



# General Chemistry Laboratory I

## CHEM161L, CRN: 61024

Spring 2022

### CLASS INFORMATION

Thursday @ 14:30 – 17:15 hours,  
If in person: 'Imiloa 111/131

Meeting Location: Zoom  
<https://hawaii.zoom.us/j/5803716362>

### INSTRUCTOR INFORMATION

**Instructor:** Marc Bresler

**Office:** Zoom

<https://hawaii.zoom.us/j/98992574555>

**Office Hours:** M/R 9:00-10:00 T/W 1:00-2:00

**E-mail:** [mbresler@hawaii.edu](mailto:mbresler@hawaii.edu)

**Virtual Office:** email for zoom appointment

### WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

*Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide the Ko'olau region of O'ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.*

### SYLLABUS CHANGE POLICY:

Information contained in the course syllabus may be subject to change with reasonable advance notice, as deemed appropriate by the instructor. Updates to the syllabus will be communicated via email.

### About This Course

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Laboratory experiments illustrating fundamental principles of chemistry. (2 hrs 45 mins lab)

Pre-Requisite(s): Credit for or registration in CHEM 161.

### Course Learning Outcomes

After successfully completing this course, you will be able to:

1. Apply laboratory safety procedures and respond to hazards.
2. Use molecular and crystal models, perform common laboratory techniques competently and computer-based experiments to verify chemistry laws on stoichiometry, thermochemistry, behavior of gases and liquids.
3. Apply and articulate the scientific method by preparing lab reports using the standard scientific format. Express in writing core chemistry principles, results of experiments and do critical thinking by synthesizing conclusions based on observations and data.
4. Make and record precise measurements, calculate results using significant figures, standard deviations and identify sources of error in laboratory experiments.
5. Use computer competently, word-processing, spreadsheet and graphing.
6. Prepare chemical solutions, perform dilutions, calculate solution concentrations and generate a calibration curve.

## Course Format

Due to the uncertainty with the ongoing pandemic, and the fact that not everyone is comfortable being around others, I will be offering two options this semester. You will have the choice between working exclusively online or coming to laboratory. You must select one format for the entire semester – however, if you elected to do in-person lab and are ill or suspect you have been exposed to Covid-19, you will be given the option to complete the experiments completely online.

We will be using the Labflow platform this semester which will enable a seamless transition from in-person to online as needed and will present a consistent set of questions to everyone regardless of the selected option. There are no supplies to purchase but there is a \$30 fee to access the platform.

For each lab, students will have to complete the pre-lab work by 2:30 pm on the day of the experiment (the prelab will lock and become unavailable after that time) and complete an experiment (in-person or virtual). Students should allocate 4-6 hours a week to complete all work.

All tasks are due at 14:30 on Thursday unless specified otherwise and include the following:

- View the background videos
- Answer online pre-lab quiz questions
- Attend the lab or setup your report to be provided with data
- Submit lab report

## Required Materials

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Students must have the following:

- Computer or tablet with high-speed internet connection
- Access to Lulima website and Zoom as needed
- Access to Labflow platform (semester cost \$30): [www.labflow.com](http://www.labflow.com), enrollment code 61041
- Chem 161 class notes and OpenStax Textbook: Chemistry (Free, <https://openstax.org/details/books/chemistry-2e>)
- Scientific calculator that has Log and Ln functions.

## Course Policies

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### Communication

Your instructor will send a weekly email to provide specific instructions about the week's experiment.

Students can communicate with the instructor via Lulima e-mail, or university e-mail. Messages will be answered within 24 hours during the week or within 48 hours on weekends and holidays.

### Alternative Contact

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

Location: Alakai 121  
Phone: 808-235-7422  
Email: [wcaa@hawaii.edu](mailto:wcaa@hawaii.edu)

### Attendance & Grading

#### Attendance/Participation

Students are expected to complete the work associated with each week's experiment within the allocated time frame.

## Evaluation and Feedback

The instructor will attempt to grade work and provide feedback within two weeks.

## Late Work

A 10% per day penalty (up to 30%) will be applied to all late reports. No work will be accepted later than one week after the due date unless there are specific circumstances and you have notified the instructor prior to the initial due date. Work can be submitted until 11:59 pm on the due date.

## Pre-lab Assignments

Each experiment (except the first one) will have an associated pre-lab assignment posted on Laulima. Allow 1-2 hours to watch the videos and complete the pre-lab. This pre-lab **MUST** be completed before the Experiment and access will close at exactly 14:30 hours on the day the experiment is available.

## Reports

Whether you are doing at-home or in-lab experiments, each lab includes worksheet reports that will be used to record data and observations during the experiment (or you will be provided with your own personal set of data). You should allocate 4-6 hours to complete both the experiment and the post-lab questions. Formal reports may take longer. All work must be completed by the due date and time.

## Formal lab reports.

Two of the experiments (highlighted in bold in the schedule) will require formal reports which have to be submitted either in Word, Google doc, or pdf format. More information will be provided during the week the first formal report is due; you will be provided with a template and sample of a formal report. Tips on writing formal lab reports can be found in the Resource section of Laulima.

Just like the worksheets, formal lab reports must be turned in by the due date/time.

## Lab Safety

### At-home lab.

All experiments will be performed virtually and will not involve any chemicals.

### Campus lab.

For in-person labs, you will watch the instructions provided during the pre-lab session and set up the required equipment. Your instructor will be providing additional information as needed. In lab, you will carry out the procedure, record your observations and data, and perform the necessary calculations.

We will be working with potentially hazardous chemicals. You must wear your safety goggles/glasses **at all times** when in the laboratory – not just when performing experiments. Glasses must be worn to cover your eyes – not on your forehead/head. IF I have to remind you more once, you may be asked to leave the laboratory and will earn a zero for that experiment. You must wear closed-toed shoes to protect your feet from chemicals or objects that may fall to the ground. No sandals, slippers or any footwear that does not completely cover the foot will be allowed in the lab. No shoes – no lab experiment → grade = 0. A lab coat is recommended but long pants and long-sleeved tops are acceptable, preferably made of natural materials as synthetic materials can easily catch on fire and stick to your skin. If you are wearing a short-sleeve top, shorts, or any garment that exposes legs/arms, you must wear a long lab coat over your clothes. The lab coats should be long enough to provide protection from chemicals.

Everyone must wear a mask that provides mouth and nose coverage and stays securely in place; you don't want to keep adjusting your mask while handling chemicals with your hands.

No food, no chewing gum, no drinks (including water bottles) allowed at any time during the lab. It is easy to contaminate your food and drinks, and minute amounts can be very harmful when ingested. You must wash your hands thoroughly with soap and water after completing an

experiment (even if you wore gloves) and before consuming any food/drinks.

Treat chemicals with respect, keep your work area clean and wipe up any spills. Return reagents to their proper place, replace lids on bottles, and dispose of all chemicals according to the directions provided in the experimental procedure. You are responsible for your safety and the safety of others and should report ALL unsafe situations or incidents to the instructor. The last 10 minutes of class will be allocated to cleaning your workspace and equipment and putting everything away in its place.

This is worth repeating. **Please work away from electronic devices**, water is hazardous to computers and phones! Why am I saying that? I've seen a couple of computers getting fried over the years, it would be a shame if yours was the next one.

A high level of maturity and professionalism is expected in the lab. Distractions which will not be tolerated include: talking loud, audible cell phones, listening to devices using headphones/earbuds, texting, social media use, making offensive remarks, eating in class, sleeping in class (!), packing and leaving class early (unless you have notified the teacher), and arriving late. You will be given ONE warning – if the behavior continues you will be asked to leave the class and marked absent.

Before leaving the laboratory, you must show your results to your instructor who will verify if your results make sense and will dismiss you.

### Data

You will be working solo for these experiments and every person must present their own data.

When recording data, write down the precision/units of the instrument used (for example, your balance should weigh to two decimal places, so you would record a reading at 10.45 grams).

Before dismantling your experiment setup, you should do a quick calculation to see if the data makes sense. Do NOT make up data to try to match expected results, this is unethical and dishonest and will be obvious to your instructor. Instead, try to provide an explanation as to why the results were not as expected.

### Exams

There will one midterm and one final exam (120-minute duration) administered via Laulima. Both will be open-book.

### Weekly Experiments - Recipe for Success

- Prepare before each lab session so you're ready to ask questions if needed – read the experiment, complete the pre-lab assignment.
- Check the Laulima homepage weekly for announcements and update/important information.
- Check your email a couple of time per week.
- Submit your work on time.

### Special learning needs

If you have special learning needs, inform your instructor at the beginning of the semester.

### Grade Composition (subject to change if we resume hybrid classes)

The Final Grade will be based upon a possible total of 620 points.

The lowest worksheet and pre-lab quiz will be dropped.

1. 12 Experiments Worksheets (25 points each) – 300 points
2. 2 Formal Lab Reports (50 points each) – 100 points
3. 14 Pre-lab Quiz (5 points each) – 70 points
4. Midterm exam – 75 points

## 5. Final Exam– 75 points

Students can check their grades and examination scores on Lualima Gradebook at any time.

### Final Grade

Grades of I, W, CR, CN are described in the current college catalog. The last day for withdrawals (W, CR, CN) is March 29th, 2021, after that date, the instructor will sign withdrawals only in cases of extreme or unusual circumstances, such as 1) a certified medical reason, or 2) a death in the immediate family. Grade-related excuses are unacceptable. Students who no longer attend class and who DO NOT OFFICIALLY WITHDRAW from the course will receive "F" grades.

Students must present the "Request for Incomplete" form to their instructor prior to the last day of instruction. "I" grades will be given only to students who are achieving passing grades and are very close to completing the course. Only serious reasons will be accepted (listed under the withdrawal policy).

You will receive a letter grade based on the following scale:

### Letter Grades and Percentage Ranges

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

### Institutional Information

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Please review the following institutional policies:

#### Student Responsibilities

- Students should allocate 4-6 hours per week to complete each experiment and work on assignment/report.
- UH Policy on Email Communication  
The electronic communications policy adopted in December 2005 establishes the University of Hawai'i Internet service as an official medium for communication among students, faculty, and staff. Every member of the system has a hawaii.edu address, and the associated username and password provide access to essential Web announcements and email. You are hereby informed of the need to regularly log in to UH email and Web services for announcements and personal mail. Failing to do so will mean missing critical information from academic and program advisors, instructors, registration and business office staff, classmates, student organizations, and others.
- Academic Honesty  
In cases of suspected or admitted academic dishonesty, the instructor involved shall attempt to discuss the matter with the student. The instructor may bring the matter to the attention of the departmental chairperson for consultation. The instructor may require the student to redo the assignment, give a failing or reduced grade for the course, and/or refer the student to the Vice Chancellor for Student Affairs or designee through the Department Chair for possible college action under the Student Conduct Code. The Vice Chancellor for Student Affairs or designee shall pursue such cases to determine appropriate disciplinary actions if, after a preliminary investigation, it is his/her determination that probable cause exists to establish that an act of academic dishonesty took place.

#### College Policies

- Disabilities Accommodations

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Roy Inouye can be reached at (808) 235-7448, [royinouy@hawaii.edu](mailto:royinouy@hawaii.edu), or you may stop by Hale Kāko'o 106 for more information. You shall also inform your instructor at the beginning of the semester; that information will remain confidential.

- Sex Discrimination and Gender-Based Violence Resources (Title IX)

Windward Community College is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking.

If you or someone you know is experiencing any of these, WCC has staff and resources to support and assist you. To report an incident of sex discrimination or gender-based violence, as well as receive information and support, please contact one of the following:

Kaahu Alo, Student Life Counselor & Designated Confidential\* Advocate for Students

Phone: (808) 235-7354

Email: [kaahualo@hawaii.edu](mailto:kaahualo@hawaii.edu)

Office: Hale 'Ākoakoa 232

*\*confidentiality is limited*

Desrae Kahale, Mental Health Counselor & Confidential Resource

Phone: (808) 235-7393

Email: [dkahale3@hawaii.edu](mailto:dkahale3@hawaii.edu)

Office: Hale Kāko'o 101

Karla K. Silva-Park, Title IX Coordinator

Phone: (808) 235-7468

Email: [karlas@hawaii.edu](mailto:karlas@hawaii.edu)

Office: Hale 'Ākoakoa 220

As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and I cannot guarantee confidentiality, you will still have options about how your case will be handled. My goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

For more information regarding sex discrimination and gender-based violence, the University's Title IX resources and the University's Policy, Interim EP 1.204, go to [manoa.hawaii.edu/titleix/](https://manoa.hawaii.edu/titleix/)

- Covid-19 policies: <https://windward.hawaii.edu/campus-life/safety-security/campus-emergency-preparedness-and-evacuation-procedures/coronavirus/>

## How to Get Help <https://windward.hawaii.edu/services-for-students/>

- Academic Support
- Student Support Services [windward.hawaii.edu/MySuccess](https://windward.hawaii.edu/MySuccess)
  - Academic Advising
  - Financial Aid
  - Personal Counseling
- Technical Support Services

## Tentative Course Schedule

The following schedule is subject to change. Should changes occur, you will be notified by email. Please note the highlighted entries for the midterm and final exams. All due dates are on Thursday.

Week	Date	Event	Topic/Event	LabFlow Experiment
1	13-Jan	Lab 1	Laboratory Safety and Procedures	Lab Safety
2	20-Jan	Lab 2	Scientific Measurements and Density	Intro to the Laboratory/Basic Laboratory Techniques
3	27-Jan	Lab 3	Separation of Mixtures	Separating a Mixture of Solids
4	3-Feb	Lab 4	<b>Conductivity of Solutions</b>	Solutions, Electrolytes, and Concentrations/Using Excel
5	10-Feb	Lab 5	Types of Chemical Reactions	Types of Chemical Reactions (remove reaction VII)
6	17-Feb	Lab 6	Solubility Rules	Soluble and Insoluble Salts
7	24-Feb	Lab 7	Determination of Chemical Formula and Stoichiometry	Empirical Formula
8	3-Mar	Exam	Covers Labs 1 to 6	
9	10-Mar	Lab 8	Beer's Law Investigation	Beer's Law and Spectrophotometry
10		18-Mar	<i>Note</i>	<i>Spring Break</i>
11	24-Mar	Lab 9	<b>Titration of Acetic Acid Content in Vinegar</b>	Titration: Determining the Concentration of an Acid
		29-Mar	<i>Note</i>	<i>Last day to withdraw with a W grade</i>
12	31-Mar	Lab 10	Pressure-Volume and Pressure-Temperature	Boyle's Law
13	7-Apr	Lab 11	Calorimetry	Constant Pressure Calorimetry
14	14-Apr	Lab 12	Periodic Trends	Atomic Spectra (Part C only), Identification of a Halide
15	21-Apr	Lab 13	Lewis Formula and Molecular Shapes	Compounds and their Bonds
16	28-Apr	Exam	Covers Labs 7 to 13	

**\*\* Experiments in bold require a formal lab report**