of 8 different lab-based activities. Since we cannot meet in person to collect data, our lab program will be a combination of virtual lab simulations, thought experiments, one hands-on lab, and a research project.

These lab will be conducted in an asynchronous manner, meaning that there will not be a specific lab period in which you will need to complete the lab exercise. Instead, there will be a deadline for submission (through CANVAS). Late assignments will always be accepted but will be subject to a late penalty depending on how far past the due date it is submitted.

Although there is no specific lab period in which you will need to complete the lab exercise, I will be available during the normally scheduled lab period to help with any lab issues. From 9:00 AM – 10:20 AM, I will be in a Zoom conference room waiting for any questions.

Below outlines the important aspects of each type of lab activity. As with all labs, please read through the entire manual for that exercise before starting.

Virtual Labs

For a large amount of the lab work this quarter, we will use virtual laboratories provided by Chem Collective (CC) as well as a free EChem simulation built by Gary O. Bertrand from the University of Missouri-Rolla. These programs will allow us to perform virtual experiments and take data. The virtual labs can be accessed online and CC can also be downloaded for offline access.

For online access of CC use: <http://chemcollective.org/>

Download CC for Offline Use use: http://chemcollective.org/vlab_download

To access the EChem lab (for lab 6) use:
<http://web.mst.edu/~gbert/Electro/Electrochem.html>

Although we will not do chemistry with our own hands in these virtual labs, we will still practice following the procedure correctly to obtain the desired data and perform calculations based off those measurements to determine a desired value.

For each virtual experiment there is a lab manual that will be posted on CANVAS containing an introduction, the procedure, and questions/calculations for the online activity. Some of what we do this quarter will be similar to the in-person lab activities listed on the De Anza Chemistry website, but they are not the same, so please, only use the lab manuals from CANVAS. Be sure to read through the entire lab manual before performing the labs

A lab notebook will still be used to collect data and perform calculations for these simulated labs. I want to make this online quarter seem as authentic as possible, and keeping a notebook is an essential step. (If you do not have a notebook, please, **do not** go out shopping for

one. If you can have one delivered quickly, that is great. If not, blank sheets of paper will work as long as you keep things organized). Key part is that I want all of this to be handwritten by you.

In the notebook, for each experiment, you will need to complete,

1. Abstract – This is a brief summary of the experimental goals and methods used to achieve these goals. Perhaps even a mention of a special equation that might be used. This should be in your own words and should be done before starting the experiment and after looking through the exercise description. This should not be more than one paragraph and should reflect that you have read through the entire experiment before starting.
2. Data Collected – All of the data collected should be in tables inside the notebook.
3. Calculations – All calculations for the exercise needs to be hand written in your lab notebook.

What to turn in for these exercises

1. Pictures of the items listed for the notebook. Upload these to CANVAS for the correct assignment. Please try to upload as jpg or convert to pdf if possible. I cannot open HEIC, so please do not send these.
2. Your work in answering questions at the end of the lab manual. Pictures of these are okay. If you want to write on the assignment with your tablet then upload, that is fine too.
3. A complete summary of the experimental process. This should include a description of the experimental goals, a brief introduction to the concepts applied, and a discussion of the experimental results in relation to the expected results. Typing this part is okay.

If there are any issues using any programs, please let me know as soon as possible, and we can figure everything out. Also, let me know if there are any questions in general during this online quarter.

Thought Experiments

These will be lab problems/situations that will be presented to you. You will be given a certain situation and be asked to solve the problem using ideas/techniques from the current chapter. This will require a detailed description of the chemicals and equipment required in addition to the reasoning for your choice.

These will be a challenging aspect of the labs but will provide a vital aspect of scientific knowledge: how to use what you know to solve an actual, IRL, problem. Specifics of what you will need to do to complete the assignment will be provided in the assignment description, as it will be different for each different situation.

Hands-On Lab

There is one lab that you will do at your house. This lab will require water (from sink is okay), a freezer, a spoon, salt (table salt NaCl), and an ice cube tray.

The size of the spoon is not extremely important (metal, plastic, or wooden is okay), but enough salt will be. I don't want anyone to go out shopping, so I am sending this out in hopes that there will be enough time to acquire an ice cube tray and salt through the internet, if needed.

This lab will start the 2nd week of the quarter and is due 7/8. I know that shipping times are long, so if you cannot get the items in time, I understand and support you completing the lab when you have the items. This is a great way to explore freezing point depression, so I would strongly suggest trying to do this experiment, and **you will not lose any points for not having the resources in time**. Please contact me as soon as possible if you think performing this lab will be an issue.

The ice cube tray will only need 4 spaces and should not be more than 6\$. I don't like extra costs, but I think this lab is worth it. If you don't want the extra costs, the manual is still written to accommodate experiments without an ice cube tray and you will not lose any points for not using an ice cube tray.

The salt needed is a very small amount, so if you have anywhere close to ¼ of a salt shaker, it should be more than enough.

However/whenever you can acquire these supplies, please try to get them and please contact me as soon as you can if think there will be a time issue.

Again, I understand shipping times are long, and I don't want anyone to go out to the market shopping for an ice cube tray during this pandemic. **Communication** and **flexibility** are the key words of the quarter.

The requirements for this lab are the same as the CC labs **with the addition of a description relating your experimental success to the experimental process**. Since this lab will require actual, hands-on work, it will be meaningful to **compare the experimental results to the expected results** by examining possible issues with the experimental process or design. Please add this aspect to the summary.

Research Project

You will also do a research report on an important chemical process, element, or chemist relating to topics in this course. A guide for this report will be available on CANVAS. The due date is Friday July 31 by 11:59PM.

How and when to turn these in activities? – Any and all of the lab based activities will be turned in through CANVAS. There will be a due date set on the assignment in CANVAS

that can be found on the schedule on page 10. I will try to send announcements to remind of due dates.

Class Schedule

This is a very tentative schedule because I am not sure how the lectures will go with online summer delivery. All dates, including exams and quizzes, are subject to change throughout the quarter. The final exam date will not change. Lecture topics are in black, labs are in blue, quizzes are in orange, and exams are in red. I will let you know as soon as possible when there is a change in the schedule.

Week Of	Week #	Monday	Tuesday	Wednesday	Thursday
6/28/20	1	Chapter 13 (Solutions)	Chapter 13 (Solutions)	Chapter 13 (Solutions)	Quiz 1 Chapter 19 (Buffers)
7/5/20	2	Chapter 19 (Buffers)	Chapter 19 (Buffers)	Chapter 19 (Buffers)	Chapter 19 (Buffers) Exam 1 Review
7/12/20	3	EXAM 1 Chapters 13 and 19	Chapter 21 (EChem)	Chapter 21 (EChem)	Chapter 21 (EChem)
7/19/20	4	Chapter 21 (EChem)	Quiz 2 Chapter 21 (EChem)	Chapter 21 (EChem)	Chapter 23 (T-Metals)
7/26/20	5	Chapter 23 (T-Metals)	EXAM 2 Chapters 21	Chapter 23 (T-Metals)	Chapter 23 (T-Metals)
8/2/20	6	Chapter 24 (Nuclear)	Chapter 24 (Nuclear)	Final Review Overflow	FINAL EXAM

LECTURE FINAL EXAM

Thursday August 6, 9:15AM - 11:15AM

The lab start dates indicate a *suggested* time for starting, but these activities may be performed anytime as long as the reports are turned in by the due date.

Week Of	Week #	Monday	Tuesday	Wednesday	Thursday
6/28/20	1	In Person Check In START Lab 1 - Warm Up to CC: Making Solutions		DUE Lab 1 - Warm Up to CC: Making Solutions START Lab 2 - Solution Formation	
7/5/20	2	DUE Lab 2 - Solution Formation START Lab 3 - Freezing point depression lab (Hands On)		START Lab 4 - Buffers	DUE Lab 3 - Freezing point depression lab (Hands On)
7/12/20	3		START Lab 5 – Poison in the Well		DUE Lab 4
7/19/20	4	START Lab 6 - Electrochemistry		DUE Lab 5 – Poison in the Well START Lab 7 - Batteries R Us (Thought/Lab Practical)	
7/26/20	5	DUE Lab 6 - Electrochemistry		DUE Lab 7 - Batteries R Us (Thought/Lab Practical) START Lab 8 - Green Crystal Revisit (Thought/Lab Practical)	
8/2/20	6		DUE Lab 8 - Green Crystal Revisit (Thought/Lab Practical)		

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.