CHEM 3A-51434: Introductory General Chemistry Summer 2021

Asynchronous 2 hours online lecture and 2 hours online lab every day, M-F
Synchronous online exams 6-7pm every Thursday

Instructor: Veronica Cornel
Contact info: e-mail veronica.cornel@reedleycollege.edu using "Chem3A" in subject line, or voicemail 638-3641 ext 3449
Canvas Website: https://scccd.instructure.com (All lecture videos, lab videos, assignments, exams, grades)
Zoom Office Hours: MTh 11-12am and W 5-6pm
Tutoring: 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. Math11 (Stats) is not sufficient as a pre-requisite.

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 labs off Canvas
3. You will need to be able to take a photo of your lab reports, homework, scratch paper in exams and submit them online on Canvas. File must be less than 1MB to upload properly.
4. You will need a calculator with "exp" (or "EE") and "log" keys ($12 at Walmart), but not a programmable calculator.

Online Class Attendance and Participation Policy Requirements: Your participation matters! Remember that this is an online class and simply logging into Canvas is not enough to be marked present. This means that you need to complete assignments listed under Modules for each day (if you upload an assignment early you will still be marked present for the day it is due). If you do not post and contribute to the assignments and discussions boards you will be marked absent for that day. Students who do not submit any assignments during the first day of class (or contact me with a valid excuse) will be dropped to allow waitlisted students to register. Students need to pass the lab portion of the class to pass the class. Students who have not participated in the class for three days, or a cumulative 25% of the assignments, 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. If you have a valid reason for not participating please contact me so we can discuss your situation.

Online Assignments Late Work Policy: Online assignments are due on the assigned due date and time as stated per assignment. You will lose 10% for every day and assignment is

late. I can't accept late assignments after I have posted the answer key, which will usually be the day after the assignment is due.

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 before viewing the lecture or lab videos, or fill in the digital version while watching the videos. (If you need an accommodation to have a note-taker or another accommodation, please contact the DSP&S office). The homework and lab assignments are available on Canvas to print. Fill these out, take a photo or pdf and submit them on Canvas by the due date, as an assignment under each "Module". Studies have shown that 90% of the lecture material is retained if you do the homework straight after viewing 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. Keep these homework and lab assignments and review them the day before your exam.

Homework and Lab Reports: Homework will be assigned every lecture and a lab report after every lab video. It is essential to your success in this class that you do all the assigned homework and lab reports by yourself, and read the relevant sections in your Textbook or the free OpenStax textbook. All homework/lab reports will due by the end of the day of the lecture/lab 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. I will post the answers the next day and it will be up to you to check and correct your own homework. You will need to print or write out the homework questions as well as the answers so you can study your homework/lab report. Take a photo of your homework/lab report and submit it on Canvas by the due date and time. Save it as a doc, pdf, png, gif file but the file must be less than 1MB. (Turn your phone of "live" before taking a photo). You can also do the odd number problems in your textbook (or free OpenStax textbook) for extra practice and check the answers at the back of the textbook.

Last day to add class or to drop class to avoid a "W": Friday, June 27
Drop Date: The last day to drop this class is Friday, July 9. After this date a grade will be assigned.
Online Exam and lab quiz dates: 6-7pm every Thursday. Everyone must do the exam during this time. You will need to work quickly and the exams are designed so that you can't use the internet or outside help.

Laboratory (25%):	**Lab Reports 12.5%, lab quizzes (12.5%, part of Exams)**
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%

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

CHEM 3A Summer 2021 - Cornel

Week	Day	Date	Lecture Topic and Chapters in Tro	Lab
Week 1	Mon	June 21	Introduction, Periodic Table 2.2 Scientific Notation and Temperature Conversions	Lab Safety and Equipment Mentos in Pepsi demo
	Tue	June 22	2.3 Significant Figures and Density	Lab 3. Densities of Liquids and Solids
	Wed	June 23	2.6 Dimensional Analysis & Measurements	Significant figures worksheet
	Thur	June 24	3. Matter, Physical and Chemical Changes	**Exam 1. 6:00-7:00pm**
	Fri	**June 25**	4. Atoms, Elements and Ions	Lab 1: Properties and Changes of Matter **Last Day to add the class, or to drop to avoid a "W"**
Week 2	Mon	June 28	5. Chemical Nomenclature:Ionic Compounds 5. Chemical Nomenclature: Molecules	Nomenclature Worksheet
	Tues	June 29	5.11 and 6.1-6.1 The Mole	Lab 4: Moles
	Wed	June 30	6.7 Mass Percent Composition 6.8 Empirical Formulas	Lab 5. Empirical Formula of a Compound
	Thurs	July 1	5. Polyatomic ions and Hydrated Ionic Compounds	**Exam 2. 6:00-7:00pm**
	Fri	**July 2**	Percent Water in Hydrates 7.1-7.4 Balancing Chemical Reactions 7.9-7.10 Types of Reactions	Lab 13: Percent water in hydrates
Week 3	**Mon**	**July 5**	**Campus closed for Independence Day**	
	Tues	July 6	8. Stoichiometry	Nomenclature worksheet
	Wed	July 7	8.6-7 Limiting Reactants and Percent Yield	Lab 8: Alum production from scrap aluminum
	Thur	July 8	6. Thermochemistry	**Exam 3. 6:00-7:00pm**
	Fri	**July 9**	6. Calorimetry 9. Electronic Configuration	Lab 2: Calorimetry **Last day to drop this class to get a "W"**
Week 4	Mon	July 12	9.7, 9.9 and 10.2 Periodic Table Trends	Lab 6: Percent copper recovery
	Tues	July 13	10. Bonding and 10.5 Lewis Diagrams	
	Wed	July 14	10.7 Geometry	Lewis Diagrams and Molecular Models
	Thurs	July 15	11. Gases	**Exam 4. 6:00-7:00pm**
	Fri	**Jul 16**	11. Combined Gas law	Lab 10: Charles' Law
Week 5	Mon	July 19	11. Ideal Gas Law	Lab 14: Molar mass of a volatile gas
	Tues	July 20	11. Gas Stoichiometry and Partial Pressure	Lab 9: Production of hydrogen gas
	Wed	July 21	13. Solutions, Dilutions	
	Thurs	July 22	14. Acids, Bases and 14.6 Titrations	**Exam 5. 6:00-7:00pm**
	Fri	**Jul 23**	14. pH and pOH	Lab 11: Acid-base titration
Week 6	Mon	July 26	10.8 Electronegativity, Polar Covalent Bonds and Polar Molecules	Gummy Bear Demo
	Tues	July 27	12. Liquids, Solids and Intermolecular Forces	15. Chemical Equilibrium (lecture)
	Wed	July 28	17. Nuclear Chemistry and Radioactivity	
	Thurs	July 29		**Exam 6. 6:00-7:00pm**