Porterville College

General Chemistry I

Chemistry 101A, CRN 70095, Fall 2018

Instructor Contact: **Christopher "Buzz" Piersol**

Please feel free to find/contact me using any the following methods:

Office: SMSS-211F (offices facing quad)

Phone: 559-791-2346

Remind: Text 81010 with the message "@pcchem101"

Email: cpiersol@portervillecollege.edu

Web: http://chem.piersol.com/chem101/

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. – 11:30 a.m. **SMSS-211F**
M 04:00 p.m. – 04:30 p.m. **SMSS-211F**
W 10:00 a.m. – 11:30 a.m. **SMSS-211F**
R 10:00 a.m. – 11:30 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
- ✓ 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. Solve problems dealing with significant figures, scientific notation, and unit conversion involving moles, weight, percentage composition, theoretical yield, and stoichiometry using dimensional analysis.

B. Describe the physical and wave mechanical aspects of the atom, and trends in structure, size, and properties of the elements in the periodic table.

C. Give the name of an element or compound, and draw Lewis Dot and 3-Dimensional structures, predicting bond angle, hybridization, and electron configuration of atoms, molecules, and ions. Predict structures based on molecular orbital theory. Identify the oxidation state of a given atom/element in any given species.

D. Classify chemical reactions, balance equations, including oxidation-reduction reactions. Predict the products of combustion, acid-base, and precipitation reactions.

E. Describe the kinetic molecular theory of gases and the difference in behavior between ideal and real gas behavior. Describe and solve problems involving the fundamental gas laws.

F. Classify intermolecular attractive forces and use them to describe structural and physical and chemical properties of elements and compounds, such as density, state of matter, state changes, and hardness of solids.

Grading: See course schedule for test and lab dates. The final course grade will be based on a standard grading scale (i.e. A = 89.5%+, B = 79.5% - 89.49%, C = 69.5% - 79.49%, D = 59.5% - 69.49%, F = 59.5%-) Each grade component will be weighted as follows:

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

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 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 keep a laboratory notebook of all your data, and turn in the carbon copies. By the 4th week of lab, some laboratory activities will require laboratory reports to be turned in. These will be 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 Laboratory Assignment Guidelines 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 available 2 weeks before it is due. The first assignment is due Week 2. See the handout for purchase, registration, and how to perform the online homework. I recommend that you work on the online homework in the Learning Center (LRC 503) when either professor Piersol or Haney are present in order to receive assistance.

Class Notes: Class notes are available on the class website to assist during lecture. These notes are not a substitute for the lecture itself.

Chemistry Tutor: We should have a dedicated CHEM 101A tutor, Kassandra Montes de Oca, ready to go by the 2nd week of classes.

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 (**September 2**) does not result in anything appearing on your transcript. Withdrawal between the 20% date and the 60% date (**October 19**), 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. Be sure you understand this policy! *It is the student's responsibility to ensure that he/she has withdrawn from the class!* For more information, please refer to the PC catalog.

Important Things Outside of Class

- **Email** – check your Porterville college email daily, I email the entire class information relevant to the lecture and laboratory.
- **Website** - Please check the website for 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.

Lecture Schedule (Monday & Wednesday)

Week	Class Date	Read Chap	Lecture Topics	Homework Due
1	8/20	1	Measurement, Units, Calculations	
	8/22	1	Temperature, Density	
2	8/27	2	Chemistry & Early Atomic Theory	HW1
	8/29	2	Atomic & Molecular Structure, Nomenclature	
3	9/3	--	***Labor Day Holiday - No class meeting***	HW2
	9/5	3	Stoichiometry, Molar Mass, Percent Composition	
4	9/10	3	Chemical Equations & Stoichiometry	HW3
	9/12	4	Electrolytes, Solutions, Concentration & Dilution	
5	9/17	4	Reactions in Solution, Acid-Base Reactions	HW4a
	9/19	4	Redox Equations, Half-Reaction Balancing	
6	9/24	5	Gases, Gas Laws, Ideal Gas Law	HW4b
	9/26	5	Gas Stoichiometry, Kinetic Molecular Theory	
7	10/1	5	KMT, Gas effusion, diffusion	HW5a
	10/3	6	Thermochemistry, enthalpy	
8	10/8	6	Hess' Law	HW5b
	10/10	6	Enthalpies of formation	
9	10/15	7	EM Radiation, photoelectric effect	HW6
	10/17	7	Bohr & Quantum Mechanical Model of Atom	
10	10/22	7	Quantum Mechanics, continued!	HW7a
	10/24	7	Electron Configuration, Periodic Table & Trends	
11	10/29	8	Bonding, Electronegativity, Polarity	HW7b
	10/31	8	Covalent Bonds, Lewis Structures, VSEPR	
12	11/5	8	Bond Energy, Lattice Energy	HW7c,8a
	11/7	8	Born-Haber Cycle	
13	11/12	9	Hybridization, Molecular Orbital Theory	HW8b
	11/14	9	Molecular Orbital Diagrams	
14	11/19	9	Bond Order, Paramagnetism	--
	11/21	9	Delocalized Pi Electron Systems	
15	11/26	10	Intermolecular Forces, the Solid State	HW9
	11/28	--	Thermite Demonstration	

Examination Schedule

Including the final exam, there are four exams scheduled throughout the semester during Laboratory meeting times.

Note: Exam 4 is the Tuesday before Thanksgiving.

Exam	Week	Exam Date
1	4	Thursday, September 13
2	7	Thursday, October 4
3	10	Thursday, October 25
4	14	Tuesday, November 20
FINAL	16	Tuesday, December 4

Laboratory Schedule (Tuesday & Thursday)

Lab Reports are required for Experiments 9, 35, and 33.

- For non-report labs, turn in notebook carbon copies at the following lab meeting.
- For report labs, Lab Report (with notebook copies) is due at the lab one week later.

See the handout, Laboratory Assignment Guidelines for more details on laboratory assignments.

Week	Lab Date	Lab Manual Exp #	Prelab	Lab Topic
1	8/21	--		Check-in, safety, lab equipment, lab assignment
	8/23	1,2	1: 2,4 2: 1,4	Determination of Mass, Volumetric Glassware
2	8/28	3	3,6	Density Determinations
	8/30	5	1,2	Determination of Melting Point (Part 2 only)
3	9/4	--		*Catch-up lecture*
	9/6	13	2,4	Hydrates and Thermal Decomposition
4	9/11	--		*Review for Exam 1*
	9/13	--		**Exam 1**
5	9/18	11	1,2	Stoichiometry of Iron(III)-Phenol Reaction
	9/20	9	3,5	Resolution of Mixtures 2: Chromatography **Lab Report (due 9/27)**
6	9/25	32	1,2	Analysis of an Unknown Acid Sample
	9/27	22	1,2a-f	Properties of Some Representative Elements
7	10/2	--		*Review for Exam 2*
	10/4	--		**Exam 2**
8	10/9	15	3,4	Molar Volume and The Ideal Gas Constant
	10/11	35	2,4	Determination of Iron by Redox Titration **Lab Report (due 10/18)**
9	10/16	--		*Catch-up lecture*
	10/18	17	2,5	Calorimetry
10	10/23	--		*Review for Exam 3*
	10/25	--		**Exam 3**
11	10/30	14	1,2	Preparation and Properties of H_2 and O_2 gases
	11/1	19	handout	Spectra of Atomic H and N
12	11/6	33	1,4	Evaluation of Commercial Antacid Tablets **Lab Report (due 11/13)**
	11/8	--		*Catch-up Lecture*
13	11/13	21	2	Molecular Shapes and Structures
	11/15	--		*Review for Exam 4*
14	11/20	--		**Exam 4**
	11/22	--		***Thanksgiving Day Holiday – No Lab meeting***
15	11/27	--		*Review / Marathon Problem*
	11/29	--		*Review for Final Exam*
16	**Tues 12/4**			**Final Exam: Tuesday, December 4 12:30 PM – 02:30 PM**