

## Chemistry 1C Sec 25Z Summer 2022

Course Dates and Times:

Dates: From 06/27 to 08/04

Lecture: MTWTh 02:30 PM – 03:45 PM Room S34

Lab: MTWTh 11:30 AM – 02:20 PM Room SC2208

Instructor: John Cihonski, e-mail: [cihonskijohn@fhda.edu](mailto:cihonskijohn@fhda.edu)

Zoom code (if needed): <https://fhda-edu.zoom.us/j/9071890886>

### General:

Course Goal: Provide a Chem 1C course with sufficient content so that those in the sciences can succeed academically and by you understanding and being able to apply the course materials and problem skills to build a solid foundation for your further studies.

Chemistry 1C will focus on the following topics:

Chapter 13 Mixtures and Solutions

Chapter 19 Ionic Equilibria

Chapter 21 Electrochemistry

Chapter 23 Transition Metals and Coordination Compounds

Components of this course:

- Textbook Silberberg, 8e (or 9e). Read the recommended sections of the text then work to master the text example problems including the example follow-up problems labeled A & B. For adequate mastery of the material insure that you can work these problems without looking at hints or solutions. If your copy is not the 8e or 9e then you should share a copy or obtain a copy of the homework from a friend who has one.
- Lectures After reading the recommended text material and attending the lectures; you should understand the material sufficiently well to be solve the on slide questions (labeled as “Q” in red). The red Q’s are similar to the text and homework problems but being just one step up the learning curve and they will be the main focus for the exams. Think of the lectures as being your ‘Exam Study Guide.’
- Homework (HW) is from the text (Silberberg 8e/9e). The homework shouldn’t be difficult assuming you have read the text, studied the in-text examples and attended lectures. Your homework will be submitted as a *handwritten* document for grading. *Typed copies of the homework will not be accepted.* Since most answers are provided in the back of the text I will be looking for three things: (1) at a minimum you attempt every problem, (2) that your work is legible and coherent (meaning that I can read and follow it) and (3) that you *show your work* (justify/support your result) and *explain* your reasoning. Your homework will be graded as either *acceptable* or *unacceptable*.
- Laboratory Experiments (LE) The laboratory portion, based on our laboratory procedures. Procedural PDFs are available on line from: <https://www.deanza.edu/chemistry/Chem1C.html>. Each lab will focus on a specific experimental topic and the resulting written reports should demonstrate that you have

learned the concepts, made a professional record of the experiment and wrote a short, focused formal synopsis or summary for “management.” Examples will be discussed. We will be doing two types of Labs – Research and Qualitative – which we will be defining and clarifying before we do them. The lab reports will be a bit different.

The class will be assigned the same general problem and you are free to discuss the problem with each other. However, everyone is responsible for their personal *independent* experimental and write up efforts. The labs and reports present an opportunity to demonstrate that you can break a problem down into simple steps and that you can provide a rational, reasonable and meaningful solution in a rational, coherent, readable and independently hand written report that is the carbon copy from your lab notebook. ***An example report will be shown and discussed in class prior to the first experiment.*** Think of this as a document you could use to sell yourself. LE report grading will be on a 20 point basis for the four Research type experiments and a 10 point basis for the two Qualitative reports. We will discuss this further in the lab.

- ***Extra Credit (XC)*** Potential XC points will be available based on your HW assignments. If you successfully complete all four HW assignments then you will receive 3% points added to your final grade percentage. Assume you completed 3 of the 4 HWs – then the points that will be added to your final grade will be  $(3 \text{ HW completed} / 4 \text{ Possible HW}) \times 3\% = 2.25\% \text{ pts}$ . The intent is to boost a hard working student to the next grade if they are close. In this example if your current average is 78.2% (a C) then with the added 2.25% your grade will become an 80.5% (a B).
- ***Exams*** There will be two (2) exams - A mid-term, Exam 1, covering the first two chapters and an Exam 2 that will cover the last two chapters (not comprehensive). Exam specifics will be discussed further at the appropriate time but be aware that lab related questions/problems are fair game on the exams since the lab material is based on the text material.
- ***Plagiarism*** is presenting someone else’s work or idea(s) as your own. This is a common occurrence and it will not be tolerated. If caught you will be given a “0” for the assignment and you will be *further penalized the same number of points as the assignment is worth*. E.g. if the assignment is worth 20 points then you will earn a 0 for the assignment plus a penalty score of -20 will be added for plagiarism – meaning an overall loss of 40 pts! This is intended to carry a heavy cost.

**Grading:**

Exams (Mid-term + Final) (2 x 100 pts)	200
Labs (4 x 20 pts and 2 x 10 pts)	100
Home Work (Acceptable or Unacceptable)	See XC above
Total Points:	300

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Grading: A (100-92%), B (91<sup>+</sup>-80), C (79<sup>+</sup>-65), D (64<sup>+</sup>-55)

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**Quarter Calendar: Chem 1C Summer 22** (Normal – tasks in progress, *Italic* – *Introducing topic/handout*, **Bold** – assignment due that day)

Week of:		Monday	Tuesday	Wednesday	Thursday
Wk-1 June 26	Lecture	Course Introduction <i>Intro C13</i>	General Q & A on course <b>C13</b> Lecture	<b>C13</b> Lecture	<b>C13</b> Lecture
	Lab	Discuss LE in general Cover LE sample reports	<i>Check-in, Intro Freezing Point LE &amp; draft 1<sup>st</sup> lab plan</i>	Freezing Point Lab	Freezing Point Lab
Wk-2 July 03	<b>Holiday</b>		<b>C13</b> lecture & HW Q&A <b>C13</b> HW Due	<i>Intro C19</i>	<b>C19</b> Lecture
			<i>Intro Titration LE</i> <b>Freezing Point Report Due</b>	Titration Lab	Titration Lab
Wk-3 July 10	<b>C19</b> Lecture		<b>C19</b> Lecture	<b>C19</b> Lecture	<b>C13</b> & <b>C19</b> review for E1 <b>C19</b> HW Due
	<i>Intro Ksp &amp; Common Ion LE</i> <b>Titration Report Due</b>		Ksp & Common Ion Lab	Ksp & Common Ion Lab	<i>Intro Anion Qual LE</i> <b>Ksp &amp; Common Ion Report Due</b>
Wk-4 July 17	<b>Exam 1 (E1) –for C13 &amp; C19</b>		<i>Intro C21</i>	<i>E1 Grade results</i> <b>C21</b> Lecture	<b>C21</b> Lecture
	<b>Anion lab or do E1 first???</b> <b>Discuss options</b>		Anion Lab	Anion Lab	<i>Intro Electrochemical LE</i> <b>Anion Qual Report Due</b>
Wk-5 July 24	<b>C21</b> Lecture		<b>C21</b> Lecture & HW Q&A	<i>Intro C23</i> <b>C21</b> HW due	<b>C23</b> Lecture
	Electrochemical Lab		Electrochemical Lab	<i>Intro Cation LE</i> <b>Electrochemical Lab Report Due</b>	Cation Lab
Wk-6 July 31	<b>C23</b> Lecture		<b>C23</b> Lecture & HW Q&A	<b>C21</b> & <b>C23</b> review for E2 <b>C23</b> HW due	<b>Exam 2 – C21 &amp; C23</b> Time/Place to be determined
	Cation Lab		Cation Lab	<b>Finish Cation Qual Lab &amp; Report Due at end of period</b>	<i>Lab check-out</i> <b>Use time as study or exam period</b>

**There is a 20%/day late (not just class day) penalty on all assignments (HW, LEs, Exams & XCs) assessed based on the time they are actually received. Example, if an exam is due by 3 PM of a certain day but it not received until after it is due then the document will be considered to be one day late and the clock will then restart at midnight that day.**

## **Topic 1: Mixtures, Solutions & Colligative Properties (C13)**

*Textbook/Lectures:* Read C13 sections 1 & 4 to 6. Recommended that you read, understand and can work through the in text example problems (without the need to look for hints) then work the A and B related examples. The A and B worked answers are provided at the beginning of the “Problems” section at the end of each chapter.

*Homework (HW):* Problems from Silberberg 8e and 9e – with select answers in the Appendix: 4 5 7 8 9 12 13 16 44 45 46 49 52 53 55 59 61 65 69 70 75 84 88 91 93 94 97 101 102 107 110. Remember: For credit you must at a minimum attempt all the problems, clearly show your work and explain your answer – not just copy the answer from the book – in a hand written based document.

*Lab Experiment (LE):* (See: <https://www.deanza.edu/chemistry/Chem1C.html>). A practical laboratory problem will be assigned and we will it to clarify what is being asked and required. This is your opportunity to demonstrate that you can break a problem down, think it through and provide a rational, reasonable and meaningful solution to the problem that a student with a similar background can read and understand.

## **Topic 2: Ionic Equilibria (C19)**

*Textbook/Lectures:* Read C19 all sections

*HW:* Problems from Silberberg 8e and 9e – with select answers in the Appendix: 3 5 8 17 24 27 35 43 47 50 52 53a 54a 64 70 72 74 76 79 84 88 89 92 97 104.

*LE:* Here you will be doing three labs (1) Titration and Buffers (2)  $K_{sp}$  and Common Ions and (3) Qualitative Unknown Anion Analysis and a PDF of these procedures is available from the site mentioned above.

## **Topic 3: Electrochemistry (C21)**

*Textbook/Lectures:* Read C21 – all sections

*HW:* Problems from Silberberg 8e and 9e – with select answers in the Appendix: 2 3 6 9 13 15 23 25 26 28 31 34 37 39 41 45 47 52 54 57 61 69 83 88 102.

*LE:* Here you will be doing an Electrochemical Lab or a simple battery construction and analysis. A PDF of this procedure is available from the site mentioned above.

## **Topic 4: Transition Metals & Coordination Compounds (C23)**

*Textbook/Lectures:* Read C23 – skim Section 1 then read 3 & 4

*HW:* Problems from Silberberg 8e and 9e – with select answers in the Appendix: 11 15 22 23 35 36 44 46 47 49 50 54 58 62 63 66 76 78 81 87 91 95 98 102 110.

*LE:* Here you will be doing an extension of your Chapter 19 studies that involves the metals chemistry you are introduce to here. The lab Qualitative Cation Analysis PDF of this procedure is available from the site mentioned above. Note: This report will be due at the end of the final lab period (the day before Exam 2)

**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:**