

CHEM161L GENERAL CHEMISTRY LABORATORY I

1 credit (CRN 62062)

Thursday 2:00 PM to 4:45 PM

`Imiloa 111 & 131

INSTRUCTOR: Martine Bissonnette
OFFICE: `Imiloa 119
EMAIL: martineb@hawaii.edu
OFFICE HOURS: Monday 1:00-2:00 pm
Tuesday and Thursday 12:45-2:00 pm
Friday - by appointment
EFFECTIVE DATE: Spring 2018

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 O'ahu's Ko'olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

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

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

STUDENT LEARNING OUTCOMES

Upon completion of the course, the student 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.

LEARNING RESOURCES

1. Internet access and Lualima website.
2. Chemistry 161L Laboratory Manual, edited by L. U. Colmenares
3. Chem 161 class notes
4. Scientific calculator, safety goggles, closed-toed shoes.

COURSE TASKS

Each session will consist of a pre-lab session and a laboratory experiment.

Pre-lab sessions will be held in `Imiloa 111. The underlying principles of the day's experiment will be described along with experimental procedures, use of special lab equipment when applicable, and safety procedures. Demonstrations will be given when needed. Your instructor will answer any questions and provide additional guidance as needed. You must have completed the pre-lab assignment and pre-lab activity BEFORE this session and must show your work at the beginning of class. If you not attend the pre-lab session, you will not be allowed to perform the experiment.

Laboratory experiments will be performed in `Imiloa 131. You will follow the instructions provided during the pre-lab session and set up the required equipment, carry out the procedure, record your observations and data, and perform the necessary calculations. The last 10 minutes of class will be allocated to cleaning your workspace and equipment and putting everything away in its place.

The laboratory worksheets or laboratory reports will be due at the **beginning** of the following pre-lab session. Memory has a way of fading and you should try to work on the report as soon as possible after completing the experiment, while all the information is fresh in your mind.

ASSESSMENT TASKS AND GRADING

Grading: The Final Grade will be based upon a possible total of 600 points.

1. **10 Experiment Worksheets (20 points each)**
2. **3 Formal Lab Reports (50 points each)**
3. **Special Activity Report (10 points)**
4. **12 Pre-lab Assignments (5 points each)**
5. **2 Exams (90 points each)**

Students can check their grades and examination scores on Lualima gradebook at anytime. The gradebook is usually updated on Sundays. The following scale will be used to determine final grades:

A: 90 - 100 %; B: 80 – 89 %; C: 70 - 79 %; D: 60 - 69 %; F: below 60 %

Grades of I, W, CR, CN are described in the current college catalog. The last day for withdrawals (W, CR, CN) is **March 26, 2018**, 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 such as those listed under the withdraw policy, will be accepted.

Additional Information

Recipe for success:

- Prepare before each class – read the experiment, complete the pre-lab assignment.
- Check Laulima between Sunday evening and Thursday morning for any update/important information.
- Show up on time! Important background and safety information will be shared at the beginning of class and you may be denied participation to the lab experiment or lose 10% of the report grade.
- Bring your lab manual and scientific calculator to every class.
- Follow all safety rules!

Schedule:

Week	Day	Date	Chapter/Event	Topic/Event
1	Thursday	11-Jan	Lab 1	Laboratory Safety
2	Thursday	18-Jan	Lab 2	Scientific Measurements and Density
3	Thursday	25-Jan	Lab 3	Conductivity of Solutions of Ionic and Covalent Compounds
4	Thursday	1-Feb	Lab 4	Determination of Chemical Formula
5	Thursday	8-Feb	Lab 5	Types of Chemical Reactions
6	Thursday	15-Feb	Lab 6	Stoichiometry Experiment
7	Thursday	22-Feb	Lab 7	Solution Preparation and Concentration
8	Thursday	1-Mar	Exam 1	Good luck!
9	Thursday	8-Mar	Lab 8	Determination of the Concentration of Acetic Acid in Vinegar
10	Thursday	15-Mar	Lab 9	Boyle's Law: Pressure-Volume Relationship in Gases
11	Thursday	22-Mar	Lab 10	Pressure-Temperature Relationship in Gases
12	Monday	26-Mar		Last day to withdraw with a W grade
12	Thursday	29-Mar		Spring Break
13	Thursday	5-Apr	Lab 11	Thermal Energy Associated with Chemical and Physical Changes
14	Thursday	12-Apr	Lab 12	Additivity of Enthalpy: Hess' Law
15	Thursday	19-Apr	Lab 13	Lewis Formula and Molecular Shapes
16	Thursday	26-Apr	Exam 2	Good luck!
16		5-11 May		Finals week

* Experiments in bold require a formal lab report

Class policies:

a. Pre-lab Assignments

Each experiment will have an associated pre-lab assignment posted on Lualima. Allow about two hours to complete the pre-lab. This pre-lab **MUST** be completed before coming to the pre-lab session and access will close at 1:00 PM on the day of the experiment.

b. Experiment Worksheets

In your manual, every experiment includes worksheets. You must complete the pre-lab activity before beginning the experiment. The worksheets also contain data tables which will be used to record data and observations during the experiment, and post-lab questions that must be answered (show your work and all calculations). The worksheets should be carefully removed from the manual and turned in during the pre-lab session at the next session.

You can submit the worksheet up to one week after the due date but there will be a **30%** penalty.

c. Formal Lab Reports

Three of the experiments (highlighted in bold in your manual) will require formal reports. The report must include the signed worksheets showing your raw lab results. We will discuss the format and content during the pre-lab session of each experiment and you will be provided with a sample of a formal report. Tips on writing formal lab reports are given as an appendix in the lab manual.

Just like the worksheets, formal lab reports must be turned in during the pre-lab session at the next session. You will be allowed to submit the report up to one week after the due date but there will be a **30%** penalty.

d. Special Activity

There will be a special activity assigned during the semester. The specifics will be discussed at a later date. A worksheet or report will have to be provided to earn credit.

e. Exams

There will be two exams, each covering about half of the course. Each exam will last 120 minutes and will be open book. There will be no final exam

f. Lab Safety

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 will 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 on 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. Long pants/skirt and long-sleeved tops should be worn, 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 100% cotton and long enough to provide protection.

No food, 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 should 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 situation or incident to the instructor.

g. Laboratory Procedures

There will be **no make-ups allowed** if you miss a lab session, you will receive a score of zero.

You will be working in pairs to perform the experiments and are expected to work in a cooperative manner. You must be focused and try to absorb as much information and knowledge as possible. These experiments are designed to reinforce the classroom material and you can only gain by being engaged in this process.

When recording data, use an **ink** pen and write down the precision/units of the instrument used (for example, if the balance weights to four decimal places, you would record a reading at 10.4567 grams). Never erase original data, if you make a mistake, neatly draw a line across it and write the correct data below/above/next to it.

Before dismantling your experiment setup, you should do a quick calculation to see if the data makes sense. Consult with your instructor to discuss possible causes of error and repeat the experiment if necessary. 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.

You must show your results to your instructor before leaving the laboratory, your instructor will sign off on your results. **Only reports with the instructor's signature will be accepted.**

Allow about 10 minutes at the end of the session to clean up and put away all the equipment and glassware. Points will be deducted for inadequate clean-up or for not following waste disposal techniques and procedures.

h. Laboratory behavior

A high level of maturity and professionalism is expected in the lab. Distractions which will not be tolerated include: talking, audible cell phones, 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.

i. Special learning needs

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

j. Schedule

The schedule is subject to change. Any changes to the course schedule will be announced in class and on the home page of the Lulima site. You are responsible for keeping track of these changes.

k. Academic Honesty

Although you will be working with a lab partner to perform the experiment and perform calculations, you must complete your own worksheets/lab report. You must submit your own work at all times. Cheating on an assignment, or exam will earn you an F and the Department Head and Office of the Dean will be notified.

The rules are:

- Produce and submit your own work. Although your data will be the same as your partner's, I expect the discussion to be your own. If I identify two reports as being the same source, both parties will receive a grade of zero.
- Absolutely no talking once the exams begins. If you have a question, raise your hand and I will come to you.
- Keep your eyes on your own paper. If I see you looking at other people's paper, I will assume you are cheating and will ask you to leave the class and you will receive an F.

- Only approved notes, pen, pencil, eraser and scientific calculator are allowed. Absolutely no smart phone. I will provide required formulas, constants, and a periodic table. I will tell you what will be provided before each exam.
- No listening to an audio device allowed.

Process for Dealing with Academic Dishonesty (Student Conduct Code)

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.

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.

DISABILITIES ACCOMMODATION STATEMENT

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. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale 'Akoakoa 213 for more information.