CHEM 1A General Chemistry I

Course Code: CHEM 1A

Instructor: Todd A. Wells, Ph.D.

Home Institution: University of Denver

Office Hours: TBA & By Appointment

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Credit: 3

Course Description :

Course Description: This course is a study of the fundamentals of chemistry. A survey of atomic structure, periodicity, bonding, nomenclature, stoichiometry, gas laws, and solution chemistry is provided for those students with no background in these areas.

Prerequisite:

High school chemistry and college algebra; sufficient performance on the college algebra diagnostic test, or equivalent; passing score on a standardized Chemistry diagnostic exam given prior to each semester, or a minimum grade of "C" in CHEM 4.

Textbook:

We will also use an online textbook found at OpenStax Chemistry (open source e-book): https://openstax.org/details/books/chemistry-atoms-first-2e

Course Objectives:

1. Apply significant figures correctly in measurements and calculations.
2. Use dimensional analysis to solve a variety of problems.
3. Use the periodic table to assist in explaining chemical bonding, polarity, and physical and chemical properties of elements.
4. Calculate amounts of chemical species using information from chemical formulas and chemical equations.
5. Correlate information from balanced chemical equations to the microscopic scale.
6. Explain atomic structure using the quantum mechanical model of the atom
7. Calculate the mathematical relationship between variables after graphing the experimental data.
8. Apply knowledge of chemistry principles to real world situations.

Course Schedule:

Week1 (videos 1-6)

1. Matter and Energy
2. Atoms/elements
3. Light, electrons and atomic theory
4. Electronic configuration
5. Periodic Table
6. Periodic Trend

Lab1 - Lighting the way to atomic structure

Week2 (videos 7-12)

7. Periodic Trends
8. Compounds
9. Chemical Bonds
10. Lewis structures
11. Molecules and shapes of molecules
12. Problem solving

Lab2 - Periodic Trends and Electron Configuration

Week3 (videos 13-19)

13. Grams, Moles and Mass percent
14. Chemical Reactions
15. Balanced Chemical reactions
16. Solutions, Solubility and precipitation reactions
17. Acids and Bases
18. Acid Base reactions
19. Oxidations and reductions

Lab3 – A look at Chemical Formulas

Week4 (videos 20-25)

20. Balancing redox equations
21. Limiting reactant and yield
22. Intermolecular forces and water
23. Solutions-homogeneous and heterogeneous
24. mass percent, molarity
25. Dilutions

Grading Policy:

Lecture: The format of class meetings will be a combination of traditional lecture format, problem solving/ group activities, group discussions, and laboratory exercises. I will summarize new material and present illustrations and examples. In lecture, I WILL NOT identify and describe every detail you will read in the text and any supplemental materials. I will, however,

emphasize the important topics covered in the reading as well as problem solving strategies when appropriate. You should stop me at any time if you have questions about the material being covered.

In the problem solving/group activities, material from the lecture will be explored in greater detail. We will work on specific "challenge problems" in small groups and any questions you have on the material covered in lecture or homework problems.

Reading: You are expected to complete the assigned reading prior to the class lecture. After lecture, you should reread the assigned text. I recommend that you understand the material and how to solve the sample problems before proceeding to the next section. At the end of each chapter,
a summary of important equations and terms is provided that should prove helpful in the preparation for exams.

Homework: Each lecture has a group of homework problems assigned to it. The problems are chosen to prepare you for the hour exams. If you understand and can do all the homework, you probably will do well on the exams. To get the most benefit from homework, you should **do the assignments on schedule**. It is important to keep up with these assignments!

Exams: There are two hour exams during the course, plus a cumulative final exam. Exam problems will be similar to the problems assigned as homework and the problems worked in class.

Letter Grade Assignment

Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

Letter Grade	Percentage	Performance
A	93-100%	Excellent Work
A-	90-92%	Nearly Excellent Work
B+	87-89%	Very Good Work
B	83-86%	Good Work
B-	80-82%	Mostly Good Work
C+	77-79%	Above Average Work
C	73-76%	Average Work
C-	70-72%	Mostly Average Work
D+	67-69%	Below Average Work
D	60-66%	Poor Work
F	0-59%	Failing Work

Course Policies:

Attend Class

Students are expected to attend all class sessions as listed on the course calendar.

Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that they can help you find a solution.

Understand When You May Drop This Course

It is the student's responsibility to understand when they need to consider disenrolling from a course. Refer to the Course Schedule for dates and deadlines for registration. After this period, a serious and compelling reason is required to drop from the course. Serious and compelling reasons includes: (1) documented and significant change in work hours, leaving student unable to attend class, or (2) documented and severe physical/mental illness/injury to the student or student's family.

Commit to Integrity

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

Academic Honesty Policy & Procedures

"The principles of truth and honesty are recognized as fundamental to a community of scholars and teachers. University expects that both faculty and students will honor these principles, and in so doing, will protect the integrity of academic work and student grades."

Definitions

"**Cheating** is the act of obtaining or attempting to obtain credit for academic work through the use of any dishonest, deceptive, or fraudulent means."

"Plagiarism is a form of cheating."

"Plagiarism is the use of distinctive ideas or works belonging to another person without providing adequate acknowledgement of that person's contribution."