
SYLLABUS FOR CHEM 3A: INTRODUCTORY GENERAL CHEMISTRY

Reedley College

Section 50187

Fall 2013

Instructor: Jodi Kawagoe email: jodi.kawagoe@reedleycollege.edu phone: 393-1654 (text only)
Class times: Lecture: MWF 9:00–9:50 am in PHY 82
Lab: W 11:00–1:50 pm in PHY 82
Texts: Tro, *Introductory Chemistry*, 3rd or 4th edition with MasteringChemistry
Materials: Safety glasses, lab coat & scientific calculator (with exponential notation and logarithms)
Holidays: Monday, September 2; Monday, November 11; Friday, November 29

COURSE DESCRIPTION

This is a survey course in the principles of inorganic chemistry covering the composition of matter, physical and chemical changes, atomic and molecular structure, inorganic nomenclature, chemical formula and reaction calculations, gas laws, bonding, solutions, net ionic equations, acid-base theories, pH, oxidation-reduction reactions, thermodynamics, nuclear chemistry and equilibrium. The course emphasizes problem solving and chemical calculations. Both qualitative and quantitative theory and techniques will be covered. It is intended for applied science and non-science majors or for students preparing to take Chemistry 1A

COURSE PREREQUISITE

Mathematics 103

COURSE ADVISORIES

English 1A and Chemistry 10 or high school chemistry

DROP DATE

The drop date is Friday, October 11, 2013. After that date the instructor is required to assign a letter grade that will appear on your transcript. If you plan to drop the class, you should do so yourself. Do not depend on the instructor to drop you because of nonattendance. Students with an F average or a poor attendance record at the drop date should discuss their status with the instructor; the instructor may drop such students.

SUCCESS IN CHEMISTRY

To succeed in this class you do not have to be a genius but you will need to work hard. You will need to study at least 6 hours each week outside of the classroom. This time will include reading, studying, and doing homework assignments. Preparing labs will require additional time. It is essential that you listen effectively and that you take good lecture notes in class. **Read the assigned material before coming to class** and be prepared to ask questions during the lecture. Chemistry is a cumulative subject; later topics require a good understanding of the earlier material. **It is essential that you not fall behind in your work.**

ATTENDANCE

Attendance in lecture and lab is expected. You will be dropped from the class if you are absent for 2 weeks without contacting me. If you do miss a lecture, go to Blackboard to view the slides that we covered that day and be sure to read text book. Students with 90% attendance at the end of the semester will get to drop a second lab score. You are responsible for signing the attendance roster each class period. No attendance changes will be made after the class period in question ends.

HOMEWORK

Mastering Chemistry Course ID: RCKAWAGOE FALL2013

Doing homework is essential to learning chemistry. Homework assignments for each chapter can be found on the www.MasteringChemistry.com site. They are available the day before we begin a chapter and are due at midnight the night before we start the next chapter. **Assignments submitted after the due date are penalized 10% for each hour late up to 30%.** For assistance in registering with MasteringChemistry, see the printed instructions or slides that are posted on the course Blackboard site. If you still have trouble, please contact me. While doing the homework, you may use the book, a friend/tutor, or ask me in class or via email or text message. You should be able to do each assignment in 90 to 120 minutes. The first assignment will teach you how to use MasteringChemistry.

MEMORIZATION QUIZ

During lecture in the second week of the semester I will give you a quiz which requires that the following information be memorized. It will be worth 100 points (equivalent to one lab) in the lab grade. You will have three chances to pass with 80% or better, otherwise, you will get a zero for that assignment. If you get 80% or better, you get all 100 points. The quiz will be given at the beginning of class so if you are late you will have less time or may miss the quiz entirely.

Memorize the following (for a detailed list, see Blackboard):

- The names, symbols and spelling of elements 1-38, 47, 50, 53-56, 78-80, 82 on the periodic table
- The names, abbreviations and values of the metric prefixes *kilo*, *centi*, *milli*, *micro*, and *nano* (see Table 2.2)
- The names, formulas and charges for the polyatomic ions: sulfate, phosphate, chlorate, nitrate, peroxide, cyanide, hydroxide, acetate.

The material on the quiz will be random but will only contain the material listed above. You will have 5 minutes to complete the quiz. Expect 10-20 multiple choice questions.

EXAMS

There are four scheduled exams and a cumulative final exam in this class. **There are NO MAKEUPS for missed exams. NO EXCEPTIONS!** If you absolutely must be absent on the day an exam is scheduled, you may discuss with me the possibility of taking the exam **early**. The two-hour final exam will cover new material (chapter 17) and cumulative material (chapters 1-16). Your score on the cumulative portion of the final exam can be used to replace a missed exam.

LAB

Lab work will follow as closely as possible the material discussed in the lectures. There is no published lab manual for this course. All the lab assignments and experiments are available on Blackboard. It is your responsibility to print the assigned experiment and bring it with you to class. Prelaboratory assignments are due at the beginning of the lab period. Some weeks we will have study guides (worksheets) instead of or in addition to experiments. There will be one lab score for each week. Lab reports are due on the following Monday. You may not leave lab early unless you have completed and turned in the lab

assignment. Late labs will be penalized 25%. No labs will be accepted after I have graded that lab. The lowest lab score of the semester will be dropped. Any missed labs will receive a grade of zero. **It is not possible to make up missed labs.**

Proper attire is required for participation in lab. This includes a long-sleeved, knee-length lab coat, approved safety glasses or goggles, and closed-toe shoes (no flip flops or sandals). Students without proper attire will be asked to leave.

ELECTRONIC DEVICES

Technology is wonderful in its place. Please silence your cell phone during class and refrain from texting or surfing the internet. If your cell phone rings during an exam you will lose 5% on the exam grade; if you are caught using your phone during an exam you will receive a zero for that exam. **You may NOT use the calculator on your cell phone during an exam.**

GRADING

A summary of your grades, including a projected course grade, will be emailed to your school email address periodically.

The grading scale will be based on a straight percentage:

A = 100% - 90%
B = 89% - 80%
C = 79% - 70%
D = 69% - 60%
F = 59% - 0%

The final grade will be calculated as follows:

Average of exams	50%
Final exam	20%
Homework	10%
Lab grade	20%

CANCELLED CLASSES

If I have to cancel a class there will be a notice on the door and on Blackboard stating that the class is cancelled.

BLACKBOARD

You are strongly encouraged to make use of Blackboard. It is like a virtual blackboard on the internet where I can post announcements. You can find the course syllabus, lecture and lab schedules, lab experiments and PowerPoint slides. Slides will be posted in a full-size, color version and as a black & white, 6 slides/page handout version. Some students may find it helpful to print the handout version to bring to class. Please see me if you need help with Blackboard.

ACADEMIC DISHONESTY

For the college policy on cheating and plagiarism, refer to the Reedley College catalog. Academic dishonesty is a cause for discipline under Board Policy 5500 (c) and procedures for formal discipline are spelled out in AR 5520 and also in *Student Conduct Standards and Grievance Procedures Handbook* available in the Vice President of Student Services' office. Every instructor has the authority and responsibility for dealing with such instances of cheating or plagiarism as may occur in class. For current information, consult your dean or the Office of Instruction.

The penalty for cheating in my class is a zero for both the originator and the copier for that assignment or exam. Anyone caught cheating will have to meet with me to discuss continued enrollment in the class.

ACCOMMODATIONS

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. Please let me know if you have any unusual circumstances in your personal life that may affect your performance or attendance in class.

STUDENT LEARNING OUTCOMES:

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

- A. Use dimensional analysis to solve for an unknown parameter of density, volume, mass, pressure, temperature, molar mass, concentration, or an empirical formula.
- B. Construct and balance a chemical reaction and use the reaction to predict stoichiometric quantities.
- C. Explain concepts from the periodic table and use the periodic table to solve chemical problems.
- D. Describe acid-base reactions and how to calculate pH.
- E. Name and draw Lewis diagrams of inorganic and molecular compounds from the formula and vice versa.
- F. Safely conduct laboratory experiments implementing concepts and principles learned in lecture.

COURSE OBJECTIVES:

In the process of completing this course, students will:

- A. describe the impact of chemistry on modern society and the relationship between chemistry and other disciplines including agriculture, the medical field, and industry;
- B. identify types of matter, recognize physical properties and chemical properties, and apply 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 explain the basic principles of the quantum mechanical model of the atom;
- F. 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. identify different types of intramolecular and intermolecular forces of attraction present in various substances based on chemical formulas and structures;
- I. develop techniques to write Lewis electron-dot formulas and identify the shape using the VSEPR method;
- J. explain, 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 mass percentage composition given the appropriate data;
- L. complete, identify type and balance chemical equations of reactions;
- M. perform calculations involving a limiting reagent and determine the percent yield;
- N. predict the physical behavior of gases to pressure, temperature, and volume changes;
- O. prepare and solve simple mathematical problems involving formula calculations related to gas laws;
- P. apply gas laws and stoichiometry to calculate quantities (e.g. moles, volume, grams) of gas produced or consumed during a reaction;
- Q. calculate molarity, mass percentage concentration and density of solutions and apply the molarity in dilution calculations;
- R. diagram heating and cooling curves;
- S. explain state and energy changes accompanying heating and cooling curves;

- T. identify the principles of equilibrium in reversible reactions, saturated solutions, solutions of weak electrolytes and solutions of gases in solving related problems;
- U. apply solution properties and stoichiometry to calculate quantities (e.g. moles, volume, grams) of reactants and products in a reaction;
- V. explain colligative properties of solutions (e.g. boiling point elevation, freezing point depression, and osmotic pressure);
- W. define and identify acids and bases and perform math calculations involving pH measurements;
- X. identify the nature and applications for electron exchange reactions;
- Y. understand the structure of the atomic nucleus;
- Z. explain 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.