

Chem 1C- 30Y General Chemistry Course Outline

Spring 2022

Lecture: TTh 5:30 –6:45 PM Zoom

Dr. Billie Lo

Laboratory: TTh 7:30 AM– 10:20 PM SC2208

lobillie@fhda.edu
(or send email via Canvas)

PREREQUISITE: Chem. 1B with a C or better.

ACCEPTABLE FOR CREDIT:

University of California, California State University and Colleges.

COURSE DESCRIPTION:

This is the third and the last quarter of general chemistry, pertaining the advanced discussion on solution equilibria, colligative properties, buffers, solubility products and the factors effecting solubilities of slightly solubility of ionic salts, transition metals, coordination chemistry and its application. The principle of selective precipitation and its application to the qualitative analyses of cations and anions. Electrochemistry including voltaic cells, corrosion and electrolysis, nuclear chemistry, radioactivity, hazard and protection. Laboratory parallels lecture topics with an emphasis on qualitative analysis.

For the 2022 spring quarter, the course will be hybrid, which means that the students will attend the laboratory in-person and on campus, but the lecture will be online. You will participate in the course using De Anza CANVAS. and zoom. **Student should have access to a computer, or a smart phone with internet connection.** All assignments, including lab reports, worksheets should be submitted to the appropriate CANVAS assignment. All exams need to be taken on Canvas in the zoom meeting room with CAMERA On unless otherwise stated. Refer to Student Hub the De Anza Online Resources for Students on the De Anza web site, <http://www.deanza.edu/online-Spring Student Resource Hub> to see how to join the Zoom lecture sessions. You may also use De Anza Library Chat room for help. If you have any specific needs that I should be aware of, please let me know. The PCC Disabled Students Programs and Services is available to assist you during this course.

TEXTBOOKS:

Chemistry, The Molecular Nature of Matter and Change, Martin Silberberg, McGraw Hill. [Silberberg 9 ed.png](#).

If you plan to do the online homework, CONNECT you **may not need to purchase a book**, because the **CONNECT ACCESS code** which is required for the online homework **has an ebook** attached to it and can be purchased online. Refer to Canvas CONNECT REGISTRATION VIDEO for information

A simple Scientific Calculator (those can do +.-X and /, but non-programmable) is required for all exams or quizzes. Safety goggles are provided for students in their lab lockers, and it should stay there when you leave the lab because you are not allowed to be in the lab without goggles.

THE LABORATORY

The laboratory sessions will be in-person, on campus in spring 2022, and all safety precautions will be followed. All the experiments are described in the De Anza Chemistry Lab Manual, which can be download online at: <https://www.deanza.edu/chemistry/chemLabManuals.html>

Each Student should have a pair of **safety goggles** and should be worn whenever they are in the laboratory including the check-in and check-out days. When leave the lab, it's recommended to keep your safety goggles in your drawer ready for use the next time you attend the lab. Each laboratory

experiment must be completed within the specified time. When that period is over, **no make-up labs**. All lab work not conducted in the lab will be graded as a zero.

BASES OF EVALUATION

A. Hourly Exam:

Three hourly exams will be given during the quarter. The lowest exam will be dropped. Make-up exam shall be given for serious and compelling reasons only. Arrangement should be made with instructor **PRIOR TO EXAM TIME** by all means. Any late exams if allowed will be subject to 10% deduction in grade.

B. Final Exam:

A comprehensive final exam will be given. Student who misses or fails the final exam will not receive a grade C or better.

C. CONNECT on-line homework is optional, but it is **strongly recommended.** Not only you can get **100 extra credit points toward your over-all grade on completion of 60% of the total assigned Connect homework**; but also, by **doing them on-line you can get instant feedback when you make a mistake, and you can get online tutoring when you need help**

The "CONNECT" assignments are divided into two parts - the conceptual and the selected end of the chapter problems. The program is set to allow late submission; but with **3% deduction** in points per day. It's important that you submit your work before due date when you are ready to avoid unnecessary deduction in points. Refer to Canvas CONNECT REGISTRATION VIDEO for information on how to purchase the CONNCT ACCESS Code and how to register.

D Worksheets – **4 Worksheets for a total of 40 extra points**

Worksheet#	Topic	Available	Due Date	Points
1	Concentration			10
2	Buffer			10
3	Titration			10
4	Balance equations			10

E. Grading:

<u>3 Exams</u> 175 point each, <u>drop the lowest</u>	Total 350 Points
Final exam	265 Points .
Lecture participation (attending lecture zoom meetings/response to Q's)	20 Points
Lab Grade	365 Points
2 Lab Exams total	160 points
Lab Notebook (prelab)	45.points
Lab Reports	90 points
Lab cleanup	20 points
Lab performance (Unknown)	50 points
Total	1000 Points

Extra Credit: Optional, but in order to get the extra points it should be submitted by the due date, except "Connect" allow late submission with penalty 3% per day late.

"Connect" on-line Homework** 100 Points.

4 Worksheets 10 points each total 40 Points.

>1000 A+, 885+ pts A, 780+ pts B, 650+pts C, 500+pts D

*****The grading in this course will follow what is written in this syllabus and according to the scale listed above.** From time to time, I will show a spreadsheet summarizing your grades. It is **your responsibility** to let me know the discrepancies so I can make corrections as soon as possible. **Please note that all the single relevant grades recorded in Canvas are correct and will be exported to this spreadsheet. As a precaution though, don't trust the automatically posted grade total, %, or the A, B, C etc. calculated and posted on Canvas.**

The best way to figure out how you are doing in the class is to calculate how many points you have lost by subtracting it from the maximum possible points for each exam or assignment and deduct it from 1000 points. The worksheets and the CONNECT assignments are extra points which can be used to make up for the points you've lost. Then, by the point standard above you can figure out how many points you can afford to lose and still get your desired grade. For example, if you have lost total 90 points in the exams, to get an "A", you can only lose 25 more points; but if you have a perfect score on 4 worksheets (10 points each), then you may lose a total of 65 points still get an "A"; furthermore, if you've earned 100 extra Connect points, you can lose 165 points total still get an "A"

F. Homework

The on-line "CONNECT" homework is optional. The problems are actually the selected textbook END of Chapter" problems.

You may use it as a tutorial tool. Feel free to ask for Hint or answers; use it as a self-study guide. **Do your assignments in a timely manner can help you understand the material better and get better grades for the exams. You will earn 100 extra points toward your final grade if you score 60% of the total assigned points.** A CONNECT access code with an ebook attached can be purchased online. Refer to CANVAS CONNECT Registration video for information.. The "CONNECT" web address is:
<https://connect.mheducation.com/class/b-lo-chem-1c-30y-spring-2022-9ed>

G. Attendance and withdraws:

Attendance at every meeting is required and will be count towards your grade. You may be dropped from the course if you missed more than 2 periods either in lecture or in the lab.

H. Academic Dishonesty: Any form of academic dishonesty will be ground for dismissal from the course.

I. For Chem 1C we cover the following chapters in this order Chapter 13, Chapter 19, Chapter 21, Chapter 23, and Chapter 24. To do well in the course You should:

(1) Read each chapter before coming to class. Not every detail will be covered in lecture, but you are still expected to understand the whole chapter.

(2) As you read the chapter, attempt to do the in-chapter sample and follow up problems and the corresponding end-of chapter practice problem. In fact, the "CONNECT" assignments are selected end of the chapter problems. The exam questions will often be very similar to the problems mentioned above; Do the CONNECT homework in a timely manner will help you do well in class.

(3) DO NOT FALL BEHIND WITH THE READING OR HOMEWORK!!. To avoid this, try to read ahead of the scheduled lecture topics and keep up with the homework

J. CHEMISTRY 1C LABORATORY RULES

1. **SAFETY GOGGLES** must be worn **AT ALL TIMES** while you are in the laboratory.
2. Each student is required to have a **lab notebook** to outline the lab procedures, record experiment data, and calculations. It will be evaluated as part of the grade.
3. You are expected to arrive in the laboratory on time. Tardiness of 15 minutes or more will not be permitted. Preview the lab materials before coming to lab is required
4. Students must clean and return all items from the stock room **no later than 10:10 PM** each day of the experiment.
5. Student must check out with the instructor and **sign** a roll sheet at the end of each lab.
6. Each laboratory experiment must be completed within the specified time. When that period is over, no credit will be given for the lab, but **all labs must be completed to receive a grade in the course**. All lab work not conducted will be graded as a zero.
7. **Chemical Disposal:**
Proper chemical disposal is essential. Students who do not comply with directed procedures may be dropped from the course for repeated offenses. Please note that you are required to **officially** check out of your lab locker whether you remain in the course or drop the course. Failure to check out of lab on time will result in a late fee and may also result in your grades being held and a block placed on your future registration.
8. **If you drop within the first two weeks of class and fail to check out of lab, your locker may be reassigned to another student by the instructor, and you will be held responsible for any missing or broken lab locker equipment. After the first two weeks of class you must checkout by the assigned checkout date for your laboratory section.**
9. **Lab Cleanup**
It's your responsibility to keep you work area, bench and the sink clean, **2 points will be deducted** for each violation.
10. You are also responsible to keep the balance room clean, and the waste bottle capped and there are second containment for all the waste bottles and reagents are returned to the tray under the hood. On rotation bases, **2 students** will be assigned to take care of these – one for the hoods, the other will take care of the balance room and general area, including making sure all equipment have been returned to the proper place. There will be a **signup sheet** for you to choose the day which best fit your schedule.

K. FORMAT OF THE LABNOTEBOOK (a permanently bound notebook):

For each experiment you need to enter 4 parts in you lab notebook. (I) Prelab, (II) Data (iii) Calculation, (III) Results and (IV) Discussion.

(I) **The Prelab:** A prelab include the following 4 things should be **done prior to** attending Day 1 of each experiment. Take a picture and **upload** to the proper Canvas prelab session **for 5 points**.

(a) Number and Title of the experiment

(b) Purpose/theory of the experiment (brief)

(c) Formula for the calculation.

(d) Procedure You may write it in the flow chart format which can guide you for doing the experiment. A photo copy of the lab manual is not allowed.

(II) **Data (your lab work) should be recorded directly in your notebook in ink. If you make a mistake, simply cross out with a ruler and a pen. No white-out or Erasers please!**

(III) **Calculations-** If time allows you should try to do the calculation in class to make sure you know how to do it.

(IV) **Results and discussion: Make sure you enter the results in a way people can see clearly.**

Remember! The laboratory midterm and final are “open-notebook”. A well-prepared notebook would be helpful during these exams.

L. THE LAB REPORT

1. Number and Title of the experiment.
2. Theory and formula for the calculation
3. Procedure for the experiment (briefly describe the important steps).
4. Data and calculation. Show at least one set-up for each different type of calculations.
5. Results (including all graphs) and discussion in doubt.
6. Post-lab questions if any.

Since the lab report follows the same format as the lab notebook. **If your lab notebook is well organized and not too messy, you make take a picture of your notebook (or certain part of the writeup in your notebook) and upload to proper Canvas Report assignment for grading. Remember to attached any graph to your report.**

Report is due 1 week after the day 2 of the experiment. Penalty for late reports: 1-2 day late less 10%, 2-7 day late less 40% More than 1 week late, less 60%.

CHEM 1C-02 SUMMER 2019 TENTATIVE LECTURE AND EXAM AND LAB SCHEDULE Lo

	CHEM 1C	LECTURE	& EXAM SCHEDULE	LABORATORY SCHEDULE
WK	DATE	CHAPTER	CONTENT	
1	Th 4/7/22	Chapter 13.5, 13.1 13.6	Solution Units and conversion IMF and solubility; Colligative properties	Lab Check-In
2	T 4/12/22	Chapter 13.6	Colligative Properties, Buffer, Common ion effect, Henderson-Hasselbach equation	Freezing Point Day 1
	Th 4/14/22	Chapter 18.3,	Buffers conjugate acid-base pair, buffer range, buffer capacity, Titration – acid (or base), equivalence point	Freezing Point Day 2
3	T 4/19/22	Chapter 19	buffer, salt, conjugate base or acid; treat salts as conjugate base or acid; How to choose the correct indicator, Titration curves	Buffers Day 1
	Th 4/20/22	Exam 1	Solutions and advanced acid-base equilibria	Buffers Day 2
4	T 4/26/22	Chapter 19.2	Effect on Solubility - K_{sp} , common ion effect, pH and metal complex-ion formation	K_{sp} , Common Ion Effects Day 1
	Th 4/28/22	Chapter 19.3	Solubility & Complex-Ion Equilibrium Electrochemistry	K_{sp} , Common Ion Effects Day 2
5	T 5/3/22	Ch 17.2&4, Chapter 19	Solubility & Complex-Ion Equilibrium Electrochemistry	ANIONS DAY 1
	Th 5/5/22	Chapter 21	Electrochemistry	ANIONS DAY 2 Lab Midterm
6	T 5/10/22	Chapter 21	Electrochemistry	Microscale Electrochem DAY 1
	Th 5/12/22	Chapter 21	Electrochemistry	Microscale Electrochem DAY 2
7	T 5/17/22	Chapter 21	Transition Elements and Their Coordination Compounds Chemical	CATION (1)
	Th 5/19/22	Chapter 21	Transition Elements and Their Coordination Compounds	CATION (2)
8	T 5/24/22	Chapter 23	Transition Elements and Their Coordination Compounds	CATION (3)
	Th 5/26/22	Exam 2	Solubility equilibria & electrochemistry	CATION (4)
9	T 5/31/22	Chapter 23	Transition Elements and Their Coordination Complexes	CATION (5)
	Th 6/2/22	Chapter 23	Nuclear Chemistry	CATION (6)
10	T 6/7/22	Chapter 23 Chapter 24	Nuclear Chemistry	CATION (7)
	Th 6/9/22	Exam 3	Nuclear Chemistry	CATION (8)
11	T 6/14/22	Chapter 24	Nuclear Chemistry	CATION n (9)
	Th 6/16/22	Chapter 24	Nuclear Chemistry	Lab Final Check-out
12	T 6/21/22	Final		

Laboratory Safety Rules *Please sign this form and return it to your instructor*

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: Please print, read and sign and turn in to your lab instructor.

- 1) Chemistry Department-approved safety goggles purchased from the De Anza College bookstore (NOT safety glasses) must be worn at all times once laboratory work begins, 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 student drawers.
 - 2) 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
 - 3) Shorts, cut-offs, skirts or pants exposing skin above the ankle, and sleeveless tops may not be worn in the lab: ankle-length clothing must be worn at all times
 - 4) Hair reaching the top of the shoulders must be tied back securely
 - 5) Loose clothing must be constrained
 - 6) Wearing jewelry such as rings, bracelets, and wristwatches in the laboratory should be discouraged to prevent chemical seepage in between the jewelry and skin..
 - 7) Eating, drinking, or applying cosmetics in the laboratory is forbidden at ALL times, including during lab lecture
 - 8) Use of electronic devices requiring headphones in the laboratory is prohibited at ALL times, including during lab lecture
 - 9) Students are advised to inform their instructor about any pre-existing medical conditions, such as pregnancy, epilepsy, or diabetes, that they have that might affect their performance.
 - 10) Students are required to know the locations of the eyewash stations, emergency shower, and all exits
 - 11) Students may not be in the lab without an instructor being present
 - 12) Students not enrolled in the laboratory class may not be in the lab at any time after the first lab period of each quarter.
 - 13) 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.
 - 14) 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;
 - 15) Strongly recommended: Wear Nitrile gloves while performing lab work; wear a chemically resistant lab coat or lab apron; wear shoes made of leather or polymeric leather substitute.
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By signing below, I, _____,
First Name Family Name

acknowledge that I fully understand and agree to abide by the laboratory safety rules listed above. Further, I acknowledge that my failure to abide by these rules will result in my being dropped from this chemistry class immediately.

Signature

Date

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.