

Chem 100L Chemistry in Society Laboratory

1 credit (CRN 64412)

T 10:00 AM - 12:45 PM Imiloa 131

INSTRUCTOR: David Reeves
OFFICE: Imiloa 130
E-MAIL: dr6@hawaii.edu
OFFICE HOURS: T 1:00-2:00 (*Imiloa 130*)
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EFFECTIVE DATE: Fall 2013

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

CATALOG DESCRIPTION

Experiments in everyday chemistry. (2 hrs. 45min lab.)

Prerequisites: Credit or registration in CHEM 100.

WCC: DY

STUDENT LEARNING OUTCOMES

1. Identify/locate laboratory safety equipment and apply laboratory safety procedures.
2. Construct molecular models to determine molecular shape and properties.
3. Assemble apparatus to perform common laboratory techniques to verify fundamental chemistry principles in everyday life.
4. Make and record accurate observations and precise quantitative measurements.
5. Synthesize conclusions based on observations and data in a formal laboratory report.
6. Identify sources of error in laboratory experiments.

LEARNING RESOURCES

Required Textbook: Chemistry 100L Laboratory Manual Fall 2010, edited by L. Colmenares

Course Website: <http://laulima.hawaii.edu> (use UH email account login and password)

Other Requirements: Scientific Calculator, Lab goggles and Internet Access

PURPOSE OF THE LABORATORY COURSE

The chemistry laboratory allows the student to understand some of the concepts discussed in the lecture more thoroughly. In the laboratory you will be involved with the processes of

scientific inquiry. It is the only way for the student to learn the techniques that are so important in chemistry and applied sciences. The student will discover that doing quality work in the laboratory requires a great deal of patience and care.

GRADING

The final grade will be based on the following scheme:

11 Activities	70% of total
Midterm + Final Exam	30% of total
Total	100%

The lowest lab report score will be deleted.

Course grades will be assigned as follows:

- A-- 90-100%
- B-- 80-89%
- C-- 70-79%
- D-- 60-69%
- F-- less than 60%.

For grades I, W, Cr, NC and N -- See college catalog

MODE OF INSTRUCTION

The primary mode of instruction is through the use of hands-on laboratory activities. Each hands-on activity will be preceded by a class discussion based on a pre-lab online homework consisting of a reading assignment and completion of pre-lab questions and problems. The homework and pre-lab may consist of videos, websites and computer programs.

Conduct of the Lab:

- | | |
|-----------------|--|
| First 45 min | Discuss answers to <u>pre-lab</u> assignment problems and questions, review important principles and safety precautions, demonstrate new techniques needed or use of new equipment (in Imiloa 111) |
| Remaining time | Perform hands-on activity, record observation and data, calculate results |
| 10 min | Clean-up |
| Last 30 minutes | Answer Post-lab questions |

The activity report may be turned in at the end of the class, or at the latest at the start of the next meeting.

COURSE POLICIES AND TIPS TO SUCCEED IN THIS COURSE

1. The **Course Content and Schedule** (activity titles and corresponding dates) is listed on the last page. Changes in the schedule will be announced in class (or course website on Laulima) at least a week prior to the affected date. You are responsible for obtaining this information whether or not you were present during the announcement.
2. **Before class.** Each hands-on activity is described in detail in the Lab Manual. PLEASE **be**

prepared for the activity by reading it *thoroughly* and do the online *Pre-Lab* homework *before* coming to class. This will allow you to become familiar with the experiment and to better understand the calculations involved.

3. Bring your *Lab Manual*, *scientific calculator*, *lecture textbook* and a *stapler* to class at all times.
4. **Safety** is important. Wear your safety goggles and wear closed-toed shoes (preferably sports shoes) to protect from danger of spilling chemicals. Slippers, sandals or similar footwear are not allowed. **You will NOT be permitted in the lab** if you are not wearing close-toed shoes.
5. The *online pre-lab homework* constitutes **10% of the report grade**. Please allot two hours for this activity.
6. Please come to class on time. Attendance in the pre-lab discussion will count **5% of the grade**. **Important background information** about the experiment **and safety** will be discussed in the Pre-Lab discussion. During the Pre-Lab, you are expected to ask questions and take notes. Pre-lab will meet in Imiloa 111.
7. **During lab (Imiloa 131)**. Follow **laboratory rules and procedures** at all times. Treat all chemicals with respect and wipe up any spill, return all reagents to the proper place, replace lids on bottles and report any accident or problem to the instructor. Follow the **directions in the Procedure** precisely. Don't take short cuts or fake results as these are readily spotted. General lab rules and procedures comprise 5% of the report grade.
8. In the lab, you are to work in pairs. Work cooperatively and maintain a positive attitude. Treat it as an **opportunity to learn** and do **not** simply **rush** through an experiment in order to get out of the laboratory as quickly as possible. **Maintain a positive attitude** and **work cooperatively** with other students and the laboratory instructor. **Be alert** and maintain **presence of mind**.
9. **Inappropriate and disruptive behavior** such as activated beepers and cell phones, making offensive remarks, prolonged chattering, etc. will not be tolerated. **Do not use cell phones** in the classroom or in the laboratory. Please step outside if you need to make a call.
10. When recording a **measurement**, it is expected that the **value** reflect the precision of the instrument used (never round-off) and affix the correct unit. **Record all your data** neatly in ink and with units. Do not erase original data. If you make a mistake just put a line thru them. Point deductions will be applied to data with incorrect precision.
11. Do a quick calculation to check if results are reasonable before dismantling the setup. **Repeat the experiment** if you make a mistake. Consult the instructor to **discuss** the probable **causes of error** before doing the repeat.
12. Use laboratory time efficiently and bear in mind that the experiment **should be done** at least **ten minutes** before the end of class for cleanup activity. Leave your laboratory station in good order when you are finished for the day. Points will be **deducted** when safety precautions, chemical transfer, clean-up and waste disposal techniques and procedures are not followed.

13. **After completing the lab.** Complete your calculations as soon as possible after the laboratory. Complete all calculations and post lab questions before the end of the period. Do not procrastinate and wait until the night before the next laboratory to write your report. Remember you will need to prepare for the new one as well.
13. **Laboratory reports.** You are expected to turn in an *individual* report at the beginning of next class. Please answer all the questions and present all data and calculations. Deductions of two to three points for every omission will be implemented.
- You are expected to discuss results, calculations and interpretations with your laboratory partner and classmates, but calculations and answers in the report should be completely *your own work*. Copying someone else's work or answers is cheating. Students involved in *cheating* will be assigned a grade of "F" and will be reported to the Dean.
14. A *formal* laboratory report is required for Experiments on *Polymers* and *Household Chemicals* while an *informal* lab report is required for all the other experiments. *Formal reports* should follow the standard format. The *rubric for grading* the formal lab reports and tips on *how to write a formal report* are found in your Lab Manual. A sample formal lab report is accessible at Laulima.
15. **Late Reports.** If submitted one week after the due date, the lab report (only for labs the student was present) will be given a *grade of 70% if complete* and 65% if less than complete. The grade assigned will be *zero* if submitted much later.
16. The *graded lab report* will be returned to you in the following lab session. Return all graded lab reports to the teacher. They will be returned to you the week before the exam. These will be your primary review materials for the exam. *Monitor your class performance by keeping a record of your scores on the table of contents page of the Lab Manual.*
17. **Make-up.** No make-up is allowed and the student gets "zero" for the missed lab activity. You cannot turn in a lab report for a missed activity.
18. **Attendance** will be checked at the beginning of each Pre-Lab session.
19. If you have any **special learning needs**, including hearing/visual impairment, please inform the instructor as soon as possible.
20. **Extra Credit** The teacher may announce opportunities for earning extra credit from time to time.

DISABILITIES ACCOMMODATION

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.

COURSE CONTENT AND SCHEDULE

Holidays: Sep 2 (M), Nov 11 (M), Nov 28 (R), Nov 29 (F)

Important Dates: **Last day for withdrawal**, Nov 4 (M)

Last day of instruction, Dec 12 (R)

Date	Activity	Notes
Aug 27	1 Laboratory Safety, Equipment & Procedures	
Sep 3	2 The Scientific Method	
Sep 10	3 Elements and Compounds	
Sep 17	4 Molecular Models & Balancing Equations	
Sep 24	5 Measurements and Density	
Oct 1	6 Stoichiometry of a Precipitation Reaction	
Oct 8	7 Separating Mixtures using Chromatography	
Oct 15	Midterm Exam (Experiment 1-6)	
Oct 22	8 Acids, Bases, pH Indicators & Neutralization	
Oct 29	9 Oxidation Reduction	
Nov 5	10 Individual Student Demonstrations*	
Nov 12	11 Polymers	Formal Lab Report
Nov 19	12 Penny Battery	
Nov 26	13 Chemistry in Everyday Life-Household Chem	Formal Lab Report
Dec 3	14 Soaps and Detergents	
Dec 10	Final Long Exam (Experiment 7-14) & Check-out	

*Subject to change due to lecture alignment, etc.