Course Syllabus

*This is a tentative syllabus. With the changes being made because of COVID-19, there may be significant changes throughout the semester.

Syllabus for Chem 1A: General Chemistry
Reedley College

Section: 55035

Term: Fall 2021

Course Information

Lecture: Online (asynchronous)

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 Canvas).
- 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. I purchased these to give out when we have our face-to-face lab.
- Lab coat and goggles for face-to-face labs.
- Scientific calculator (I recommend the TI-36X Pro; cell phone calculators are **not** acceptable)

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.
Office hours: Monday 12:30-1:30 PM by Zoom (by appointment) . Friday 10 AM - 2 PM (MSCI 201 in person)

Lab: Monday & Wednesday. Room **MSCI** 201 - 2:00 PM - 4:50 PM.

Statement on Academic Dishonesty:

Academic Dishonesty

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 performance in the course, please stop 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 with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

Attendance

This is a hybrid class. Lab is face-to-face. Lecture attendance will be monitored via assignments turned in.

- Students who have not contacted me or have not turned in the first assignments by 8/20 (Friday), will likely be dropped.
- Students who do take exam 1 or do not turn in 70% of assignments as of 9/3 also be dropped (last day to drop without a W). Exceptions can be made if students have contacted me and worked out a plan to successfully catch up before 9/3.

Important dates

Wednesday, December 8, 2 PM: 2 hour Face-to-face final exam.

Exams

Five multiple choice exams will be given in this class. Make up exams will generally not be given. Most constants, conversion factors and equations will be provided on exams. Examples of information given can be found on Canvas. If we are required to go into online only teaching, exams will be open book, but face-to-face exams are closed book.

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 average and a 60% exam average** 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
- 25% Lab reports/worksheets. You must receive at a 70% average in lab to pass the course.
- 45% Chapter Quizzes. Your Quiz average must be at least 65% to pass the class with a grade of C or better.
- 20% Final Exam

Homework

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

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:

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

Work shown:

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

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 experiments are available on 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 experiment or the introduction to the 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 your notebook. If important information 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 20% (4% per day). However, assignments are only available for upload until the following Sunday at Midnight. This is encourage you

to get caught up each weekend.

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 (CSLO)

- CHEM-1A SLO1: Apply math skills to solve chemical problems.
  CHEM-1A SLO2: Collect and analyze data in the laboratory and have reasonable conclusions.
  CHEM-1A SLO3: Utilize the periodic table in calculations and analyses involving molecules and compounds.

Course Objectives

- Draw covalently bonded structures and apply bonding theory to predict geometry and polarities of the molecules
- Effectively collect, record, and analyze experimental data, recognize the limitations of measurements, identify sources or error, and correlate experimental results with the appropriate theory.
- Recognize functional groups in organic molecules and draw structures of the molecules to show geometry and isomers
- Use stoichiometric relationships to calculate quantities of reactants, products, limiting reactants, theoretical yields, percent yields, and chemical formulas.
- Define the structural periodicity of the elements and discuss the trends in all directions on the periodic chart and the terms for grouping elements, i.e., metalloids, transition elements, inner transition, etc..
- Convert from the English to the metric system in mass, volume, and linear measurements.
- Describe colligative properties of solutions of ionic and non-ionic substances and solve their numerical problems.
- Use systematic nomenclature to name and classify ionic compounds, molecules, and simple organic molecules.

- Identify types of reactions, predict the outcomes of chemical reactions, and write and balance chemical reactions.
- Apply gas laws and the kinetic molecular theory to processes involving gases.
- Compare and contrast ionic bonding, covalent bonding, and intermolecular forces. Explain properties of liquids, solids and phase changes.
- Apply the first law of thermodynamics, contrast internal energy and enthalpy, describe how energy changes are related to temperature, atomic motions, and change in chemical bonding and perform thermochemical calculations.
- Calculate molecular mass, formula mass, gas volumes, temperature, pressure, concentration of solutions, molarity, empirical and molecular formulas, and percentage composition.

Tentative schedule

	Lectures are Online Exams are in person during a lab period. Specific dates TBA.	Important Assignments (For due dates, check canvas calendar) (homework is listed separately)
Week 1 8/8/21	**Chapter 1 (Lecture links are here)**	Monday (M) - Course & Syllabus Overview Wednesday (W) - **WS 1** & Laboratory Safety Lecture Bring your own copies of WS 1 to lab. I may be able to print a few, but I don't have access to my printers right now (and the new building does not have internet yet).
Week 2 8/15/21	**Chapter 2 – Atoms and Elements**	M - Memorization Quiz (**Material to Memorize**) & **Exp 0a** W - **WS 2**
Week 3 8/22/21	**Chapter 3 – Molecules and Compounds**	M - **Exp 1a - Introduction to Measurements KTK.pdf** **(https://scccd.instructure.com/courses/68833/files/12799691/download?download_frd=1)** W - **WS 3 Nomenclature & Formula Calculations** **Friday - Last day to drop and avoid a W**
Week 4	**Chapter 4 – Chemical**	M - **Exp 2a Intro to Qualitative Observations**

8/29/21	**Reactions and Chemical Quantities**	W - **WS 4 Stoichiometry** F - 10 AM - 2 PM Study Period MSCI 201 (office hour if you can attend)
Week 5 9/5/21	**Chapter 5 part 1**	Monday - Labor Day, No class W FF Exam 1 (Chapters 1-3)
Week 6 9/12/21	**Chapter 5 part 2**	M - Exp 3a – Determination of a Chemical Formula (Finish writeup in class) W - WS 5
Week 7 9/19/21	**Chapter 6 - Gases**	M - **Exp 5b Density of Sodium Chloride Solutions** W - WS 6
Week 8 9/26/21	**Chapter 7 - Thermochemistry**	M - **Exp 6a – Molar Mass of a Volatile Liquid** (writeup in class) W - **Exp 5l Determination of Citric Acid (face-to-face)**
Week 9 10/3/21	**Chapter 8 – The Quantum-Mechanical Model of the Atom**	M - Exam Review/Study Period W - Exam 2 (Chapters 4-6) Friday - Last Day to Drop
Week 10 10/10/21	**Chapter 9 – Periodic Properties of the Elements**	M - **Exp 8a – Emission Spectra** W - WS 8a – Periodic Trends
Week 11 10/17/21	**Chapter 10 – Chemical Bonding I**	M - **Exp 5g – %Tartaric Acid** (Practice, calculations in class) W - **WS 10a - Lewis Structures (Study Guide) KTK2.pdf** **(https://scccd.instructure.com/courses/68833/files/12753999/download?download_frd=1)**
Week 12	**Chapter 11 - Chemical**	M - **Exp 5g – %Tartaric Acid** (Lab Exam)

10/24/21	**Bonding II**	**WS - 11 Shapes and Valence Bond Theory**
Week 13 10/31/21	**Chapter 12 – Liquids, Solids, and Intermolecular Forces**	I'll be updating the syllabus beyond this point later in the semester! FF Exp 5h – Antacids (Demonstration of a “back titration”))
Week 14 11/7/21	**Chapter 13 – Solids and Modern Materials**	FF Lab Practical (Exp 5i) – Day 1 Veterans Day (W)
Week 15 11/14/21	**Chapter 14 – Solutions**	FF Lab Practical (Exp 5i) – Day 2
Week 16 11/21/21		FF Exp 14a – Freezing Point Depression Thanksgiving (Th/F)
Week 17 11/28/21	Review Week	FF Exp 14b – Making Ice Cream
Week 18 12/5/21	Finals Week Wednesday 1 – 2:50 PM	

Course Summary:

Date	Details	Due
Mon Aug 9, 2021	**Starting Week 1** (https://scccd.instructure.com/calendar?event_id=165962&include_contexts=course_68833)	12am

Date	Details	Due
	Unit analysis review (https://scccd.instructure.com/courses/68833/assignments/1854570)	due by 11:59pm
Fri Aug 13, 2021	Friday Help Session (https://scccd.instructure.com/calendar?event_id=165924&include_contexts=course_68833)	11am to 1pm
Sun Aug 15, 2021	Chapter 1 Homework (https://scccd.instructure.com/courses/68833/assignments/1819135)	due by 11:59pm
	WS 1 (https://scccd.instructure.com/courses/68833/assignments/1830894)	due by 11:59pm
Mon Aug 16, 2021	Memorization Quiz (https://scccd.instructure.com/calendar?event_id=165963&include_contexts=course_68833)	12am
	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174557&include_contexts=course_68833)	12:30pm to 1:30pm
Wed Aug 18, 2021	Exp 0a - Laboratory Notebook (https://scccd.instructure.com/courses/68833/assignments/1819155)	due by 11:59pm
	Memorization Quiz (https://scccd.instructure.com/courses/68833/assignments/1854975)	due by 11:59pm
Sun Aug 22, 2021	Chapter 2 Homework (https://scccd.instructure.com/courses/68833/assignments/1819137)	due by 11:59pm
	WS 2 (https://scccd.instructure.com/courses/68833/assignments/1819169)	due by 11:59pm
Mon Aug 23, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174558&include_contexts=course_68833)	12:30pm to 1:30pm
Sat Aug 28, 2021	Exp 1a (https://scccd.instructure.com/courses/68833/assignments/1861295)	due by 11:59pm
Sun Aug 29, 2021	Chapter 3 Homework (https://scccd.instructure.com/courses/68833/assignments/1819139)	due by 11:59pm

Date	Details	Due
	WS 3 Nomenclature & Formula Calculations (https://scccd.instructure.com/courses/68833/assignments/1819172)	due by 11:59pm
Mon Aug 30, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174559&include_contexts=course_68833)	12:30pm to 1:30pm
Sat Sep 4, 2021	Exp 2a Intro to Qualitative Observations (https://scccd.instructure.com/courses/68833/assignments/1819159)	due by 11:59pm
Sun Sep 5, 2021	Chapter 4 Homework (https://scccd.instructure.com/courses/68833/assignments/1819141)	due by 11:59pm
	WS 4 Stoichiometry (https://scccd.instructure.com/courses/68833/assignments/1819173)	due by 11:59pm
Mon Sep 6, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174560&include_contexts=course_68833)	12:30pm to 1:30pm
Fri Sep 10, 2021	WS 5 Stoichiometry II (https://scccd.instructure.com/courses/68833/assignments/1819174)	due by 11:59pm
Sat Sep 11, 2021	Exp 3a Determination of a Chemical Formula (https://scccd.instructure.com/courses/68833/assignments/1819160)	due by 11:59pm
Sun Sep 12, 2021	Chapter 5 - Part 1 - Homework (https://scccd.instructure.com/courses/68833/assignments/1819143)	due by 11:59pm
Mon Sep 13, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174561&include_contexts=course_68833)	12:30pm to 1:30pm
Sat Sep 18, 2021	Exp 5b - Densities of NaCl (https://scccd.instructure.com/courses/68833/assignments/1819162)	due by 11:59pm
Sun Sep 19, 2021	Chapter 5 - Part 2 - Homework (https://scccd.instructure.com/courses/68833/assignments/1819144)	due by 11:59pm

Date	Details	Due
Mon Sep 20, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174562&include_contexts=course_68833)	12:30pm to 1:30pm
Sat Sep 25, 2021	Exp 5l Determination of Citric Acid (face-to-face) (https://scccd.instructure.com/courses/68833/assignments/1819164)	due by 11:59pm
Sun Sep 26, 2021	Chapter 6 Homework (https://scccd.instructure.com/courses/68833/assignments/1819146)	due by 11:59pm
Mon Sep 27, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174563&include_contexts=course_68833)	12:30pm to 1:30pm
	Chapter 7 Homework (https://scccd.instructure.com/courses/68833/assignments/1819148)	due by 11:59pm
Thu Sep 30, 2021	Exp 6a Molar Mass of a Volatile Liquid (https://scccd.instructure.com/courses/68833/assignments/1819165)	due by 11:59pm
Mon Oct 4, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174564&include_contexts=course_68833)	12:30pm to 1:30pm
Sun Oct 10, 2021	WS 8 Atomic Structure (https://scccd.instructure.com/courses/68833/assignments/1819175)	due by 11:59pm
Mon Oct 11, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174565&include_contexts=course_68833)	12:30pm to 1:30pm
	Exp 5g Tartaric Acid (face-to-face) (https://scccd.instructure.com/courses/68833/assignments/1819163)	due by 11:59pm
Wed Oct 13, 2021	Chapter 8 Homework (https://scccd.instructure.com/courses/68833/assignments/1819150)	due by 11:59pm
Thu Oct 14, 2021	Exp 8a Emission Spectra (https://scccd.instructure.com/courses/68833/assignments/1819166)	due by 11:59pm

Date	Details	Due
Mon Oct 18, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174566&include_contexts=course_68833)	12:30pm to 1:30pm
Wed Oct 20, 2021	Chapter 9 Homework (https://scccd.instructure.com/courses/68833/assignments/1819152)	due by 11:59pm
Mon Oct 25, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174567&include_contexts=course_68833)	12:30pm to 1:30pm
	WS 10a Lewis Structures (https://scccd.instructure.com/courses/68833/assignments/1819170)	due by 11:59pm
Wed Oct 27, 2021	Chapter 10 Homework (https://scccd.instructure.com/courses/68833/assignments/1819125)	due by 11:59pm
Mon Nov 1, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174568&include_contexts=course_68833)	12:30pm to 1:30pm
	Exp 4x Gravimetric Determination of Sulfate (https://scccd.instructure.com/courses/68833/assignments/1819161)	due by 11:59pm
	WS - 11 Shapes and Valence Bond Theory (https://scccd.instructure.com/courses/68833/assignments/1819171)	due by 11:59pm
Thu Nov 4, 2021	Chapter 11 Homework (https://scccd.instructure.com/courses/68833/assignments/1819127)	due by 11:59pm
Sun Nov 7, 2021	Exp 12a Intermolecular Forces - online version (https://scccd.instructure.com/courses/68833/assignments/1819156)	due by 11:59pm
Mon Nov 8, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174569&include_contexts=course_68833)	12:30pm to 1:30pm
Wed Nov 10, 2021	Chapter 12 Homework (https://scccd.instructure.com/courses/68833/assignments/1819129)	due by 11:59pm

Date	Details	Due
Sun Nov 14, 2021	Exp 12b Paper Chromatography -- Online Version (https://scccd.instructure.com/courses/68833/assignments/1819157)	due by 11:59pm
Mon Nov 15, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174570&include_contexts=course_68833)	12:30pm to 1:30pm
Wed Nov 17, 2021	Chapter 13 Homework (https://scccd.instructure.com/courses/68833/assignments/1819131)	due by 11:59pm
Mon Nov 22, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174571&include_contexts=course_68833)	12:30pm to 1:30pm
Sun Nov 28, 2021	Exp 14b Making Ice Cream (at-home project) (https://scccd.instructure.com/courses/68833/assignments/1819158)	due by 11:59pm
Mon Nov 29, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174572&include_contexts=course_68833)	12:30pm to 1:30pm
Wed Dec 1, 2021	Chapter 14 Homework (https://scccd.instructure.com/courses/68833/assignments/1819133)	due by 11:59pm
Mon Dec 6, 2021	CHEM-1A-55035-2021FA (https://scccd.instructure.com/calendar?event_id=174573&include_contexts=course_68833)	12:30pm to 1:30pm
Wed Dec 8, 2021	Curved Final Score (https://scccd.instructure.com/courses/68833/assignments/1819154)	due by 3pm
	Final Exam (https://scccd.instructure.com/courses/68833/assignments/1819167)	due by 3pm
	Roll Call Attendance (https://scccd.instructure.com/courses/68833/assignments/1853241)	