CHEM 30A: Introductory General Chemistry
Fall 2017, Laney College

Welcome to Chem 30A!

Meeting Time/Location
Lecture (Class Code 41591): Sa 10:00AM – 12:50PM in A233
Lab (Class Code 41592): Sa 1:30PM – 4:20PM in A235

Instructor: Dr. Hui Sun Kim
Office: A237A
Office Hours: Sat 9:00 am-10:00 am and 4:20 pm-5:20 pm in A235 (lab)
Email: hkim@peralta.edu (Please include "Chem 30A" in the subject line.)
Class Website: www.laney.edu/huisunkim
Grade Website: http://eperalta.org/fall2017/

Course Description
Chemistry 30A introduces quantitative problem solving skills and many of the fundamental principles of chemistry. No previous chemistry is required or assumed, but algebra is a prerequisite (one year of high school algebra or a semester of college algebra).
Prerequisite: Math 201 or 210D or 204B (Basic Algebra)

Required Materials
1. Text: Tro, Nivaldo. *Introductory Chemistry Essentials*, 6th Edition.
2. Lab Manual: Chem 30A Lab Manual, Laney IMC. (Alternatively, you can print the experiments from the class website.)
   *Please note: Lab report forms are *not* included in the Lab Manual (neither hardcopy nor online), and must be printed from class website prior to the lab session!
3. Calculator: scientific, non-programmable, non-graphing
4. (Recommended) Tro, Nivaldo and Johll, Matthew. *Student Selected Solution Manual for Introductory Chemistry, 6th Edition*

Attendance Policy: According to Laney College policy, students are allowed a total of 2 weeks of absences. Thus, you will be allowed a total of two absences. If you are absent for more than two classes, you will be dropped from the course. If it is your intention to withdraw from the class, it is your responsibility to withdraw from the class in a timely manner.

Last day to drop without a "W": Su 09/03/17
Last day to drop with a "W": W 11/15/2017

Textbook Chapters Covered in this Course
Chapter 1. The Chemical World
Chapter 2. Measurement and Problem Solving
Chapter 3. Matter and Energy
Chapter 4. Atoms and Elements
Chapter 5. Molecules and Compounds
Chapter 6. Chemical Composition
Chapter 7. Chemical Reactions
Chapter 8. Quantities in Chemical Reactions
Chapter 9. Electrons in Atoms and the Periodic Table
Chapter 10. Chemical Bonding
Chapter 11. Gases
Chapter 12. Liquids, Solids, and Intermolecular Forces
Chapter 13. Solutions

Chapter 14. Acids and Bases
Chapter 15. Chemical Equilibrium
Chapter 16. Oxidation and Reduction
Chapter 17. Radioactivity and Nuclear Chemistry

Student Learning Outcomes
At the end of this course, you will be able to:

1. Use dimensional analysis to solve quantitative problems and evaluate the results of calculations to make sure they are physically reasonable.
2. Clearly explain qualitative chemical concepts and trends.
3. Describe, explain, and model chemical and physical processes at the molecular level in order to explain macroscopic properties.
4. Perform laboratory techniques correctly using appropriate safety procedures
5. Calculate experimental values from laboratory data and interpret the results

Course Structure

A. Exams: The following exams will be given (See Schedule on page 5 for dates):
   - Three Mid-Term Exams
   - One Final Exam: Cumulative
   - ***No make-up exams will be given.*** If an emergency comes up, you must notify me before the exam by email or in person. For an excused absence, you may be assigned a score calculated from your other exam scores.

B. Quizzes: A quiz will be given every week unless there is an exam scheduled for that week (See Schedule on page 5 for dates). The quiz with the lowest score will be dropped.
   - ***No make-up quizzes will be given.***

C. Homework: Homework, consisting of problems from the textbook, will be assigned every week. The solutions for the textbook problems are available in the back of the textbook and in the (optional) solution manual. Homework will be graded mainly for completeness, and you are responsible for checking the accuracy of your homework answers. For each homework assignment, you must show your work and write your answers in your own words. **When you turn in your homework, write on the top of the first page the number of problems you honestly attempted, and circle it.
   - ***One homework that is one class period late will be accepted.***

D. Laboratory Reports: Reports for wet labs will be collected at the following lab period. Dry lab worksheets will be collected at the end of the lab period in which they are assigned. **Prelabs must be written prior to the lab period, and will be a component of the lab report grade. The prelab consists of the purpose of the experiment and a brief outline of steps for the experiment, in the form of a flow chart, list, or summary.
   - ***No makeup labs are available.*** However, your lowest grades on two experiments or lab worksheets will be dropped. Lab reports for missed lab periods will not be accepted.
   - ***One*** **lab report that is *one* class period late will be accepted**.
   - **You will not pass this course if you miss more than 2 lab periods**, no matter how many other points you have!

Course Evaluation
The course grade will be based on the number of total points earned out of total possible points during the semester.

Range:	90-100 %	A	60-69 %	D
	80-89 %	B	<60%	F
	70-79 %	C		

Assignment	Points	Approx %
Midterm Exams (3 x 100 pts)	300	41
Final Exam	200	27
Quizzes (Best 9 x 10 pts)	90	12
Laboratory Reports (Best 16 lab reports x 6 pts)	96	13
Homework (13 x 4 pts)	52	7
Total	**738**	**100%**

Advice and Expectations

a. **Keep up with the work!** This course is fast-paced, and it is a challenge to catch up once you get behind (particularly in a course that meets only once a week). You should expect to spend *at least* 5 hours per week outside of the class and lab to be successful in this course.

b. **Please come to the lecture and lab prepared.** You are expected to read the appropriate book chapter before attending lecture. You are expected to read the material on each experiment before the lab meeting.

c. **Please do your homework mindfully.** Working many problems is critical for learning chemistry. A majority of the quiz and exam problems are the same type of problems encountered in homework assignments.

d. **Any questions about the grading of a returned test or assignment** must be addressed to me by one class meeting following the return of the test or assignment.

e. **Please help make the classroom an environment that is conducive to learning and expression**. Questions and discussions relevant to lecture are strongly encouraged. Cell phone usage and texting are not allowed during class or lab. No electronic devices, except nonprogrammable calculators, are allowed during quizzes and exams.

f. **Academic honesty**: Students are expected to perform honestly and ethically in completing course assignments. It is fine to discuss homework and lab work with each other. It is not acceptable to copy sentences from other students or allow another student to copy from you. It is not acceptable to collaborate on exams and quizzes, or use an electronic device during exams and quizzes. Any instances of cheating, copying, or plagiarism on any assignments or tests will result in a zero on the assignment. Students with a second incidence of academic dishonesty will be referred to the dean's office for disciplinary action.

g. **DSPS**: Students who would like to receive accommodations for their learning, physical, or psychological disabilities should contact the Disabled Students Programs & Services (DSPS) office at 464-3428 for assistance. I encourage you to communicate with me by the second week of the course regarding any accommodations that will improve your experience in or access to this course.

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Tentative Lecture and Lab Schedule: CHEM 30A FA2017 (Sa 10:00am) – Kim

Wk	Date	Lecture	Lab	Assignmts Due
1	Sa 08/26	**Ch1. The Chemical World, Ch2. Measurement and Problem Solving** Intro, measurements and calculations, uncertainty, significant figures, unit conversion, density	Check in, Lab Safety; Math Review Worksheet	Math Review Worksheet
2	Sa 09/02	**Quiz #1; Ch3. Matter and Energy** Matter, physical states, physical and chemical properties, elements, compounds, mixtures, energy, temperature, heat capacity **Ch 4. Atoms and Elements:** Atomic theory, atomic number, atomic symbols, ions, isotopes, atomic mass, periodic table	Exp 1. Metric Measurement and Density	HW 1
3	Sa 09/09	**Quiz #2;** (Ch4 continued) **Ch5. Molecules and Compounds** Chemical formulas, ionic compounds, molecular compounds, chemical nomenclature, formula mass **Ch 6. Chemical Composition:** Mole, gram-mole conversion, mass percent composition	Exp 2. Identification of Unknown Liquid; Exp #3. Paper Chromatography	HW 2; Exp 1 Lab Report
4	Sa 09/16	**Quiz #3;** (Ch 6 continued) **Ch 7. Chemical Reactions:** Electrolytes, pptn rxn, acid-base rxn, redox rxn, net ionic equations, balancing chemical equations, solubility **Ch 16.2-16.3 Oxidation and Reduction**	Nomenclature Worksheet; Chemical Composition Worksheet	HW 3; Exp 2 & 3 Lab Reports; Worksheets
5	Sa 09/23	**Quiz #4; Ch 8. Quantities in Chemical Reactions:** Mole-to-mole conversions, mass-to-mass conversions, limiting reactant, theoretical yield, percent yield, enthalpy	Review for Exam 1; Exp 9. Double Displacement Reactions	HW 4;
6	Sa 09/30	**EXAM #1 (Ch 2-6); Ch 9. Electrons in Atoms and the Periodic Table:** Orbitals, electronic configuration, periodic trends	Exp 13. Thermal Decomposition of Sodium Bicarbonate; Exp 15. Line Emission Spectra	HW 5; Exp 9 Lab Report

7	Sa 10/07	**Quiz #5;** **Ch 10. Chemical Bonding**: Electron dot symbols, Lewis structures, resonance, molecular shapes, electronegativity and polarity **Ch 11. Gases:** Kinetic molecular theory, Boyle's Law, Charles's Law, combined gas law, Avogadro's law, Ideal Gas Law, gas mixtures	Lewis Structures and VSEPR Worksheet; Stoichiometry Worksheet	HW 6; Exp 11 and 15 Lab Reports; Worksheets
8	Sa 10/14	**Quiz #6;** (Ch 11 continued) **Ch 12. Liquids, Solids, and Intermolecular Forces:** Intermolecular forces, liquids and solids, state changes, crystalline solids	Review for Exam 2; Exp 21. Solubility and Molecular Structure	HW 7;
9	Sa 10/21	**EXAM #2 (Ch 7-11);** Ch 12, continued	Exp 12. Determination of Molar Mass using Ideal Gas Law	HW 8; Exp 21 Lab Report
10	Sa 10/28	**Quiz #7;** **Ch 13. Solutions:** Solution process, molarity, dilution, osmosis	Exp 22. Concentration of Solutions Exp 23. Concentration of a Sodium Chloride Solution;	HW 9; Exp 12 Lab Report
11	Sa 11/04	**Quiz #8;** **Ch 14. Acids and Bases:** Acid dissociation constant, pH, pOH, buffers, neutralization, titration	Exp 25. Titration of Vinegar	HW 10; Exp 22 and 23 Lab Reports
12	Sa 11/11	**Quiz #9;** **Ch 15. Kinetics and Equilibrium:** Rate, equilibrium, Le Chatlier's Principle, free energy	Exp 8. Chemical Changes; Exp 11. Empirical Formula of Magnesium Oxide	HW 11; Exp 25 Lab Report
13	Sa 11/18	**Quiz #10;** **Ch 17. Radioactivity and Nuclear Chemistry:** Nuclear reactions, radioactive decay, half-life **Catch up.**	Review for Exam 3	HW 12; Exp 8 and 11 Lab Reports
14	Sa 11/25	**Thanksgiving Holiday**		
15	Sa 12/02	**EXAM #3 (Ch 12-17);** review	Review for final exam; Checkout	HW 13
16	Sa 12/09	**FINAL EXAM (10:00 am in A233)**		