

CHEM 3A: Introductory General Chemistry

Fall 2012

Lecture: MW 1:00 – 2:15

Lab: M or W 2:30 – 5:20

Instructor: Bill Blanken

Contact info: e-mail bill.blanken@reedleycollege.edu using “Chem3A” in subject line, this helps keep the spam filter from rejecting the email if it comes from Yahoo etc., office phone is ext. 3341.

Webpage: <http://blackboard.reedleycollege.edu>

Office Hours: T,Th 11:00 – 12:00, F 8:30 - 9:30 AM

Important dates:

See the course schedule for additional dates and times.

Last day to drop to avoid a “W”– Fri Aug 31

Labor Day – no school – Mon Sept 3

Last day to drop and receive a “W”: - Fri Oct 12

Veterans Day Observance – no school – Mon Nov 12

Thanksgiving Break - no school - Nov 22 - 23

Final exam: Wed Dec 12, 1:00 – 2:50 PM

Course Objectives: Chemistry 3A is an elementary survey course in chemistry including hands on lab work. It is designed to give the student a chemistry background for a wide variety of careers including agriculture, forestry, nutrition, nursing, physical therapy, teaching and other biological and health related fields. It can also serve as a prep course for chem. 1A.

Math 103 is a required prerequisite, CHEM 10 or high school chemistry and eligibility for ENGL 125 are strongly recommended. Many students attempt to take CHEM3A without any prior chemistry. It is possible, but it takes a lot of **hard work**. Start seeing a tutor right from the beginning if you’re having problems. Students will need to be familiar with college level algebra before taking this course as there is a lot of math and critical thinking involved. I also cannot stress enough the importance of working outside of class in study groups. This can be very helpful to some students. At the minimum exchange email addresses and phone numbers with other class members to help keep up with what’s going on in class throughout the semester.

Study Recommendations: chemistry is a very challenging subject and the general accepted rule of thumb for study time outside of class is 2 – 3 hours of study for every hour of lecture time. So for chem 3A you need to expect to study 6 – 9 hours per week if you want to get an A.

Text and Required Materials and Equipment:

- Nivaldo J. Tro: “Introductory Chemistry” 3rd or 4th Ed., can be purchased online or at the bookstore.

- Access code to www.Masteringchemistry.com for completing online homework, specify 4th edition
- Safety glasses and lab coats are required for lab, these can be purchased at the bookstore or from other students.
- You will also need materials to take notes and a calculator with “exp” (or “EE”) and “log” keys (\$10 or less at Walmart).

Lab procedure and experiment explanation: the labs for each lab period will be available on the chem. 3A Blackboard site for download. These are to be printed out and read in advance of coming to lab. After carefully reading the lab directions and theory sections the prelab is to be completed and the lab procedure is to be written out as well. When writing out the lab procedure have in mind what information would be needed to conduct the experiment. You will be conducting the experiment entirely from your own notes. The prelab and the procedure is to be done **before coming to lab.** These will be checked at the beginning of lab and are worth 60% of the lab. The grade breakdown for each lab is as follows, 30% for prelab completed correctly, 30% for the procedure being done before class and correctly (if it's not legible I can't grade it) and 40% for the lab and calculations to go with the lab.

Laboratory Work: Lab work will follow as closely as possible the material discussed in the lectures. The student is required to complete all the assigned experiments, 50% of the final lab grade will include the average of the graded lab work. The other 50% of your lab grade is determined by the average of the 2 lab quizzes, a lab final and a lab practical, which is a demonstration of laboratory skill. Please refer to the lab schedule to determine which lab will be done during each lab period. If you know you need to miss a lab, attend the other lab section the same week. **No make up labs or make up lab quizzes will be allowed after the week they were assigned as the chemicals and equipment will no longer be available.**

Lecture Notes: The ability to listen carefully and to take good lecture notes is an essential college skill. Class notes will be disseminated through the Reedley College Blackboard site, these should be printed out prior to coming to class as we will use these in class. You should also be prepared to take notes longhand should the lecture make that a necessity. **You should also expect to take your calculator to class every class period, this is due to an extensive amount of classroom problem solving will be done.**

Homework, Quizzes and Group work: Homework will be assigned for every chapter. It is essential to your success in this chemistry course that you do all the assigned homework and read the relevant chapters in your textbook. The homework is electronic and can be accessed through Mastering Chemistry that was included with the textbook. There will be no make-up homework assignments, but the first two assignments are counted as extra credit. **Do not copy your homework from somebody else. You only learn by doing the homework problems for yourself.** You can ask other students or get a tutor to help you if you have problems.

Attendance: Attendance in lecture and lab is mandatory. Students will be dropped automatically if she/he misses a cumulative total of 2 weeks of class without contacting the instructor. **No make-up exams will be given without documentation for serious and compelling reasons, like a documented medical emergency.**

Grading and Exams: There will be **4 exams** over the course of the semester. There will also be a **comprehensive final** at the end of the semester covering the same material as covered for the exams. The 4 exams will be equally weighted and the lowest score will be dropped and the second lowest will be doubled. **There are no makeup exams.** If for whatever the reason you cannot take the exam the day the rest of the class takes the exam, that exam will be the one that is dropped. The only exception to this rule is a valid medical excuse with documentation to verify the medical emergency.

The final grade is calculated as follows:

Laboratory (30%):	Lab quizzes 5% Lab final 3%
	Lab practical, acid/base titration 7%
	Lab reports 15%
Lecture Material (70%):	Exams 40%, 4 exams Comprehensive final 20%
	Homework Assignments 10 %

The grading scale to be used is **A** 90-100%, **B** 80-89%, **C** 70-79%, **D** 60-69%, **F** 0-59%

Please be aware of the following rules:

- Tardiness, leaving early during lecture or lab sessions are considered disruptive behavior and will result in an absence being recorded. If a student is habitually late they will be barred from the classroom. Students will need to sign the sign-in sheet within the first 5 minutes of class. If a cumulative total of 2 weeks of absences is recorded the study may be dropped.
- Texting in class is discouraged and if it is disruptive to the people around you or to the instructor, you will be asked to leave and be given an absence for the day.
- Loud disruptive talking or visiting during the lecture is not advised and if it occurs the students involved will be asked to leave and will be given an absence for the day.
- Chem 3A is a science class and as such occasional lecture topics will cover current events as they relate to chemistry and the advancement of scientific knowledge and such topics are the discretion of the instructor.
- Fraudulent behavior during exams is graded with a (0) zero and reported to the Dean and other appropriate administration officials.
- Copying of homework, experimental data, and lab reports is considered fraudulent behavior for both the copier and the originator.
- **Turn in lab reports before the end of the lab period.**
- **Late lab reports will not be accepted.**

- **Lab materials left at home or in the car etc. will not be accepted after the lab period.**
- **No extra credit will be given except on the exams.**
- Dangerous behavior in the lab will result in the student being asked to leave the lab. Come prepared to lab, this includes lab coats and safety eyewear.
- Please silence your cell phones during lectures so as not to disturb the class. No cell phones or i-pods will be allowed during exams.
- **In the lab:**
 - **Attendance to the lab is mandatory, coming late will result in the student not being allowed to perform the experiment, this is a violation of standard safety protocol.**
 - Cleanliness in the lab is very important in preventing accidental contamination. At the end of each lab thoroughly clean work area by disposing of loose paper and wiping countertops. Points will be deducted from experiment if work area is left messy.
 - Safety glasses need to be worn whenever somebody near you is conducting an experiment.
 - No experiments may be conducted without the instructor or teaching assistant present
 - No horseplay or unauthorized experiments. Do not taste any chemical or smell any chemical directly.
 - No visitors inside the lab. You need to go outside to meet with them.
 - No food or drinks allowed.
 - Backpacks should not be left on the floor where others can trip over them.
 - Closed toed shoes must be worn in the lab at all times, no sandals.
 - Long hair should be tied back so it will not fall into chemicals or flames.
 - If any accident occurs in the lab, inform your instructor immediately and follow safety procedures. (To be discussed during first lab period)
 - Clean up any spills promptly (Clean-up procedures will be discussed during first lab period)
 - Do not point the open end of a test tube towards anybody
 - Turn off flames when working with organic solvents. Dispose of them in waste bottles in the fume hood, not down the sink.
 - At the beginning of each lab your instructor will inform you of any special safety precautions and how to dispose of used chemicals. You need to be on time for the lab so that you hear these instructions.
 - Do not dispose of matches, paper or solid chemicals in the sink. Use the large evaporating dishes for spent matches.
 - Put broken glassware in the “broken glassware bucket”, not with the trash.
 - Before leaving the lab, wipe the desktop and wash your hands with soap and water.

If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

Upon completion of this course, students will be able to:

- A. demonstrate an appreciation for the impact of chemistry on modern society and the relationship between chemistry and other disciplines including agriculture, the medical field, and industry;
- B. classify types of matter, recognize physical properties and chemical properties, and a general understanding of the Law of Conservation of Mass and the Law of Conservation of Energy;
- C. perform unit conversions using the correct significant figures; between the English and metric systems, temperatures in different units, density, energy, and with SI units;
- D. use the periodic table to predict physical and chemical properties of elements and calculate molar masses of compounds and molecules;
- E. recognize the electromagnetic spectrum and have a basic understanding of the quantum mechanical model of the atom;
- F. demonstrate the ability to name inorganic compounds given their formulas, and write formulas given names;
- G. distinguish and identify metals, non-metals, metalloids, and the elements of alkali metals, alkaline earth metals, halogens, noble gases, transition metals, and elements of the lanthanide and actinide;
- H. distinguish and identify between different types of intramolecular and intermolecular forces of attraction present in various substances based on chemical formulas and structures;
- I. write Lewis Electron-Dot Formulas and identify the shape using VSEPR method;
- J. write and balance chemical equations, and use these equations along with stoichiometry and the mole concept to convert quantities (e.g. grams or moles) of a given substance into quantities of an unknown substance;
- K. calculate, empirical formulas, and percentage composition given the appropriate data;
- L. distinguish and balance chemical equations of different types of reactions;
- M. perform calculations involving a limiting reagent and determining the percent yield;
- N. predict the physical behavior of gases to pressure, temperature, and volume changes;
- O. solve simple mathematical problems involving formula calculations related to gas laws;
- P. use gas laws and stoichiometry to calculate quantities (e.g. moles, volume, grams) of gas produced or consumed during a reaction;
- Q. calculate various parameters of solutions including molarity, dilution techniques, percentage concentration, and density.
- R. construct heating and cooling curves;
- S. describe state and energy changes accompanying heating and cooling curves;
- T. apply the principles of equilibrium in reversible reactions, saturated solutions, solutions of weak electrolytes and solutions of gases in solving related problems;
- U. use solution properties and stoichiometry to calculate quantities (e.g. moles, volume, grams) produced or consumed during a reaction;
- V. describe colligative properties of solutions (e.g. boiling point elevation, freezing point depression, and osmotic pressure);

- W. define and identify acids and bases and be able to perform math calculations involving the pH;
- X. determine the nature and applications for electron exchange reactions;
- Y. understand the structure of the atomic nucleus;
- Z. understand the fundamental types of nuclear radiation and the effects they have on biological systems
- AA. and demonstrate laboratory skills which include operating an analytical balance; calibrating and/or use fundamental lab equipment such as a thermometer, barometer, buret, pipette; recognizing use and limitations of laboratory glassware; recording and reporting observations; using error analysis techniques to evaluate certainty of data; use safety precautions and general laboratory procedures.