Chemistry 1C Sec 01 & 02 Fall 21

Course times: Lecture: MW 6:00 - 7:15 PM Lab 01 & 02: MW time to be determined

Instructor: John Cihonski, e-mail: cihonskijohn@fhda.edu

Office Hours: After Lecture/Lab meeting – as needed after lecture

General:

Course Goal: Under the current restrictive conditions provide a Chem 1C course with sufficient content so that those in the sciences can succeed academically – under safe physical conditions. It is also a *personal* goal for you to understand the course materials and be able to solve problems (apply) using this understanding.

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

Approach to this on-line course:

- *Canvas* – We *will not be relying on Canvas* in this course. We will be relying on Zoom, My Portal and De Anza email for communication and pdf support.

- *Textbook* Silberberg, 8e or 9e. Read the recommended sections and work the "in 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 earlier than 8e then you should share a copy of the text or obtain a pdf of the homework from a friend who has an 8e or 9e. (See homework – below)

- *Lectures* After reading the recommended text material watch the on-line lectures (and take photos of the slides and worked examples for personal use if you find them useful). The material is similar to the text. Access to the Zoom videos is easy. See the example below:

Lecture	Chapter 13 Solution Related
T1 P1	Topic: Lecture material to be covered
	Sign in code for Zoom lecture – cut & paste entire code into your browser

T1 P1 means Topic 1 and Part 1

You should also be able to solve the on slide questions (labeled as "Q" in red), they are similar to the text and homework and they will be the main focus for the exams. Think of the lectures as being your 'Exam Study Guide." As a follow up to the on-line lectures we will periodically do open discussion sessions to answer questions related to the lectures and homework.

- *Homework (HW)* is from the text (Silberberg 8e or 9e). The homework shouldn't be difficult assuming you have read the text, studied the in-text examples and completed the lectures. Your homework will be submitted as a *handwritten* document at specified times 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*. If all four of the HWs are manually completed (and hopefully not copied from the solutions manual) then your final average will be increased by 3%. For example, if your final average is a 78.3% (a C) and you actually did all four HWs then your final average will increase by 3% to an 81.3% and a B for the course.

- *Laboratory Experiments (LE)* (25 pts/experiment) – We will use Hands on Labs (HOL) lab kits to study and apply the theory for select text topics. Each lab will focus on a defined topic and your written report 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."

  The class will be assigned the same 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. These lab problems 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. Your report should be a rational, coherent, readable and independently written description of your effort. This report should include calculations or example calculations as necessary to support your results and conclusions. In short, it must be suitable for someone to independently understand and duplicate your work. ***An example report will be provided and discussed in class prior to the first experiment***. Think of this from more of a job or internship perspective than a classroom situation. LE grading for Part A will be on a 0, 5, 15, 20 or 25 pts basis. If your data and lab report look too much like others then it will be evaluated more rigorously.

- *Exams* There will be two (2) exams - A mid-term covering the first two chapters and a final covering only the last two chapters. Exam specifics will be discussed further at the appropriate time but be aware that lab related questions/problems are fair game on the exams.

- *Plagiarism* is presenting someone else's work or idea 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 25 points then a penalty score of -25 will be awarded for plagiarism.

Grading:

Exams (Mid-term + Final) (2 x 100 pts)	200
Lab problems (3 x 25 pts)	75
Home Work (HW)	--
HW essentially represents a 3% bonus or extra credit benefit.	
Total Points:	275

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

Quarter Calendar: Chem 1C Fall 21

Estimated project start and due dates are indicated. Due dates will be modified if necessary.

Week of:	Monday	Wednesday
Wk-1 Sept 19	Course Intro (Syllabus) *Provide C13 Assignment Sheet (Lecture & HW)*	Do C13 slide intro General Q & A on course - clarification
Wk-2 Sept 27	Discuss LE in general *Provide LE sample reports*	Do C13 lecture slide & HW Q&A
Wk-3 Oct 03	Census. Order Lab Kit from DA bookstore *Provide C19 Assignment Sheet (Lecture & HW)* Last minute C13 Q & A **C13 HW due (see "email" info. below)**	Do C19 slide introduction
Wk-4 Oct 10	*Provide C13 LE pdf* and do introduction	Do C19 lecture slide & HW Q&A Lab kit delivery status?
Wk-5 Oct 17	C13 LE Hands on Lab/with Help session **C19 HW due**	Post C13 LE Q & A **C13 LE report due Sat Oct 23rd by midnight**
Wk-6 Oct 24	*Provide C19 LE pdf & do introduction* Wrap up & review for Exam 1	Grade check **Exam 1 (E1)** – covering C13 & C19
Wk-7 Oct 31	*Provide C21 Assignment Sheet (Lecture & HW)* Start C21 with slide overview	E1 Grade results + short Exam review Where do we god from here?
Wk-8 Nov 07	C19 LE Do Hands on Lab/with Help Session	*Provide C23 Assignment Sheet (Lecture & HW)* Start C23 with slide overview **C19 LE report due Sat Nov 13th by midnight**
Wk-9 Nov 14	Do C21 lecture slide & HW Q&A **C21 HW due**	*Provide C21 LE pdf & do introduction*
Wk-10 Nov 21	C23 lecture slide & HW Q&A	C21 LE Do Hands on Lab/with Help Session
Wk-11 Nov 28	C21 LE Q & A C23 HW Q & A **C23 HW due**	C21 & C23 Exam 2 review **C21 LE report due on Sat Dec 04 by midnight**
Wk-12 Dec 05	Grade Check before E2 (All but E2) **Exam 2** – discuss specifics	After E2 is graded – provide E2 and final grade *on an individual basis by personal request only*

Email addresses for HW, LP, Exam & XC submissions (Note: Section dependent):

Section 01 use : jcihonski@juno.com Section 02 use: jlcihonski@juno.com

Use the correct email for document submission. The wrong address will be treated as being late – a penalty.

There is a 20%/day late penalty on all assignments (HWs, Les & Exams) assessed based on the email time they are received. Example, if an exam is due by 6 PM then an email received after 6 PM (with a grace period to 6:05 PM) that day is considered to be one day late and the clock restarts at midnight.

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

Textbook: 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.

Lecture: Lectures are available on You-Tube. You are on your honor to listen to and understand the material presented. During the follow up Q & A sessions a reasonable level of understanding is assumed when participating in a discussion.

Lecture	Chapter 13 Solution Related
T1 P1 55 m	Topic: Definitions, Concentrations & Calculations
	https://youtu.be/76rd4mY_vnc
T1 P2 39 m	Topic: Concentration Units & Applications
	https://youtu.be/GZibL4tUyMU
T1 P3 63 m	Topic: Colligative Properties, Calculations and Applications
	https://youtu.be/tubTZZxGP6Q

To view the lecture - paste the *entire* code into your browser.

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): A practical laboratory problem will be assigned at the appropriate point in the chapter. We will discuss the problem to clarify what is being asked but your instructor will not discuss specific approaches or solutions to the problem. 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. *Lab procedure will be provided via pdf.*

Topic 2: Ionic Equilibria (C19)

Textbook: Read C19 all sections

Lecture: 4 You-Tube lectures for this Chapter.

Lecture	Chapter 19
T2 P1 44 m	Topic: Strong/Weak Acid/Base Titrations
	https://youtu.be/QN8ZhBjfJms
T2 P2 42 m	Topic: Buffers
	https://youtu.be/4y_faNV_C10
T2 P3 56 m	Topic: Solubility Product & Common Ion Effect
	https://youtu.be/VenFMBBccdY
T2 P4 38 m	Topic: Multiple Equilibria
	https://youtu.be/yL1jW1-Ocks

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.

Lab procedure will be provided via pdf.

Topic 3: Electrochemistry (C21)

Textbook: Read C21 – all sections

Lecture: – 6 You-Tube lectures for this Chapter

Lecture	Chapter 21
T3 P1 44 m	Topic: Oxidation, Reduction and Balancing Equations
	https://youtu.be/cO9WJx5-izM
T3 P2 51 m	Topic: Voltaic (Galvanic) Cells and Spontaneous Reaction Direction
	https://youtu.be/itHlwFSv6kY
T3 P3 41 m	Topic: Experimentally Determining Cell Voltage
	https://youtu.be/A_E7oYRScIU
T3 P4 43 m	Topic: Advanced Cell Calculations (Nernst Equation)
	https://youtu.be/mcPuo1IwIX4
T3 P5 47 m	Topic: Commercial Batteries and Corrosion
	https://youtu.be/QXNOFfn1J_g
T3 P6 67 m	Topic: Electrolytic Cells, Applications and Calculations
	https://youtu.be/SW5ZI2m442M

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.

Lab procedure will be provided via pdf.

Topic 4: Transition Metals & Coordination Compounds (C23)

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

Lecture:–6 You-Tube lectures for this Chapter

Lecture	Chapter 23
T4 P1 38 m	Topic: Transition Metals and their Electron Configurations
	https://youtu.be/KVGM4LLt2b4
T4 P2 39 m	Topic: Coordination Compounds – Definition
	https://youtu.be/bqjQKqRMr1w
T4 P3 51 m	Topic: Coordination Compounds – Structure & Nomenclature
	https://youtu.be/CnIETe0Sto8
T4 P4 49 m	Topic: Crystal Field Theory (CFT) & Compound Properties
	https://youtu.be/_rLJztSFu3Y
T4 P5 44 m	Topic: Crystal Field Theory (Continued)
	https://youtu.be/RwOZHKpiHkI
T4 P6 31 m	Topic: Coordination Compound Synthesis
	https://youtu.be/gzLPnlFy0XQ

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.

There is NO Lab for this Topic/Chapter.

Student Learning Outcome(s):

*Apply the principles of equilibrium and thermodynamics to electrochemical systems.

*Apply the principles of transition metail chemistry to predict outcomes of chemical reactions and physical properties.

*Evaluate isotopic decay pathways.

*Demonstrate a knowledge of intermolecular forces.