

Porterville College
Chemistry 101B - General Chemistry II
CRN 30088 - Spring 2019

Instructor Information:

Christopher "Buzz" Piersol

Please feel free to communicate with me using any of the following methods:

Office: SMSS-211F (second floor offices facing quad)

Phone (voice): 559-791-2346

Remind: Text 81010 with the message "@pcchem101"

e-mail: cpiersol@portervillecollege.edu

web: <http://chem.piersol.com/>

Lectures: MW 12:50 p.m. – 02:15 p.m. **SMSS-220**

Labs: TR 01:00 p.m. – 04:10 p.m. **SMSS-220**

Office Hours: M 10:00 a.m. – 11:00 a.m. **SMSS-211F**

T 10:30 a.m. – 12:00 p.m. **SMSS-211F**

W 2:30 p.m. – 3:30 p.m. **SMSS-211F**

R 10:00 a.m. – 11:00 a.m. **SMSS-211F**

and also by arrangement!

Required Materials:

(obtain before the end of 1st week)

- ✓ Text: Chemistry, 10th Ed., Zumdahl – ISBN: 9781305957404 (**9th edition OK**)
- ✓ Lab Manual: Experimental Chemistry, 10th Ed., Hall – ISBN: 9781305957459 (**10th Ed ONLY**)
- ✓ Laboratory Notebook, Hayden-McNeil – ISBN: 9781930882744
- ✓ Online Homework, Sapling Learning – ISBN: 9781319080266
- ✓ Approved Splash Goggles, indirect vent (purchase or borrow)
- ✓ Scientific Calculator

Student Learning Outcomes

By the end of the course the student should be able to:

- A. Explain and interpret vapor pressure, phase diagrams, heating and cooling curves, while also applying the concepts of specific heat capacity, enthalpy of fusion, and enthalpy of vaporization, using related formulas.
- B. Describe and solve problems involving the properties of solutions, including structural, pressure, and temperature effects, and the standard colligative properties of boiling point elevation, vapor pressure of ideal and non-ideal solutions, freezing point depression, and osmotic pressure.
- C. Using experimental data, determine the differential and integrated rate law, calculate rate constant, and apply collision theory to evaluate reaction mechanism.
- D. Apply equilibrium concepts to physical and chemical change, such as acid-base reactions, solubility product, complex ion dissociation, electrochemical cells, and solvation.
- E. Apply the first and second laws of thermodynamics to solve spontaneity and equilibrium problems involving energy and entropy change.
- F. Describe nuclear chemical change, factors regarding stability of the nucleus, including modern applications of nuclear chemistry.

Grading:

See course schedule for test and lab dates. The final course grade will be based on the following percent range (A = 89.5%+, B = 79.5% - 89.49%, C = 69.% - 79.49%, D = 59.5% - 69.49%, F = 59.5%-) Each assignment category will be weighted as follows:

4 Mid-Term Exams:	Labs/Pre-Labs:	Homework:	Final Exam:
50%	20%	10%	20%

Grading, cont.:	You can check your grade progress on Canvas: https://kccd.instructure.com/courses/27789
Attendance:	Regular attendance of lectures and laboratories is essential. Poor attendance will be reflected in the final grade. In the event of absence or tardiness, it will be the student's responsibility to obtain handouts, assignments and/or notes from fellow students. Students who miss several classes/laboratories may be dropped from the class.
Students with Disabilities:	State and federal regulations require equal access to education for students with disabilities. If you require alternate media, or other disability services, please visit the Disability Resource Center in AC-115, or contact them by phone at 791-2324.
Exam/Lab Make-Up Policy:	Exam and lab make-ups will only be allowed if the instructor is contacted prior to, or during the absence and for unavoidable absences only. In the event that a laboratory make-up is not possible, a related assignment will be given. Make-ups will not be given for any avoidable absence. Contact methods are listed at the top of this syllabus.
Laboratory:	You are required to <u>keep a laboratory notebook</u> of all your data, and turn in the carbon copies. Three labs require a lab report which are weighted higher than other labs. The laboratory assignment is 20% of your overall grade. Missing labs, turning lab assignments in late, or failing to turn in lab assignments may severely affect your grade. Please refer to the handout <u>Laboratory Assignment Guidelines</u> for detailed information on lab assignments.
Online Homework:	Homework is assigned and due on a weekly basis online through Sapling Learning. Each weekly assignment is typically available 2 weeks before it is due. The first assignment is due at the end of Week 2. Purchase online or at the bookstore. I recommend you do your homework on campus either in the Learning Center (LRC-503) when a tutor is present, or in the Computer Commons.
Class Notes:	Class notes will be available on the class website to assist during lecture. These notes <u>are not a substitute</u> for the lecture itself.
Tutor:	Kassandra Montes de Oca is again serving as a chemistry tutor. You can set up appointments at the beginning of the second week of school in the Learning Center (LRC-503).
Other Resources:	The library has a recent addition of the CRC Handbook of Chemistry and Physics, along with other chemistry references. There are also references in the classroom. There are many fun chemistry sites on the internet (some good, some bad). Some are listed on my website. A newly purchased textbook has an "Online Study Center" at http://www.cengage.com/highered/ (search the text ISBN).
Withdrawal Policy:	Stay on track and keep up with the work as much as possible, however withdrawal from the course may be necessary if you are making poor progress. Withdrawal by the 20% date (Jan 27) does not result in anything appearing on your transcript. Withdrawal between the 20% date and the 60% date (Mar 29), results in a 'W' appearing on your transcript. Students may not withdraw from a course after the 60% date. A student who is not attending class and does not officially withdraw through admissions will likely receive a grade of 'F' on his/her transcript. <i>It is the student's responsibility to ensure that he/she has withdrawn from the class!</i> For more information, please refer to the PC catalog .
Important Things Outside of Class	<ul style="list-style-type: none"> • Email – check your Porterville college email daily, I regularly email the entire class information relevant to the lecture and laboratory. • Website - Please check the website for any handouts you missed in class • Exam Keys – I post old exam keys at Sapling—Online Homework site. Check them out! • SMS reminders – Subscribe by texting the number 81010 with the message @pcchem101 • Grade Reports – Posted on Canvas. Note: these are posted "live" and may not be 100% accurate at any given moment.

Spring 2019 Exam Schedule (during lab meeting)

There are four exams scheduled throughout the semester during Laboratory meeting times plus the final exam.

Exam	Week	Exam Date
1	4	Thursday, February 7
2	7	Thursday, February 28
3	10	Thursday, March 28
4	13	Thursday, April 18
Final	16	Tuesday, May 7, 12:30 p.m.

Spring 2019 Lecture Schedule (MW 12:50 – 2:15 p.m.)

Week	Class Date	Chap	Lecture Topics
1	Jan 14	10	Read text: 10.1, 10.2, 10.8, 10.9 / Vapor Pressure, Phase Diagrams
	16	11	Solutions, Solubility
2	21	—	<i>Martin Luther King, Jr. Holiday – No Class Meeting</i>
	23	11	Colligative Properties of Solutions
3	28	12	Reaction Rates, Rate Laws
	29	12	Reaction Path and Rate, Catalysts
4	Feb 4	13	The Equilibrium Constant & Expression
	6	13	Equilibrium Calculations
5	11	13,14	Le Châtelier's Principle, Intro Acids
	13	14	Acid Definitions, Strength & Acid Constant, Conjugate acid/bases
6	18	--	<i>Washington Day Holiday – No Class Meeting</i>
	20	14	Calculation of pH: strong acids & bases, weak acids & bases, acid mixtures
7	25	14	Acid Structure, Oxides, Lewis Definition
	27	15	Buffer Solutions
8	Mar 4	15	Acid-Base Titration Calculation of pH
	6	16	Solubility of Ions in Acid, Solubility Product
9	11	16,17	Complex Ions, Spontaneity
	13	17	Entropy and Free Energy
—	18	<i>Spring Recess – No Class Meetings</i>	
	20		
10	25	17	Free Energy Calculations, Equilibrium, Work
	27	18	Electrochemistry: Galvanic & Electrolytic Cells
11	April 1	18	Electrochemistry: Half-Reactions, Potential, Calculations
	3	19	Nuclear Chemistry, Radioactive Decay
12	8	19	Half-life, Nuclear Stability
	10	19	Nuclear Fission & Fusion, Reactors
13	15	21	Trends in Transition Metals, Coordination Compounds
	17	21	Local Electron Model, Crystal Field Theory
14	22	21	Isomerization
	24	22	Alkanes, nomenclature, reactions
15	29	22	Alkenes, alkynes, nomenclature and reactions
	May 1	22	Aromatic compounds, functional groups, polymers
16	May 7	10–21	Final Exam: Tuesday, May 7, 2019, 12:30 – 2:30 p.m.

Spring 2019 Lab Schedule (TR 1:00 – 4:10 p.m.)

Lab Reports are required for Experiments 48, 28, and 45.

See *Laboratory Assignment guidelines and Laboratory Grading Rubric* for more information about the laboratory.

Week	Lab Date	Lab Manual Experiment	Prelabs	Lab Topic
1	Jan 15	—	—	Check-in, safety, and catch-up lecture: IM Forces, liquids
	17	42	1,4	Synthesis of Sodium Thiosulfate Pentahydrate
2	22	25	2,3	Osmosis and Dialysis
	24	48	2,4	Proteins Lab Report (Due Jan 31)
3	29	—	—	<i>Catch-Up Lecture</i>
	31	36	3,4	Determination of Vitamin C in Fruit Juices
4	Feb 05	—	—	<i>Review for Exam 1</i>
	07	—	—	Exam 1
5	12	26	1,2	Rates of Chemical Reactions
	14	47	1,4	Preparation of Fragrant Esters
6	19	—	—	<i>Catch-Up Lecture</i>
	21	8/Buzz	2,5	Distillation
7	26	—	—	<i>Review for Exam 2</i>
	28	—	—	Exam 2
8	Mar 05	28	3,5	Spectrophotometric Determination of Equilibrium Constant Lab Report (Due Mar 12)
	07	29	2,4	Stresses Applied to Equilibrium Systems
9	12	31	1,4	Acids, Bases, and Buffered Systems
	14	30	1,5a-e	The Solubility Product of Calcium Iodate
—	19	Spring Recess – No Laboratory Meetings		
	21			
10	26	—	—	<i>Review for Exam 3</i>
	28	—	—	Exam 3
11	Apr 2	37	2,4	Electrochemistry 1: Chemical Cells
	4	38	1,5	Electrochemistry 2: Electrolysis
12	09	52	3	Qualitative Analysis of Selected Cations and Anions
	11	45	7 – 14	Organic Chemical Compounds Lab Report (Due Apr 18)
13	16	—	—	<i>Review for Exam 4</i>
	18	—	—	Exam 4
14	23	44	1,5	Qualitative Analysis of Organic Compounds
	25	41	1,2	Preparation of a Coordination Complex of Cu
15	30	—	—	<i>Review / Marathon Problem</i>
	May 2	—	—	<i>Review for Final Exam</i>
16	May 7	Final Exam: Tuesday, May 7, 2019, 12:30 – 2:30 p.m.		