

De Anza College-Spring 2020 (4/13-6/26)

Chemistry 1C, General Chemistry

Chem 1C - Section 01

Lecture MW 4:30PM - 5:45PM – **Synchronous**

Lab MW 11:30AM - 2:20PM - **Asynchronous**

Chem 1C - Section 02

Lecture MW 4:30PM - 5:45PM - **Synchronous**

Lab TR 11:30AM - 2:20PM – **Asynchronous**

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. The power point lecture slides will be posted before the lecture on CANVAS. You will be invited to the conference through a CANVAS notification and the lectures will be posted to CANVAS afterwards. I will not take attendance during lecture.

Laboratory – You will **not** be required to complete the lab activities during a set time period (**asynchronous**). I will post the instructions for the activity on CANVAS and you will need to complete before a set time, but it will usually be weeks away, so there will be **no requirement** to complete the lab during the 11:30 AM – 2:20 PM time slot.

I will be available from 12:20 PM – 1:30 PM Monday - Thursday for live meeting if there are any issue with the lab activity. I will send the invite to Zoom, and if you have questions, please come by. If cannot make the live meeting time, you can always email me with questions. There is no need to check in with me if you feel comfortable completing the activities.

Office Hours – I will also hold office hours through Zoom. I will send an invite, and you can join if you have questions. So far, it has worked well. I will hold the office hours at set times, but if those don't work, we can discuss other options.

Important – To make sure that no one planning to drop the class, stays in, I want to meet with each of you through Zoom the first day of lab and at latest the end of the first week.

There are a lot of people on the waitlist, so I want to make sure everyone enrolled is still planning to take the classes and I really just want to meet you and try to bring any normalcy to this quarter. During the lab hours (12:30 PM – 1:30PM) are best, but through office hours is okay also.

Connect – You will be given a free CONNECT account for online homework and testing if you do not already have one. This comes with an online 8e textbook.

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

Office Hours: Monday 2:30PM-3:30PM, Tuesday 10:00AM-11:00AM, Wednesday 2:30PM-3:30PM PM, Thursday 10:00AM-11:00AM

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. Free electronic edition available to all students with the provided CONNECT account.
- 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, 8 ½ X 11 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. (An extra 1C was opened this quarter to accommodate extra students while maintaining the same class limits) 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

Assignment	Score	Percent
HW CH 13	20	2.74
HW CH 19	20	2.74
HW CH 21	20	2.74
HW CH 22	20	2.74
HW CH 24	20	2.74
Quiz 1	40	5.48
Quiz 2	40	5.48
Exam 1	100	13.70
Exam 2	100	13.70
Final Exam	180	24.66
Lecture Total	560	76.71
Warm Up to CC – Making Solutions	10	1.37
Enthalpy of Solution	20	2.74
Freezing Point	25	3.42
Poison in the Well	15	2.05
Research Report	25	3.42
Buffer/Titration	25	3.42
Batteries R Us	15	2.05
Electrochemistry	20	2.74
Green Crystals		
Revisit	15	2.05
Lab Total	170	23.29
Class Total	730	100

Tentative Dates. All exam dates, quiz dates, and lecture topics/dates are listed on page 10. Lab topic/dates are listed on page 11 and are subject to change throughout the quarter. The final exam date will not change and is provided on page 10 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. There will be an online CONNECT homework assignment and a handwritten homework assignment that will both be worth points. There will also be extra online problems through CONNECT. Through the combination of online and written problems there will be plenty of practice, so please take advantage of the opportunities.

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 the schedule section. 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 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 and will have the entire lecture period (4:30 PM – 5:45 PM) 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 20 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 10 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, 20 minutes to take the quiz, then 5 minutes to upload to CANVAS.

Lecture Final. The lecture final is worth **180 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 be turned in for credit, and will consist of problem sets on CONNECT as well as hand written homework to be submitted through CANVAS.

The CONNECT assignments will be linked through CANVAS and the problems for the handwritten homework will also be posted on CANVAS as the quarter proceeds.

Doing all of these is highly recommended for practice and overall concept mastery. These problems are chosen as the minimum needed to practice the topics, but you are strongly encouraged to 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. There will also be extra CONNECT assignment, similar to homework, but for no points, to provide more homework-like practice.

Laboratory

This course will require the completion of 9 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), usually at the end of the week.

Although there is no specific lab period in which you will need to complete the lab exercise, I will be available for an hour during the normally scheduled lab period to help with any lab issues. From 12:30 PM – 1:30 PM, I will be in a Zoom conference room waiting for any questions.

Below outlines the important aspects of each. 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 the virtual laboratory provided by Chem Collective (CC). This is a virtual laboratory that will allow us to perform virtual experiments and take data. The virtual lab can be accessed online but can also be downloaded for offline access. This is truthfully one of the reasons I liked going with this option because I have a bad internet connection at my house and I understand how hard it would be to do a multi part titration if the internet kept kicking you off.

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

To download use: http://chemcollective.org/vlab_download

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 some final 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 these virtual lab exercises seem as authentic as possible, and keeping a notebook is a first 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).

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.
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 in the 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.
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.

The first lab activity will be using CC to make solutions, so this will hopefully give the foundation for easy use of this program for the rest of the quarter.

If there are any issues using this program, 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.

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. I think there is enough time to complete these assignment and I will be available for help.

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 and an ice cube tray 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 3rd week of the quarter (April 27). 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.**

An ice cube tray will only need 6 spaces and should not be more than 4\$. I don't like extra costs, but I think this lab is worth it.

The salt needed is a very small amount, so if you have anywhere close to $\frac{1}{4}$ 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 except 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 of the report outline and a list of suggested topics will be provided and discussed early in the quarter.

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 and you can complete the assignment any time before that due date. The date will be one week after completion of the lab according to the schedule on page 11. 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 this new 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	Wednesday
4/12/20	1	Chapter 13 (Solutions)	Chapter 13 (Solutions)
4/19/20	2	Chapter 13 (Solutions)	Quiz 1 Chapter 19 (Buffers)
4/26/20	3	Chapter 19 (Buffers)	Chapter 19 (Buffers)
5/3/20	4	Chapter 19 (Buffers) Exam 1 Review	EXAM 1 Chapters 13 and 19
5/10/20	5	Chapter 16 (EChem)	Chapter 16 (EChem)
5/17/20	6	Chapter 16 (EChem)	Quiz 2 Chapter 16 (EChem)
5/24/20	7	Chapter 16 (EChem) Chapter 23 (T-Metals)	Chapter 23 (T-Metals)
5/31/20	8	Chapter 23 (T-Metals)	Chapter 23 (T-Metals)
6/7/20	9	Chapter 24 (Nuclear) Exam 2 Review	EXAM 2 Chapters 21 and 23
6/14/20	10	Chapter 24 (Nuclear)	Chapter 24 (Nuclear) Final Review

LECTURE FINAL EXAM

WEDNESDAY June 24, 4:00-6:00 PM

Week Of	Week #	Monday	Tuesday	Wednesday	Thursday
4/12/20	1	In Person Check In	In Person Check In	Lab 1 - Warm Up to CC: Making Solutions	Lab 1 - Warm Up to CC: Making Solutions
4/19/20	2	Lab 2 - Solution Formation Part 1 and 2: Solubility and Heat (CC)	Lab 2 - Solution Formation Part 1 and 2: Solubility and Heat (CC)	Lab 2 - Solution Formation Part 3: Determining ΔH_{sol} (CC) [Lab 1 Work Due]	Lab 2 - Solution Formation Part 3: Determining ΔH_{sol} (CC) [Lab 1 Work Due]
4/26/20	3	Lab 3 - Freezing point depression lab (Hands On)	Lab 3 - Freezing point depression lab (Hands On)	Lab 3 - Freezing point depression lab (Hands On) [Lab 2 Work Due]	Lab 3 - Freezing point depression lab (Hands On) [Lab 2 Work Due]
5/3/20	4	Lab 4 - Poison in the Well (Thought/Lab Practical)	Lab 4 - Poison in the Well (Thought/Lab Practical)	Report Check-In/Help Day [Lab 3 Work Due]	Report Check-In/Help Day [Lab 3 Work Due]
5/10/20	5	Lab 5 – Buffers, Part 1: Making/Testing Buffers (CC)	Lab 5 - Buffers Part 1: Making/Testing Buffers (CC)	Lab 5 - Buffers Part 2: Weak/Strong Titrations- (CC) [Lab 4 Work Due]	Lab 5 - Buffers Part 2: Weak/Strong Titrations- (CC) [Lab 4 Work Due]
5/17/20	6	Lab 5 – Buffers Part 3: Polyprotic Acid Titration – (CC)	Lab 5 – Buffers Part 3: Polyprotic Acid Titration – (CC)	Lab 5 – Buffers Calculation Day [Research Report Due]	Lab 5 – Buffers Calculation Day [Research Report Due]
5/24/20	7	Lab 6 - Batteries R Us (Thought/Lab Practical)	Lab 6 - Batteries R Us (Thought/Lab Practical)	Lab 6 - Batteries R Us (Thought/Lab Practical) [Lab 5 Work Due]	Lab 6 - Batteries R Us (Thought/Lab Practical) [Lab 5 Work Due]
5/31/20	8	Lab 7 – Electrochemistry (CC)	Lab 7 – Electrochemistry (CC)	Lab 7 – Electrochemistry (CC) [Lab 6 Work Due]	Lab 7 – Electrochemistry (CC) [Lab 6 Work Due]
6/7/20	9	Lab 8 - Green Crystal Revisit (Thought/Lab Practical)	Lab 8 - Green Crystal Revisit (Thought/Lab Practical)	Lab 8 - Green Crystal Revisit (Thought/Lab Practical) [Lab 7 Work Due]	Lab 8 - Green Crystal Revisit (Thought/Lab Practical) [Lab 7 Work Due]
6/14/20	10	Last Week Check-In	Last Week Check-In	Extra [Lab 8 Work Due]	Extra [Lab 8 Work Due]

Student Learning Outcome(s):

*Graphically, analytically, numerically and verbally analyze infinite sequences and series from the perspective of convergence, using correct notation and mathematical precision.

*Apply infinite sequences and series in approximating functions.

*Synthesize and apply vectors, polar coordinate system and parametric representations in solving problems in analytic geometry, including motion in space.