**CHEM 1450, College Chemistry 1, CRN 18291**

**Fall 2014, University of Central Arkansas**

**General Information**

**Professor:** Dr. Robert Mauldin

**Contact Information:** Laney Annex 130, 501-852-0692, rmauldin@uca.edu

**Office Hours:** T 8:00-10:40 AM, Th 12:15-1:30 PM, after class, or by appointment

**Lecture:** TTh 2:40-3:55 PM, Laney 103

**Laboratory:** W 2:00-4:50 PM, Laney 202

**Required Course Materials**

**Lecture Text:** “Chemistry: A Molecular Approach” by Nivaldo Tro, Third Edition. The solutions manual is optional.

**Labs:** Electronic copies of the labs will be posted on the myUCA course site for this course. You will be responsible for printing the experimental procedure and data sheet(s) and bringing them to lab.

**Calculator:** You must have your own scientific calculator in order to work assigned problems in the book and to do calculations in the lab. On the exams, however, the use of any sort of calculator is not allowed.

**Safety Glasses:** Your very own pair of safety glasses with side-shields and the designation ANSI Z87 is required and may be purchased in the bookstore, from UCA’s Chemistry Club, or a hardware store.

**Course Description and Objectives**

**Course Description:**  A required course for chemistry and biology majors, the biological and chemical physics tracks, pre-pharmacy, pre-medicine, pre-dental, and pre-veterinarian study. Recommended for pre-physical therapy. Principles of general chemistry with emphasis on their theoretical and quantitative aspects and applications. Lecture, small-group work, and laboratory instruction are used. Three hours of lecture and three hours of lab per week. Prerequisite: Math ACT subscore of 21 or above, or prerequisite/corequisite of MATH 1390.

**Course Objectives:** Upon completion of this course, the student should be able to:

* understand basic concepts in chemistry in the following content areas: chemical reactions, nomenclature, periodicity, quantum theory, electronic configurations, atomic structure, chemical bonding, Lewis structures, and molecular geometries
* solve problems regarding density, atomic mass, empirical formulas, thermochemistry, and gas laws, clearly show how the final answer was obtained, and round final answers to the appropriate number of significant figures
* apply the factor-label method to solve problems in chemistry whenever appropriate, particularly with the conversion of units and stoichiometry
* appreciate science as a way of knowing and become more familiar with the fundamentals of scientific reasoning by way of experimentally testing scientific ideas in the lab

**Grading Composition and Scale**

Thirteen lab quizzes/data sheets @ 20 points each = 260 points (30% of total)

Four exams @ 100 points each = 400 points (47% of total points)

One comprehensive final exam @ 200 points (chapters 1-10) = 200 points (23% of total points)

Total points = 880 **(Note: Extra credit will NOT be available; no grades will be dropped)**

Grading scale: 90-100%=A; 80-89%=B; 70-79%=C; 60-69%=D; <60%=F

**Policies**

**Attendance and Missed Work:** If possible, contact me by e-mail ([rmauldin@uca.edu](mailto:rmauldin@uca.edu)) to notify me in advance if you are going to miss an exam or a lab for a legitimate reason. If you do not contact me by e-mail within 24 hours after the absence, a grade of zero will be assigned for the unexcused, missed work. No makeup exams or labs will be given, except for the final exam. In order for an absence from an exam or lab to be excused, you must submit a written message (by e-mail) that identifies the date of the absence and the reason that you were absent. If you do have an excused absence (e.g., due to serious illness, court appearance, family emergency, etc.) for a missed exam or lab, the grade for the final exam will be used in place of the missed exam or lab. If you miss a class, you are still responsible for the assignments for the next class meeting. **If you miss more than one exam or more than two labs, you will be: a) dropped from the course for non-attendance if before the W deadline, or b) dropped from the course with a WP or WF, depending on your grade at that time, if between the W deadline and the WP/WF deadline, or c) assigned a letter grade of F if after the WP/WF deadline.**

**Grading Errors:** If I make a mistake in grading your paper, bring the mistake to my attention within one week after the graded paper has been returned. Otherwise, the correction will not be made.

**Cell Phone and Laptop Use:** The use of cell/smart phones, pads, and laptop computers is not allowed in the lecture or lab. For each instance in which the student is caught using one of these devices, 10 points will be deducted from the student’s grade and an e-mail notification will be sent to the student. You may place your cell/smart phone on the desk or lab bench so that you can receive emergency notifications from UCAAlert (sign up via your myUCA account), however, you may not use your cell/smart phone in any other way. Turn off the ringer and vibrate at the beginning of each class meeting.

**Academic Misconduct:**  The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the

university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy

No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for

academic misconduct in this course may include a failing grade on an assignment, a

failing grade in the course, or any other course-related sanction the instructor determines

to be appropriate. Continued enrollment in this course affirms a student's acceptance of

this university policy. In the first instance of academic dishonesty in this class, a zero will be assigned for that particular assignment. In the second instance of academic dishonesty, a failing grade will be assigned for the class. The most common form of academic misconduct in this class is cheating on exams and lab quizzes. To prevent cheating on exams and lab quizzes, no cell/smart phones are allowed during the exam or lab quiz time. Use of cell/smart phones during an exam or lab quiz will result in a zero for that exam or quiz. See the current Student Handbook for the procedure to appeal accusations of academic misconduct.

**Americans with Disabilities Act:**  The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this act due to a disability, please contact the UCA Office of Disability Services, 450-3613. If you are pregnant, allergic to any chemicals, color-blind, or have any other condition that might impact work in a chemistry lab, tell me immediately so that we can make accommodations.

**Student Handbook:** Review the entire student handbook to become familiar with all university-wide policies, including sexual harassment and academic policies.

**Laboratory Safety:** Safety glasses must be worn during the lab at all times except during the pre-lab orientation and once all students in the lab have finished experimental work. Do not remove safety glasses once your experiment is finished so that you can work on the lab report. Often it is the actions of others that can cause you to get a chemical in your eyes. I will let everyone know when all of the students in the lab have finished experimental work. At this point, you will be notified that it is OK to remove your safety glasses. Also, you are responsible for abiding by safety procedures and waste disposal procedures covered at the beginning of each lab. **You must complete the safety agreement on the Department of Chemistry’s website (under the Safety section) to be allowed to complete the first lab (see course schedule).**

**Safety Glasses Policy:** You must have your own pair of safety glasses to be allowed to complete each lab.

**Lab Handout/Manual Policy**: If you do not have a copy of experimental procedure and data sheet for the lab on lab day, you will not be allowed to complete the lab.Also, read/study the lab and complete any pre-lab and post-lab exercises in order to be prepared for a quiz either at the beginning and/or at the end of lab.

**Calculator Policy:** You must bring your own calculator to the lab since you will not be allowed to use your smart/cell phone’s calculator while in lab. During exams, use of a calculator of any sort is not allowed. Math-based problems on exams will be designed such that you can do the math without a calculator. Remember that (10x)(10y) = 10x+y,10x/10y = 10x-y, and 10-x = 1/10x. Note that the vast majority of the points on problem-based questions are assigned to the setup of the problem and not the final answer.

**E-Mail Policy:** The UCA e-mail system is the official e-mail of the university, so I will send regular e-mails to your UCA account and not your private e-mail account. Note that your UCA e-mails can be forwarded to your private e-mail account or available on your smart phone via Microsoft Exchange (contact UCA’s IT department). Make sure that you check your UCA account regularly since I will send announcements, reminders, and other important information to you via your CUB e-mail address.

**Title IX Disclosure:** If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs and the obligation to conduct an investigation will depend on those specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: <https://uca.edu/titleix>. *\*Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.*

**Student Evaluations of Teaching Effectiveness:** Student evaluations of a course and its professor are crucial elements in helping faculty achieve excellence in the classroom and the institution in demonstrating that students are gaining knowledge. Students may evaluate courses they are taking starting on the Monday of the twelfth week of instruction through the end of finals week by logging in to myUCA and clicking on the Evals button on the top right.

**Assigned End-of-Chapter Problems:** Please note that these problems will not be collected and graded. The problems also are available via Mastering Chemistry. Most problems on exams will be very similar to these problems, so make sure that you work these problems and study them for the exams. Consider these problems as a study guide to what will be on the exams. All assigned problems are odd-numbered, which have answers listed in the back of the book. Make sure to check your final answer. Beware of the use of a solutions manual with all of the problems already worked out for you. Only use a solutions manual after you have tried to work the problem, checked the answer in the back of the book, reviewed your work for errors, and still cannot get the correct answer. If you do not work these problems on your own and rely solely on studying the solutions manual, you likely will not perform well in this course. Learning chemistry is like learning a foreign language…it takes a lot of practice. Many students find that a study group can be a very effective way of working these problems. After you have worked the problems, make sure to spend time on your own studying the solutions to the problems before the exams. **Here is the list of assigned problems for Chapters 1-10:**

**Ch. 1.** 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 97

**Ch. 2.** 39, 41, 47, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 81, 83, 85, 87, 89, 91, 93

**Ch. 3.** 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 79, 81, 83, 85, 87, 89, 93, 99, 101, 103, 105, 107, 109, 111

**Ch. 4.** 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 73, 75, 77, 79, 81, 83, 85, 89, 91, 93, 95, 97

**Ch. 5.** 25, 27, 31, 33, 35, 37, 39, 41, 43, 45, 51, 53, 55, 57, 59, 71, 73, 75, 81, 83, 85, 89, 91

**Ch. 6.** 33, 35, 47, 49, 57, 59, 61, 63, 75, 77, 79, 81, 85, 87, 89

**Ch. 7.** 35, 37, 39, 41, 43, 45, 57, 59, 61, 63, 65, 67, 69, 71

**Ch. 8.** 41, 43, 45, 47, 49, 51, 53, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83

**Ch. 9.** 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 71, 73, 75, 77, 79, 81

**Ch. 10.** 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 57, 59, 67

**Course Schedule**

|  |  |  |
| --- | --- | --- |
| **Tuesday Lecture\*** | **Wednesday Lab\*** | **Thursday Lecture\*** |
|  |  | 8/21 Introduction, Chapter 1, Matter, Measurement, and Problem Solving |
| 8/26 Chapter 1 | 8/27 Lab #1, Laboratory Safety, Dimensional Analysis | 8/28 Chapter 1 |
| 9/2 Chapter 1 and Chapter 2, Atoms and Elements | 9/3 Lab #2, Measurements | 9/4 Chapter 2 |
| 9/9 Chapter 2 | 9/10 Lab #3, Density of Materials | 9/11 Exam #1, Chapters 1-2 |
| 9/16 Chapter 3, Molecules, Compounds, and Chemical Equations | 9/17 Lab #4, Separation Techniques | 9/18 Chapter 3 |
| 9/23 Chapter 3 and Chapter 4, Chemical Quantities and Aqueous Reactions Chapter 4 | 9/24 Lab #5, Hydrates | 9/25 Chapter 4 |
| 9/30 Chapter 4 | 10/1 Lab #6, Dolomite Composition | 10/2 Exam #2, Chapters 3-4 |
| 10/7 Chapter 5, Gas Laws | 10/8 Lab #7, Gas Laws #1 | 10/9 Chapter 5 |
| 10/14 Chapter 5 and Chapter 6, Thermochemistry | 10/15 No Lab: Fall Break | 10/16 No Class: Fall Break |
| 10/21 Chapter 6 | 10/22 Lab #8, Gas Laws #2 | 10/23 Chapter 6 |
| 10/28 Exam #3, Chapters 5-6 | 10/29 Lab #9 Thermodynamics: Understanding the Difference between Heat of Reaction, Temperature Change, and Enthalpy of Reaction | 10/30 Chapter 7, The Quantum-Mechanical Model of the Atom Chapter 7 |
| 11/4 Chapter 7 | 11/5 Lab #10, Acid-Base Titrations | 11/6 Chapter 8, Periodic Properties of the Elements |
| 11/11 Chapter 8 | 11/12 Lab #11, Types of Chemical Reactions and Equations | 11/13 Exam #4, Chapters 7-8 |
| 11/18 Chapter 9, Chemical Bonding I: The Lewis Model | 11/19 Lab #12 Atomic Emission and Molecular Absorption Spectra #1 | 11/20 Chapter 9 |
| 11/25 Chapter 9 and Chapter 10, Chemical Bonding II: Molecular Shape, Valence Bond Theory, and Molecular Orbital Theory | 11/26 No Class: Thanksgiving Break | 11/27 No Class: Thanksgiving Break |
| 12/2 Chapter 10 | 12/3 Lab # 13, Lab #13, Atomic Emission and Molecular Absorption Spectra #2 | 12/4 Chapter 10 |

**\*Note: Important dates are 10/31, drop deadline (W) and 12/1, drop deadline (WP/WF).**