CHEM 3A-53781: Introductory General Chemistry Spring 2022

3 hours in-person lab each week on Mon 8-10:50am in MSE 201
3 hours in-person lecture each week MWF 12-12:50pm in SOC 32
You will need to spend at least 3 more hours a week doing homework and studying.

Instructor: Veronica Cornel
Contact info: e-mail through Canvas or veronica.cornel@reedleycollege.edu using "Chem3A" in subject line, or voicemail 638-3641 ext 3449
Canvas Website: https://scccd.instructure.com (All fill-in notes, labs, grades)
Office Hours: MW 1-3pm in MSE 223 and F 1-2pm on zoom (link on Canvas under "Announcements")
Tutoring: Free in-person in the tutorial center, and free zoom tutoring available: www.tutormatchingservice.com/reedley

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

Course Prerequisite: **Math 3A/High School Algebra II** Students will need to be familiar with basic algebra before taking this course as almost half the course is math problems. Stats does not prepare you for the math in this class.

Course Advisories: ENGL 1A, CHEM10 or high school chemistry

Text and Materials:
1. Optional but highly recommended: Nivaldo J. Tro: "Introductory Chemistry" **3rd, 4th, 5th or 6th** Edition. The Mastering Chemistry CD is not needed.
2. Print fill-in notes and fill-in labs off Canvas. Start on the "Modules" page and work through the day's Module. Read the section from the free OpenStax textbook or the Tro textbook.
3. You will need a calculator with "exp" (or "EE") and "log" keys ($12 at Walmart), but not a programmable calculator.

Class Attendance and Participation Policy Requirements: Your participation matters! Students who do not attend the first lecture and lab without contacting the instructor may be dropped to allow waitlisted students to register. Students need to attend and pass the lab portion of the class to pass the class. Students who have not attended class or not completed assignments in the class for a week, or a cumulative 25%, or the last 3 days before the drop date, may be dropped if they do not contact me. This is to enable you to get a "W" rather than a letter grade.

Late Work Policy: Homework assignments need to be turned in at the beginning of the next lecture and can only be one lecture late. You will lose 10% if the homework is turned in late (even 10 minutes late!). If you are absent and email me or turn in your homework late, it will still be counted as late. Prelabs need to be turned in at the beginning of lab, and should not have anything printed on the back. Late prelabs will also lose 10%. Lab reports need to be turned in before leaving the lab. If you miss a lab, turn in the Prelab and Postlab questions before the next lab for a small partial credit.

Quizzes and Exams Late Work Policy: A make-up quiz/exam will only be given due to extreme circumstances, with verifiable written proof, at the discretion of the instructor. Only one make-up quiz/exam will be allowed per student. If you miss a second exam you will get zero for that exam.

Lecture Notes: The ability to listen carefully and to take good lecture notes in an essential college skill. Students should print out the fill-in notes on Canvas and fil them in during the lecture. (If you need an accommodation to have a note-taker or another accommodation, please contact the DSP&S office). The homework is on the last page of the notes and is due at the beginning of the next lecture. Studies have shown that 90% of the lecture material is retained if you do the homework straight after the lecture video and reading the section in your textbook. If you wait longer to do your homework you will only retain 35% of the lecture. If you get help with your homework, make sure you redo it yourself or do similar problems from your textbook before the next lecture. Keep your notes, homework and lab assignments in a binder and review them the day before your exam.

Homework and Lab Reports: Homework will be assigned every lecture and a lab report for every lab. It is essential to your success in this class that you do all the assigned homework and lab reports, and read the relevant sections in your Textbook or the free OpenStax textbook. All homework will due at the beginning of the next lecture and selected problems graded. This is to ensure that you work consistently and can apply what you learn to problems. Do not just copy somebody else's homework or you will not be able to do the problems for yourself in the exams. If you turn in identical homework/lab reports I will give a zero to both the student who copied and the student who let you copy their work. You can ask another student or tutor to help you start some problems, but you need to work them out for yourself. Even if you get all the problems wrong, you will still get 70% for the assignment for attempting all the problems yourself and showing all your work. You will need to print or write out the homework questions as well as the answers so you can study your homework/lab report. You can also do the odd number problems in your textbook for extra practice and check the answers at the back of the textbook. The lab reports need to be turned in before you leave the lab.

Last day to add class or to drop class to avoid a "W": Friday, Jan 28
Drop Date: The last day to drop this class is Friday, March 11. After this date a grade will be assigned.

Laboratory (25%):	**Lab Reports 12.5%, Lab quizzes 12.5%**
Lecture Material (75%):	**Exams 65%**
	Homework 10%

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

CHEM 3A Spring 2022 - Cornel

Week	Dates	Lectures (Cornel)	Mon Lab
1	Jan 10-14	No lecture Monday 2.2 Scientific Notation and Temperature 2.3 Significant Figures and Density	Intro, Periodic Table Safety and Lab equipment
2	Jan 17	Martin Luther King Day (No classes)	No Lab Monday
	Jan 18-21	2.6 Dimensional Analysis and Measurements 3. Matter, Physical and Chemical Changes	
3	Jan 24-28	4. Atoms, Elements and Ions 5. Chemical Nomenclature: Ionic Compounds Mon class Exam 1 and Lab Quiz 1	Exp 3. Density of liquids and solids
	Jan 28	**Last Day to drop class to avoid a "W"**	
4	Jan 31-Feb 4	5. Chemical Nomenclature: Molecules 5.11 and 6.1-6.1 The Mole 6.7 Percent Composition	Exp 1: Properties and changes of matter
5	Feb 7-11	6.8 Empirical Formulas 5. Polyatomic Ions and Hydrates Percent water in Hydrates	Exp 4: The Mole Nomenclature worksheet
6	Feb 14-17	7.1-7.4 Balancing Chemical Reactions 7.9-7.10 Types of Reactions	Exp 5: Empirical Formulas of a Compound
	Feb 18	Lincoln Day (No classes)	
7	Feb 21	Washington Day (No classes)	No lab Monday
	Feb 22-25	8. Stoichiometry 8.6 Limiting Reactants and Percent yield	
8	Feb 28-Mar 4	8. Thermochemistry 8. Calorimetry Mon class Exam 2 and Lab Quiz 2	Exp 13: Percent water in hydrates
9	Mar 7-11	9. Electronic configuration 9.7, 9.9 and 10.2 Periodic Table Trends	Exp 7: Reaction Types: Copper Chemistry
	March 11	**Last Day to drop class with a "W" (letter grades assigned after this date)**	
10	Mar 14-18	10. Bonding and Lewis Diagrams 10.7 Geometry 11. Gases	Exp 2 : Calorimetry experiment Exp 8: Alum production from scrap aluminum
11	Mar 21-25	11. Combined Gas law 11. Ideal Gas Law	Lewis diagrams and molecular models
12	Mar 28-Apr 1	11. Gas Stoichiometry and Partial Pressure 13. Solutions, Dilutions	**Exam 3 and Lab Quiz 3 during lab**
13	Apr 4-8	14. Acids and Bases 4.6 Titrations	Exp 14: Molar mass of a volatile gas
	Apr 11-15	**Spring Break**	
14	Apr 18-22	10.8 Electronegativity, Polar Covalent Bonds and Polar molecules	Exp 11: Acid Base Titration Lab
15	Apr 25-29	12. Liquids, Solids and Intermolecular Forces 14. pH and pOH	Exp 9: Production of hydrogen gas
16	May 2-6	15. Chemical Equilibrium	**Lab Practical - Titration**
17	May 9-13	17. Radioactivity and Nuclear Chemistry	**Exam 4 and Lab Quiz 4 during lab**
18	**Mon May 16**	**Final Exam 12-1 :50pm**	

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 the 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:

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.

Please be aware of the following rules:

- Tardiness, cell-phone use, leaving early, and sleeping during lecture is considered disruptive behavior and will result in a partial or full absence being recorded. Students will need to sign the sign-in sheet within the first 10 minutes of class.
- Fraudulent behavior during exams is graded with a (0) zero. This zero will not be replaced with the final exam score.
- Copying of homework, experimental data, and lab reports is considered fraudulent behavior for both the copier and the originator and points (10-100%) may be deducted from both the copier and the originator. DO NOT HAND IN IDENTICAL HOMEWORK.
- No homework may be handed in after I have returned it or gone over it in class. No alternative homework will be given. I will drop the lowest two homework assignments though.
- No extra credit will be given. You need to work consistently from the beginning.
- Please turn your cell phones onto "silent buzzer" mode during lectures so as not to disturb the class. No cell phones or i-pods will be allowed during exams.

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 the Disabled Student Services as soon as possible.

With this statement on my course syllabus, I am **referring** each of my enrolled students in need of academic support to **tutorial services**. Referral reason: Mastering the content, study skills, and basic skills of this course is aided by the use of trained peer tutors