

CHEMISTRY 310 – Chemical Calculations
Fall 2010 – American River College

Lecture Instructor: Professor Mike Payne

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Office: Library room 23 (in the basement. Enter through the side, NOT through the main library entrance)

Office Hours: MW 3:00 – 5:00, TTh 2:30 – 4:30

Course website: TBA

	Lecture Section 11262	Lab Section 11264	Lab Section 11266
Class meeting times:	Monday & Wednesday 10:00 AM – 11:20 PM	Monday 11:45 – 2:50 PM	Wednesday 11:45 – 2:50 PM
Class meeting place:	Science 401	Science 402	Science 402
Final:	December 15 th @ 10:45 AM		
Class meeting dates:	August 23 th 2010 – December 8 th 2010		

COURSE MATERIALS:

Required Lecture Text: Introductory Chemistry, 7th edition, Zumdahl and DeCoste
(You spent a ton of money on this book, so use it!)

Required Lab Manual: Chemistry 310 Laboratory Guide, Luther L. Nolen
Chemistry 310 Laboratory Notebook, Nolen

Required Lab Goggles: Must completely cover your eyes and be marked as z87.1+. Can be bought at bookstore or hardware store.

Required Calculator: NON-programmable scientific calculator. (I ***HIGHLY*** recommend the Sharp EL-506W! Also acceptable are the TI30XA and TI30XIIS). Graphing calculators will not be allowed.

PREREQUISITES:

Pre and corequisites: **PRE:** MATH 100 or 104 with a grade of “C” or better. **CO:** Must be enrolled in either MATH 120 or 124 **THIS SEMESTER!** Prerequisite verification must be turned in no later than your **second lab period** or you will be summarily dropped from the course. If you took your prerequisite course outside of the Los Rios Community College District, you ***must*** go the Student Services to get a prerequisite verification form.

COURSE DESCRIPTION AND STUDENT LEARNING OUTCOMES:

Course Description: This course introduces calculations, terminology, chemical and laboratory techniques. It provides intensive problem solving skills necessary for CHEM 400.

Student Learning Outcomes: Upon the completion of this course, the student will be able to:

- solve chemical calculation problems, for example, unit conversion and theoretical yield calculations, in a clear and logical fashion.

- describe and explain organizational trends of the periodic table, for example, atomic mass, periods and groups, metals, nonmetals, metalloids, atom size.
- describe the structure of an atom and predict common ions formed.
- formulate the name of inorganic molecular and ionic compounds, and acids.
- identify the type of chemical reaction given reactant(s) and product(s) and balance the chemical reaction using coefficients.
- predict the products of inorganic chemical reactions using solubility rules.
- use the ideal gas law and the gas laws to predict temperature, pressure, volume, mass, or molar quantity of a gas.
- perform calculations involving mass percents, molarity, solution stoichiometry, and pH.
- complete lab experiments in a safe and timely manner, after receiving written and/or verbal instructions.
- demonstrate the proper use of laboratory glassware and equipment by collecting and recording scientific measurements in data tables with the correct number of units and significant figures (i.e. graduated cylinder, balances, thermometer, buret, pipet, and metric ruler), and the recording of observations (physical and chemical changes and properties).
- use information and problem solving techniques learned in this class and apply them to situations and problems never before encountered

EXAMS AND FINAL:

There will be 3 midterm exams worth 150 points each and one comprehensive final worth 300 points.

There will be no make-up exams allowed without an **official** excuse (i.e. doctor's note, police report, etc.).

Students who do not pass an exam will be **required** to meet with me in order to discuss what can be done to help improve performance and understanding. **Tentative** midterm exam dates: 9/20, 10/18, and 11/22.

Dates are subject to change, but always with at least 2 days warning.

QUIZZES:

There will be 6 brief quizzes given throughout the semester, usually at the beginning of class on Tuesdays.

The quizzes will be worth 25 points each and will be on any topic that has been covered up to that point in the semester. Make-ups will not be allowed and you may not take a quiz if you are late for class.

HOMEWORK:

The main reason for assigning homework is to give you valuable practice in working with the concepts that you will be learning. There is going to be A LOT of homework in this class, so do NOT wait until the last second to do it. Homework must be turned in at the beginning of lecture on the day that they are due.

Assignments may be turned in one class period late for half credit, but after one class period, no credit will be given. Your overall homework scores will be normalized to a total of 100 points (7.8%).

LABORATORY:

Pre-lab assignments: For each laboratory, you will be required to complete and hand in a pre-lab assignment. These pre-labs must be completed **BEFORE** you come to lab and must be handed in at the beginning of your lab period. Incomplete or late pre-labs will not be given any credit, but you must still complete the pre-lab assignment

before you will be allowed to participate in the day's lab. Please pay attention to the lab schedule as labs will not necessarily be done in numerical order.

Lab assignments:

We will be performing 14 labs and a lab practical in this class. Each lab will have a pre-lab, a data table, and a set of post-lab questions with a combined worth of 20 points. The data tables and post-lab questions will be due at the end of the lab period that the experiment was completed (unless otherwise stated). There will be a 5 point deduction taken for each lab period that they are late. Attendance in lab is mandatory whether and experiment is performed or not and every lab **MUST** be completed and turned in. Several laboratory experiments will be designated as formal lab write-ups. The format of these will be covered in lab throughout the semester. **Failure to come to lab or to hand in a completed lab will result in a failing grade for the semester.**

Lab make-ups:

Making up a missed lab will only be allowed for those students whom can provide an **official** excuse (i.e. doctor's note, police report, etc.). You must complete the make-up lab on the Friday **IMMEDIATELY** following your excused absence.

ATTENDANCE:

Attendance in both lecture and lab are mandatory. Points will **not** be given for simply coming to lecture; however, it has been shown that there is a strong correlation between attendance and grades. Simply put, if you miss class you will not pass the course, especially in light of the challenging subject matter of this class. Please keep in mind that missing even a single lab period without a valid excuse will result in a failing grade for the semester.

EXTRA CREDIT:

Limited extra credit will be available throughout the semester. Extra credit cannot be used to raise a grade from a "D" to a "C" but will be applied in all other situations.

ACADEMIC HONESTY:

There will be absolutely **NO** tolerance of academic dishonesty in this class. You are all adults and I expect you to act as adults. A student found cheating will receive zero points for the assignment, be reported to the ARC Dean of Science & Engineering and the ARC Disciplinary Officer, and may be placed on the cheater database or under academic probation. He or she may receive an **F** in the course regardless of the number of points earned and may be suspended under the ARC Student Conduct Code. Cheating includes helping or obtaining help during exams, using unauthorized cheat notes, copying pre- and post-laboratory assignments or experimental data from classmates, and copying homework assignments.

TUTORING:

American River College offers a tremendous number of services designed to help students succeed. It is in your best interest to seek them out **BEFORE** you need them to pass the course.

- Tutorial Center: www.arc.losrios.edu/~parsoc/tutoring.html
- Science Skills: www.arc.losrios.edu/~biology/science_skills_center.htm
- Oak Tree Math Tutoring: ic.arc.losrios.edu/~math/otc.htm
- Reading for Science: english.arc.losrios.edu/rad/default.htm
- ESL: www.arc.losrios.edu/~esl/
- MESA: www.arc.losrios.edu/~mesa/
- DSPS: www.arc.losrios.edu/~dsps/

SPECIAL NEEDS:

If you have a health problem, a documented learning disability, or a physical need of some kind, please let me know. I am committed to your success in achieving your educational goals. If you require classroom or exam accommodations due to a physical or learning disability, please contact Disabled Students' Programs and Services at (916) 484-8545 to discuss your needs. I will help ensure that you receive any accommodations prescribed and approved by DSPS.

WARNING:

Just showing up for lecture will **NOT** be enough to be successful in this class; it will be necessary to read the book and do extra practice beyond what is assigned to you. You will be held responsible for **ALL** assigned material, whether covered in lecture or not. **YOU SHOULD PLAN ON SPENDING A SIGNIFICANT AMOUNT OF EXTRA TIME OUTSIDE OF CLASS TIME READING AND WORKING PROBLEMS.** Doing the minimum amount of work will result in a minimum grade.

CALCULATORS:

Graphing calculators will **NOT** be allowed on quizzes or exams; you **MUST** have a scientific calculator (i.e. SHARP EL-506W or the like). **You are required to bring your calculator to each and every lecture and lab period.** You will not be allowed you share calculators, used PDAs or phones, or any other substitute.

HINTS TO SUCCESS:

- Again, you should plan on working outside of class time reading, working problems, and studying.
- Work as many problems as possible. The assignments given are a minimum, not a maximum. The more practice you do, the better a grasp you will have on the material and the better you will perform.
- Do the homework problems alone at first. Do not use the back of the book or the solutions manual for any other purpose than checking an answer you have already arrived at. You will not have the back of a book or a solution manual on the exams. If you use them as a crutch, you will not be able to perform without them.
- Once you have worked through the problems and read the chapter, work with a small group of fellow students to make sure you truly understand the material.
- Do the assigned readings **BEFORE** you come to class. This will give you a basis for understanding the lectures.
- Come talk to me! I am available for help at almost anytime during the week, take advantage of that!
- Ask questions!! Whether in class or outside of class, make sure any questions you have are answered!

Grading:

Course based on a 1280 point scale, divided as follows:

Mid-term Exams:	3 @ 150 pts	450 pts (~35.2%)
Final Exam:		300 pts (~23.4%)
Homework assignments	:	100 pts (~7.8%)
Quizzes:	6 @ 25 pts	150 pts (~11.7%)
Lab Assignments:	14 @ 20 pts	<u>280 pts (~21.9%)</u>
		1280 pts

Grading Scale (subject to change):

A	100% to 90%
B	89.9 to 80%
C	79.9 to 70%
D	69.9 to 60%
F	<60%