

Chemistry 30A: Fall 2009

Instructor: Amanda Norick

Tues & Thurs from 2-3:50PM in room 3525

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Office hours: Mondays & Wednesdays from 12-12:30PM in 5606, Tuesdays from 12-1PM at the PSME Center (4213), or by appointment.

Course Description: This is a 5 unit introductory course covering basic principles of chemistry more descriptive than quantitative in emphasis. Topics include atomic structure, trends in the periodic table, the three states of matter (gas, liquid and solid), energy, chemical bonding in ionic and molecular compounds, nomenclature, measurement and the metric system, chemical reactions and equations, solutions, acids, bases, salts and electrolyte systems.

Student Learning Outcomes:

- I. Students will be able to classify matter correctly.
 - a. Explain the difference between a solid, liquid and gas.
 - b. Examine and classify matter and name the common elements from the periodic table.
 - c. Understand chemical and physical properties.
- II. Students will be able to use common laboratory equipment correctly and report measurements to the correct significant figures with proper units. Equipment includes Bunsen burners, beakers, graduated cylinders, thermometers, top loading balances, rulers and burets.
 - a. Use dimensional analysis for problem solving, and show answers with correct units and with the correct significant figures.
 - b. Use a Bunsen burner, balance and common laboratory glassware.
 - c. Execute laboratory procedures safely and confidently.
 - d. Be able to measure temperature, mass, length, volume, and density using lab equipment.
- III. Students will be able to represent chemical changes correctly through balanced chemical equations with proper formulas for elements and compounds.
 - a. Explain atomic theory, atomic structure, and the concept of isotopes, and be able to represent different isotopes using correct chemical symbols.
 - b. Use the periodic table to determine electron configuration, assign oxidation numbers and compare elements based on periodic trends (electronegativity, electron affinity, atomic radius, etc.).
 - c. Name ionic and molecular compounds, and name hydrocarbons with as many as 10 carbons in the longest chain.
 - d. Use the concept of the mole and Avogadro's number in stoichiometry.
 - e. Use Le Chatlier's Principle to determine affects on a system at equilibrium.
 - f. Write a nuclear reaction showing alpha, beta and gamma decay and understand the fundamentals of nuclear medicine.
- IV. Students will understand solutions and be able to prepare a solution in the lab.
 - a. Define acids, bases and salts and know what components of a solution will make a buffer.
 - b. Draw Lewis structures, determine if a molecule is polar or nonpolar, and analyze for intermolecular forces of attraction and solubility.
 - c. Explain osmosis and osmotic pressure.
 - d. Know how to prepare a solution in units such as molarity, % w/v, and % w/w.
 - e. Understand solution conductivity.

Prerequisites: Math 220 or equivalent.

Required Materials:

- McMurry/Castellation; General, Organic and Biological Chemistry, 6th Ed Custom for Foothill College; Prentice Hall, 2007.
- Laboratory Manual for Chemistry 30A updated May 2008
- Calculator
- Safety goggles

Grading:

- **Homework (15%):** Reading assignments, book homework and graded online homework:
 - Reading Assignments: You are expected to read the appropriate chapters ***before*** coming to class. You will gain more from the lectures if you come prepared. I will occasionally include relevant websites to supplement reading assignments.
 - Book Homework: Book homework assignments are given in the tentative schedule below. It is the student's responsibility to do the homework. The book homework will neither be collected nor graded. Your textbook comes with a solution manual so that you can check answers on your own.
 - Online Homework (Mastering Chemistry): Online homework assignments are due almost every Friday at 11:59 PM. Please visit masteringchemistry.com and create an account using your access code. Be sure to register for the correct section of Chemistry 30A. Assignments for Mastering Chemistry are shown below in the tentative schedule, and they are also accessible by logging into your account online.
- **Three Midterm Exams (30%):** Three exams will be given throughout the quarter (see tentative schedule below). These will be approximately thirty-forty minutes in length. There will be no make-up exams.
- **Labs (25%):** Details for the lab sessions are given in the tentative schedule below. Your lowest lab score and your lowest lab quiz score will be dropped from your overall lab grade. Thus, if you miss one lab (and/or lab quiz) it will be your drop lab. If you miss an additional lab (and/or lab quiz) they will count as zeros in your overall grade. Missing a third lab is unacceptable and will result in a failing lab grade. There will be no make up labs or lab quizzes given. Lab is an essential portion of this course. It is departmental procedure to fail any student for the entire course if they receive a failing lab grade. Do not miss lab unless it is absolutely necessary. Lab check in and lab experiment 1 (Temperature and Measurement) are required for all students. If you miss check in or experiment 1 you will be dropped from Chemistry 30A. NO EXCEPTIONS! Arriving on-time is crucial in this course, especially in lab. If you arrive 10 or more minutes late to a lab session you will receive a zero for that lab day. NO EXCEPTIONS!
- **Final Exam (25%):** The final exam is cumulative and will be given on Thursday Dec 10th from 12:30-2:30PM.
- **Evaluation (5%):** Many students have trouble taking exams. For this reason I attempt to offer multiple ways for individuals to earn points. One of the easiest ways to earn points is through your evaluation. Your evaluation will be based upon punctuality, improvement, motivation, lab preparation and performance, and the overall attitude that you bring to the classroom environment. Do not ever belittle other people as this is a sure way to lose your entire 5% evaluation score!

Grading Scale Breakdown:

Online Homework: 15% (150 pts total)

Midterms: 30% (300 pts total)

- 3 exams @ 100 pts each = 300 pts

Lab: 25% (250 pts total)

- 8 labs @ 20 pts each = 160 pts (lab 8 and 9 are graded together as one lab)
- lab quizzes (number TBD) = 90 pts

Final Exam: 25% (250 pts total)

Evaluation: 5% (50 pts total)

910-1000 pts = A

900-909 pts = A-

880-899 pts = B+

810-879 pts = B

800-809 pts = B-

780-799 pts = C+

700-779 pts = C

600-699 pts = D

Below 600 = F

Classroom Courtesy: As a courtesy to your classmates and to myself, please refrain from talking to other students during lecture, and please remember to turn off your cell phones, pagers, etc before entering the classroom. Also, be punctual in arriving to class. Late arrivals are disruptive to the rest of the class. Any disruptive behavior will ensure a loss of your 5% evaluation points.

Academic Dishonesty: All incidents of academic dishonesty will be reported to the Dean of Student Affairs. Academic dishonesty goes on a student's record and may result in expulsion. It is not worth it!

Resources: Check out the resources available on campus just for you at: www.foothill.edu/services/index.php

- **Tutoring:** The tutorial center is a great resource for students! For more information (including a schedule) visit the website.
- **EOPS (Extended opportunity program and services):** EOPS provides support in the form of tutoring, counseling, and more to students who are educationally and/or financially disadvantaged. For information visit the website.
- **ALD (Adaptive Learning Division):** ALD offers courses and services designed to help students with disabilities. For more information visit the website.
- **PSME Center:** Tutors are available to assist with lab preparation, homework, and general chemistry questions at the PSME center. It is recommended that chemistry students spend a minimum of one hour per week in the PSME center. Please visit the website for more details and to see a schedule: <http://www.foothill.edu/psme/center.php>
- **KCI (Krause Center for Innovation):** The KCI is the 4000 building on Foothill's campus. At the KCI you can relax at the cyber café, use the high tech computer labs (both PC and Mac), and enjoy a great study environment.
- Please visit the following website to view and print lecture notes and to find supplemental information for this course: http://www.foothill.edu/psme/staff.php?s=1&rec_id=909

Tentative Schedule:

Day	Assigned Reading	Book HW	Online HW Due Fridays at 11:59PM	Exam	Lab
9/22	Introduction to the course	Read your syllabus!		None	
9/24	Ch 2: Measurements in Chemistry		Intro to Mastering Chemistry due 9/25	None	Safety Video & Check In
9/29	Ch. 1: Matter and Life; Ch 3.1-3.5: Atoms and the Periodic Table	Ch. 2: 41, 44, 48, 50, 51, 56, 60, 64, 72; Ch. 1: 19, 25, 28, 34, 45, 48, 49, 56, 57		None	
10/1	Ch 3.6-3.8: Electron Configuration		Ch 2 due 10/2	None	Measurement and Temperature
10/6	Catch Up	Ch. 3: 31, 37, 40, 42, 45, 50, 57, 68, 71, 78, 88, 104, 105, 106		None	
10/8	Ch 4: Ionic Compounds	Ch. 4: 32, 33, 38, 42, 51, 52, 58, 60, 64 acfg only, 65, 70, 72, 77, 95, 98	Ch 1 and 3 due 10/9	Midterm #1 (Ch 1, 2 & 3)	Preparation of Alum Part 1 & Video: The Periodic Table
10/13	Ch 5.1-5.4 & 5.10-5.11: Molecular Compounds	Ch. 5: 27, 28, 38, 87, 89, 104			
10/15	Ch 10.1-10.2: Common Acids and Bases; Summary of Nomenclature		Ch 4 and 5 due 10/16	None	Finish Preparation of Alum; Chemical Reactions
10/20	Ch 6.1-6.2 & 6.8-6.11: Chemical Reactions; Website: http://www.usoe.k12.ut.us/CURR/Science/sciber00/8th/matter/sciber/chemtype.htm			None	
10/22	Ch 6.3-6.7: Chemical Reactions (Stoichiometry)	Ch. 6: 28, 29, 32, 37, 38, 42, 44, 46, 47, 62, 63, 75, 82, 90	Ch 6 due 10/23	Midterm #2 (Ch 3, 4, 5.1-4 & 5.11, 10.1-10.2)	Finish Chemical Reactions; Stoichiometry
10/27	Ch 8.1-8.10: Gases	Ch. 8: 22, 49, 53, 57, 58, 63, 64, 65, 66, 72, 74, 107		None	

10/29	Ch 5.5-5.11: Molecular Structure	Ch. 5: 29, 31, 38, 59, 72, 77, 79, 85, 86, 102	Ch 8 due 10/30	None	Finish Stoichiometry; Molar Weight of a Gas
11/3	Ch 8.11-8.15; Liquids and Solids	Ch. 8: 27 a-b, 92, 93			
11/5	Ch 9.1-9.10 & 9.12-9.13: Solutions	Ch. 9: 36, 40, 42, 47, 48, 49, 51, 55, 56, 65, 74, 87, 88, 106	Ch 8 continuation and Ch 5 continuation due 11/6	None	Preparation of Solutions
11/10	Ch 7: Reaction Rates	Ch. 7: 20, 21, 28, 44, 46, 47, 48, 52, 54, 62, 64, 68, 84		None	
11/12	Ch 10: Acids and Bases	Ch. 10: 32, 35, 44, 50, 52, 53, 58, 65, 66, 70, 74, 75, 92, 102	Ch 9 and 7 due 11/13	Midterm #3 (Ch 6, 8, 5.5-5.11)	Titration of Vinegar
11/17	Catch Up			None	
11/19	Ch 11: Nuclear Chemistry; Website on nuclear medicine: http://www.world-nuclear.org/info/inf55.html	Ch. 11: 21, 22, 40, 44, 45, 46, 82	Ch 10 due 11/20	None	Conductivity & Buffers (DEMO for lab 8 and 9)
11/24	Catch Up			None	
11/26	HOLIDAY			HOLIDAY	HOLIDAY
12/1	Ch 12: Intro. To Organic Chemistry	Ch. 12: 19, 23, 27, 33, 36, 42, 46, 48, 50, 52, 56, 67, 70		None	
12/3	Ch 13.1-13.5 & 13.8-13.9: Alkenes, Alkynes and Aromatic Compounds	Ch. 13: 24, 30, 36a-c, 38a-d, 40, 44, 91	Ch 11, 12 and 13 due 12/4	None	Organic Models, Polymers & Check out
12/10				Final Exam-Cumulative 12:30-2:30PM	

Important Dates:

- 10/2 is the last day to drop with a refund.
- 10/16 is the last day to drop without a grade.
- 11/13 is the last day to drop with a W.
- 11/30 is the first day to begin registration for spring quarter.