Chem 1C- 02 General Chemistry Course Outline Summer 2019

Dr. Billie Lo (billielo@comcast.net)

Lecture**: MTWTh 2:30 –3:45 PM S35**
Laboratory**: MTWTh 11:30 AM– 2:20 PM SC2208**

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.

TEXTS

Chemistry: The Molecular Nature of Matter and Change, 8th edition by Silberberg and Amateis

A simple Scientific Calculator (non-programmable) is required for all the quizzes and exams; and **Safety goggles** is a must for the labs.

THE LABORATORY

Lab safety rules are strictly enforced. **SAFETY GLASSES or GOGGLES** must be worn **AT ALL TIMES** while you are in the laboratory. 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. You are expected to arrive in the laboratory on time. Preview the lab materials before coming to lab is required. Students must check out with me at the end of each lab to have their notebook stamped and sign a roll sheet. Each laboratory experiment must be completed within the specified time. When that period is over, no credit can 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.

BASIS OF EVALUATION

A. Quizzes (Approx. 10 - 15 minutes):
Quizzes will be given either in the beginning or at the end of the lecture to those students who are present when the quizzes are passed out. No make-up quiz will be given.

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

C. 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.

D. Homework

The on-line "Connect" homework is optional. The problems are actually the 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 50 extra points toward your final grade if you score 60% of the total assigned points. However,** an acccess code which may be purchased separately or comes with a new textbook is required. The "CONNECT" web address is:
https://connect.mheducation.com/class/b-lo-chem-1c-y--2019

E. Attendance and withdraws:

Attendance at every meeting is required and will be count towards your grade.

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

F. Worksheets

Three worksheets will be assigned, each counts as 10 extra points.

Worksheet #	Content	Start Date	Due Date	Max Points
1	Concentration units and Acid/Base reactions	7/1/19	7/8/19	10
2	pH review	7/8/19	7/15/19	10
3	Balance equations	7/15/19	71/22/19	10

G. Grading:

Quizzes	100+
Exams	330 Points
Final exam	250 Points
Lab Grade	320 Points
Lab Exams (140)	
Lab Reports(90)	
Lab Notebook (40)	
Performance/Unknown (50)	
Total	100%

880+ pts A **780+ pts B** **650+pts C** **500+pts D**

I. CHEMISTRY 1C LABORATORY SAFETY RULES

1. **SAFETY GLASSES OR 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 2:10 PM** each day of the experiment.
5. Student must check out with the instructor at the end of each lab to have their notebook stamped and sign a roll sheet.
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.

8. 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.
9. **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.**

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

1. Number and Title of the experiment
2. Purpose/theory of the experiment (brief)
3. Formula for the calculation.
4. Procedure in detail for the experiment. A photocopy of the lab manual is not allowed. Check with the lab instructor which section will be performed next to minimize preparation time and effort.

The above should be fully prepared prior to attending the lab lecture and it should be stamped before lab lecture.

5. Data (laboratory work) must be entered **immediately** and **directly** into the lab notebook **in ink.**
6. Calculations

The laboratory midterm and final are "**open-notebook**". A well-prepared notebook would be helpful during these exams.

K. FORMAT OF THE LAB REPORT

1. Number and Title of the experiment.
2. Theory (more detail) and formula for the calculation
3. Procedure for the experiment (brief).
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. Pre-lab and post lab questions.

Report is due on day 2 of the next 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	**M** 7/1/19	Silber'g 10.1-3	Molecular shape(VSEPR Theory), polarity; Types of Intermolecular forces (IMF)	**Lab Check-In**
	T 7/2/19	Silber'g 13.5, 13.1- 13.6	Solution Units and conversion IMF and solubility; Colligative properties	Freezing Point Day 1
	W 7/3/19	Silber'g 13.6	Colligative properties; Buffer,Common Ion effect, Henderson-Hasselbach equ'n	Freezing Point Day 2
	Th 7/4/19	JULU 4	NATIONAL HOLIDAY	
2	**M** 7/8/19	Silber'g 18.3 19.1	Bronsted-Lowry definition of acid/base – proton transfer; Buffers conjugate acid-base pair, buffer range, buffer capacity	Buffers Day 1
	T **7/9/19**	**Exam 1**	**Solutions and advanced acid-base equilibria**	Buffers Day 2
	W 7/10/19	Silber'g 19.2	Titration – acid (or base), buffer, salt, conjugate base or acid; treat salts as conjugate base or acid; How to choose the correct indicator, Titration curves	K_{sp}, Common Ion Effects Day 1
	Th 7/11/19	Silber'g 19.3 17.2&4, (Table 17.2)	Effect on Solubility - $K_{sp,,}$ common ion effect, pH and metal complex-Ion formation Chemical Equilibrium- Q vs. K, Manipulaton of K's, Solubility & Complex-Ion Equilibrium	K_{sp} ,Common Ion Effects Day2
3	**M** 7/15/19	Chapter19	Solubility & Complex-Ion Equilibrium	ANIONS DAY 1
	T 7/16/19	Chapter 19 Chapter 21	Solubility & Complex-Ion Equilibrium Electrochemistry	ANIONS DAY 2 **Lab Midterm**
	W 7/17/19	Chapter 21	Electrochemistry	MicroscaleElectrochem DAY 1
	Th 7/18/19	Chapter 21	Electrochemistry	MicroscaleElectrochem DAY 2
4	M 7/22/19	Chapter 21	Electrochemistry	Cation (1)
	T 7/23/19	Chapter 21	Electrochemistry	Cation (2)
	W 7/24/15	Chapter 23	Transition Elements and Their Coordination Compounds	Cation (3)
	Th 7/25/19	**Exam 2**	**Solubility equilibria & electrochemistry**	Cation (4)
5	**M** 7/29/19	Chapter 23	Transition Elements and Their Coordination Compounds Chemical	Cation (5)
	T 7/30/19	Chapter 23	Transition Elements and Their Coordination Complexes	Cation (6)
	W 7/31/19	Chapter 23	Transition Elements and Their Coordination Compounds	Cation (7)
	Th 8/1/19	Chapter 23 Chapter 24	Transition Elements and Their Coordination Compounds Nuclear Chemistry	Cation (8)
6	**M** 8/5/19	**Exam 3**		Cation (9)
	T 8/6/19	Chapter 24	Nuclear Chemistry	**Lab Final** Lab Check Out
	W 8/7/15	Chapter 24	Nuclear Chemistry	
	Th **8**/8/15	**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:

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.

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):

*Develop problem solving techniques by applying the \Scientific Method\" to chemical data."
*Analyze and solve chemical questions utilizing information presented in the periodic table of the elements.
*Evaluate current scientific theories and observations utilizing a scientific mindset and an understanding of matter and the changes it undergoes.