Course Syllabus

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*This is a tentative syllabus. With the changes being made because of COVID, there may be significant changes throughout the semester.

Page Modified 1/26/22

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Syllabus for Chem 1B: General Chemistry
Reedley College

Section: 53776/53777

Term: Spring 2022

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Lecture & Lab Times

- Section 53776
  - Lecture MW 12-1:15 PM MSCI 204
  - Lab MW 2-4:50 PM MSCI 202
- Section 53777
  - Lecture TTh 9-10:15 AM MSCI 204
  - Lab TTh 11AM-1:50PM
- Office Hours
  - Monday 10:30-11:30 AM
  - Thursday 2-3 PM
  - Friday 10AM-2PM
- If you are looking for the Lecture and Lab Schedule: **Schedule v2.0.pdf**. Not officially part of the syllabus, but it does contain specific test dates and assig

Required Books and Materials:

- Chemistry: A Molecular Approach, Nivaldo J. Tro
  - 3rd to 5th editions are acceptable. Newer editions will match the lectures most closely. Homework has been selected for each edition (posted on Canva
- The lab manual will be provided as a free download from Canvas. Experiments and worksheets must be printed out and brought to class.
- Composition Notebook for Lab.
- Lab coat and goggles for face-to-face labs.
- Scientific calculator (I recommend the TI-36X Pro)

Faculty Information

Instructor: Kirk Kawagoe
Office and phone: **MSCI** (Math and Science) 222
Cell phone: (559) 393-2121 (**text only**, this is the best method of contacting me). I will usually get back to within the hour (or faster).
email: Use the canvas e-mail system. I will get back to you within 24-hours. **Do not use my RC email.**

Statement on Academic Dishonesty:

I hope you are in college with the idea of improving yourself for your future. Cheating in college will not help you in your career and will not help your own self
cannot pass the next class because you cheated your way through this class? You should be aware of and understand the colleges rules on **Academic Dish**
cheating to the Instructional Vice President. Cheating in this class will possibly result in a negative score (i.e. -100%) on an exams or zero on lab and homewo
anything to gain unfair advantage over others and includes, amongst many other things, hidden notes used on exams as well as leaving the room during an e
exam. Copying lab calculations and report sections is also considered cheating! DO YOUR OWN WORK. If you need additional help, just contact me and I w
successful in the future.

Accommodations

It is our policy not to discriminate against any student. If you suspect that you have any type of physical disability or learning disability that is relevant to your p
by the disabled student services office and discuss it with them as they may be able to provide services and support that could help you succeed.

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 wit
of the Rehabilitation Act, please contact me as soon as possible.

Attendance

This is an hybrid class. Lab attendance will be taken in class. Lecture attendance is based on assignments turned in. If you don't otherwise contact me, you

- You don't turn in the assignments due on (8/14) by the end of the second week.
- Don't take the first exam.
- Don't turn in 70% of assignments given by the end of week 9. I make exceptions if students contacted and worked out a plan to successfully catch up.

Important dates

- Martin Luther King Day - Monday 1/17/22
- Lincoln Day - Friday 2/18/22
- Washington Day - Monday 2/21/22
- Spring Break 4/11 - 4/15 no classes. Campus open M-Th.
- Final Exam
  - Section 53776 - Monday 5/16/22 12-1:50 PM
  - Section 53777 - Thursday 5/19/22 9-10:50 PM

Exams

Five exams are given in this class. They are a combination of multiple choice and written problems based on the study guides and homework. Make up exam
constants, conversion factors and equations will be provided on exams. Examples of information given can be found on Canvas.

Extra Credit

Extra credit assignments will not be given.

Grading

A summary of your grades, including a projected course grade, is available on Canvas. To receive a passing grade, you must have at **least a 70% lab averag**
regardless of your success in the rest of the course.

The grading scale will be based on a straight percentage:

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

The final grade will be calculated using weighted categories:

- 10%   Homework & Worksheets
- 25%   Lab Reports. You must receive at a 70% average in lab to pass the course.
- 45%   Chapter Exams. Your exam average must be at least 60% to pass the class with a grade of C or better.
- 20%   Final Exam

Homework and Worksheet grading

- I'm going to start the semester with a different type of grading scale. If it bombs, then I'll revise it. However, the homework (regardless of the scale) is still
- 4 point grading system
  - 1 - Definitely need to see me for help
  - 2 - Same as 1
  - 3 - Good enough to pass, but work is probably not clear enough for me to see your understanding of the problem and how to solve it.
  - 4 - "C's get degrees", but if you think about it, who really want's that. You know you want better. This level of work shows enough understanding that y
    you really understood what you did (btw, only you know that).

Homework

Here's a general outline of how you should work out homework problems involving calculations:

1. **Find what you are looking for and the givens.**
2. **Determine how the values are related. (i.e. conversion factors or equations)**
3. **Write what you are looking for on the left of the equal sign**
   - **If there are conversions, show each conversion factor with its units. Cancel units.**
   - **If its an equation, solve the equation for the variable you are looking for.**
4. **Carry out conversions or plug values into equations making sure that units match.**

Example:

Calculate the volume, mL, of 35.3 g of mercury at 25°C. (d = 13.593 g/cm^3)

Looking for mL Hg.

Given: 35.3 g and d = 13.593 g/cm^3

Plan:

$$\text{g} \xrightarrow{d=13.593g/cm^3} \text{cm}^3 \xrightarrow{1cm^3=1mL} \text{mL}$$

Work shown:

$$volume(mL) = \frac{35.3\,\cancel{g}}{} \times \frac{1\,\cancel{cm^3}}{13.593\,\cancel{g}} \times \frac{1\,mL}{1\,\cancel{cm^3}} = 2.5969\,\text{mL} = 2.60\,\text{mL}$$

Homework is due following the completion of the chapter and graded according to the following scale:

- 60% - Showing work for questions requiring work.
- 20% - Providing accurate answers.
- 20% - Organization and significant figures.

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 Canvas.

For Face-to-Face labs there are **two different prelab assignments**. Both need to be completed **before coming to *class*** to do an experiment.

- **If there is a prelab video, you need to watch it and complete a quiz before coming to class.**
- **Prelab Worksheets** – These are found *in* the lab instructions you download from Canvas. Most of the questions can be answered by reading the experim experiment.
- **Notebook** – You need to write out the following in your notebook ***before you come to class. Use a pen!***
  - Purpose
  - Materials
  - Hazards
  - Procedure (For Chem 1A, you are allowed to bring a copy of the procedure at the beginning of the semester, but you must work from the procedure in is missing, you can refer to and supplement your prelab notes).
  - You should also leave space in your notebook for recording data. We will discuss this more in class.

If the notebook work is not done before class, you will not be allowed to do your experiment for the day. You will receive a zero for that day.

For online/video experiments:

- Download the experiment file
- Complete the prelab assignment as if it were face-to-face
- View the video
  - Record the data into your notebook
- Complete and postlab calculations and assignments.
- Submit the file back to the assignment link by the due date.

Late Work

Points are deducted for each day the assignment is late up to 50% (5% per day). Assignments can be turned in at any time during the semester but will have really want you to turn in everything, but if at the end of the semester I run out of time for grading, the late stuff will get zeros.

Success in Chemistry

- Do not underestimate the time required for this class.
- Do not fall behind. Chemistry is cumulative and builds upon earlier concepts.
- Try and read ahead of the class schedule. Work through the examples in the text. Take notes while watching lecture videos.
- Check in EVERY DAY.
- Study for understanding. Critical thinking is a requirement for success in Chem 3A.
- Always show your work, including all units and considering significant figures.
- Complete and turn in all assignments. Work extra problems.
- Consider forming a study group.
- Ask for help. Text or email me with questions any time (literally). I will reply at my earliest convenience.

Course Student Learning Outcomes and Objectives

Overview

The Course Description, Learning outcomes, and learning objectives describe the material and skills covered in this course. You should make a copy of this p **Student Learning Outcomes and Objectives** on its own page). It 1) allows other institutions to translate this course to one of their courses for the purposes understanding of the material you need mastery in to successfully complete this course. However "knowing" everything in the accompanying page does not n course if you do not turn in assignments and do well on exams!

COURSE DESCRIPTION

5 units. *3 lecture hours, 6 lab hours. (A, CSU-GE, UC, I)*

Course Description: This course completes the yearlong general chemistry sequence (1A-1B) and covers the principles of physical and inorganic chemistry mathematical problem solving. Topics covered include acid-base theory, chemical kinetics, equilibrium (acid-base, hydrolysis, and solubility), chemical thermo topics in nuclear chemistry, coordination chemistry, and/or chemistry of selected groups. Students will analyze inorganic compounds qualitatively and quantita CHEM 120S: CHEM 1A & CHEM 1B)

Prerequisite: Chemistry 1A and **Mathematics**

103 or equivalent*.

Advisories: English 1A.

Course Objectives for CHEM 1B:

(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)

In the process of completing this course, students will:

1. use chemical kinetic mathematical operations to determine order and rates of a reaction and understand the effects of temperature;
2. apply Le Châtelier's Principle to systems displaced from equilibrium, mathematically solve for the equilibrium constant, and describe limitations involving tl
3. demonstrate the ability to classify acids and bases and then determine equilibrium constant and pH of acids, bases, and buffers;
4. solve problems involving the common-ion effect in acid-base and solubility equilibria;
5. evaluate neutralization reactions and titration curves;
6. recognize fractional precipitations and equilibria involving complex ions;
7. recognize the concept of qualitative cation analysis and be able to perform related laboratory experiments;
8. solve simple problems involving chemical thermodynamic problems (work, heat, internal energy, enthalpy, entropy, and free energy);
9. examine the Second Law of Thermodynamics and apply to the spontaneity of a reaction and the complexity of natural systems;
10. discuss concepts of an electrochemical cell and mathematically solve for a standard cell potential, change in standard free energy, and equilibrium consta
11. recognize physical and chemical properties of element groups (e.g. alkali metals; alkaline earth metals, transition elements, group 13 metals, group 14 me and noble gases);
12. identify and describe the bonding of complex ions and coordination compounds;
13. discuss general concepts of nuclear chemistry (e.g. stability, decay, fission, fusion, radioactivity, and nuclear reactions);
14. perform laboratory procedures and techniques used in semimicro qualitative and quantitative analysis of simple inorganic ions, and the apparatus and me and electrochemistry experiments
15. demonstrate skills in the laboratory in the use of the analytical balance, titration, spectroscopy, pH meter, glassware, melting point apparatus, safety preca procedures

STUDENT LEARNING OUTCOMES

(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)

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

1. Solve and explain chemical kinetics and mechanisms problems
2. Solve and explain chemical equilibrium questions including but not limited to acid/base and pH concepts
3. Solve and explain problems on thermodynamic concepts
4. Solve and explain problems on electrochemical concepts
5. Explain the fundamental concepts of nuclear chemistry
6. Demonstrate general chemistry skills in the laboratory including qualitative analysis

Course Summary:

Date	Details

Date	Details
Sat Aug 28, 2021	📝 **Chapter 16 Homework Part 1** **(https://scccd.instructure.com/courses/74783/assignments/1966996)**
Wed Sep 8, 2021	📝 **Chapter 16 Homework Part 2** **(https://scccd.instructure.com/courses/74783/assignments/1966997)**
Mon Sep 13, 2021	📝 **Chapter 17 Homework Part 1** **(https://scccd.instructure.com/courses/74783/assignments/1966998)**
Mon Sep 20, 2021	📝 **Chapter 17 Homework Part 2** **(https://scccd.instructure.com/courses/74783/assignments/1966999)**
Mon Sep 27, 2021	📝 **Chapter 18 Homework Part 1** **(https://scccd.instructure.com/courses/74783/assignments/1967000)**
Mon Oct 4, 2021	📝 **Chapter 18 Homework Part 2** **(https://scccd.instructure.com/courses/74783/assignments/1967001)**
Fri Oct 15, 2021	📝 **Chapter 19 Homework** **(https://scccd.instructure.com/courses/74783/assignments/1967002)**
Fri Nov 5, 2021	📝 **Chapter 20 Homework** **(https://scccd.instructure.com/courses/74783/assignments/1967003)**
Fri Nov 26, 2021	📝 **Chapter 21 Homework** **(https://scccd.instructure.com/courses/74783/assignments/1967004)**
Fri Dec 3, 2021	📝 **Chapter 26 Homework** **(https://scccd.instructure.com/courses/74783/assignments/1967005)**
Fri Jan 14, 2022	📝 **Practice With Unit Conversions** **(https://scccd.instructure.com/courses/74783/assignments/2080934)**
Thu Jan 20, 2022	📝 **Math Review Worksheet** **(https://scccd.instructure.com/courses/74783/assignments/2080920)**
Sat Jan 22, 2022	📝 **Chapter 15 Homework Part 1** **(https://scccd.instructure.com/courses/74783/assignments/1966994)**
Tue Jan 25, 2022	📝 **Exp 0b** **(https://scccd.instructure.com/courses/74783/assignments/2082001)**
Sat Jan 29, 2022	📝 **Chapter 15 Homework Part 2** **(https://scccd.instructure.com/courses/74783/assignments/1966995)**
Tue Feb 1, 2022	📝 **Exp 15a** **(https://scccd.instructure.com/courses/74783/assignments/2088692)**
	📝 **Comprehensive Exam (1A and 1B)** **(https://scccd.instructure.com/courses/74783/assignments/2080930)**
	📝 **Exam 1** **(https://scccd.instructure.com/courses/74783/assignments/2080922)**
	📝 **Exam 2** **(https://scccd.instructure.com/courses/74783/assignments/2080923)**
	📝 **Exam 3** **(https://scccd.instructure.com/courses/74783/assignments/2080924)**
	📝 **Exam 4** **(https://scccd.instructure.com/courses/74783/assignments/2080925)**

Date	Details
	📝 **Exam 5 (take home)** **(https://scccd.instructure.com/courses/74783/assignments/2080926)**