CABRILLO COLLEGE **CHEMISTRY 2**

Instructor: Mr. Cantin

Contact Information: lucas.cantin@cabrillo.edu
Voice mail: 831-477-3700 x1634
Office Hours: **TTh 3:50-5:05pm Room 614A**

REQUIRED COURSE MATERIALS:

Text: Tro, Introductory Chemistry, Essentials 4th Edition
Laboratory Manual: Small-Scale Chemistry Laboratory Manual, Prentice Hall Chemistry
Supplies: ***Safety Goggles or safety glasses*** and a Scientific Calculator

CLASS SCHEDULES:

LECTURE (ALL THREE SECTIONS): T-TH 2:30-3:50 pm in room 615
Section 76475 (LAB): Tue 11:15-2:20 p.m. in room 606
Section 76476 (LAB): Wed 2:30-5:35 p.m. in room 606
Section 76477 (LAB): Thu 11:15-2:20 p.m. in room 606

Course Description:
This comprehensive introductory chemistry course covers basic concepts, theories and laws with emphasis on reasoning and problem solving skills.

Pre-requisite:
Satisfactory completion of Elementary Algebra, MATH 152; satisfactory score on the District's Math placement test; or equivalent measures that indicate proficiency in Elementary Algebra are required for success in the class.

OVERALL COURSE GRADE:

Your final grade in this course will be determined according to the following percentage scheme:

Homework assignments	10%	Comprehensive final exam	30%
Quizzes	10%	Laboratory assignments	21%
Midterm exam	24%	Attendance and Safety	5%

Course grades will be assigned according to the following percentage scale:

A ≥90%	90%> B ≥80%	80%> C ≥70%	70%> D ≥60%	60% > F

HOMEWORK STRATEGIES:

This course requires 3+ hours of outside study/homework each week for success. Assigned text problems represent a fair overview of the types of problems you can expect on exams.

LECTURE QUIZZES AND EXAMS:

There will be several quizzes, a midterm exam, and a comprehensive final exam administered in this course, all of which will test not only your problem solving skills but also your conceptual understanding of the material and your ability to integrate concepts. These exams will focus on (1) the key course concepts, (2) the lecture slides, (3) the online homework assignments, and (4) the recommended text problems. The dates are on the course schedule.

Bring a calculator for all quizzes/exams.

There will be **NO MAKE-UP QUIZZES OR EXAMS** administered in this course. To accommodate emergencies or illness, your lowest ***quiz*** sco*re* and ***your lowest lab report*** score will be dropped. *If you miss the final exam, then you will not receive an overall passing grade in this course.*

ATTENDANCE AND ACADEMIC INTEGRITY:

You are responsible for all the material covered in this course, and it is expected that you attend and participate in all of the lecture and laboratory sessions. ***If you must be absent, then it is in your best interest to contact the instructor as you may be dropped from the course after two unexcused absences.*** *I****f you miss the first two lectures or the first lab, you will automatically be dropped for non-attendance****.* Additionally, it is your responsibility to understand what constitutes academic dishonesty in accordance with the Foothill College Academic Honor Code (www.foothill.edu/services/honor). *If you are caught cheating or plagiarizing at any time, then your violation will be reported and you may be dropped from the course. Any smart phones or other electronic devices shall not be visible during any quiz or test. Failure to have devices out of sight will forfeit your grade for that assignment and may lead to disciplinary action.*

Course Expected Outcomes:
By successfully completing this course students will acquire the following skills:

1. Be able to describe and apply the scientific method.
2. Use conversion of units of length, mass, volume and temperature in simple calculations.
3. Perform calculations using the concept of density.
4. Recognize states of matter. Classify matter as pure substances or mixtures.
5. Identify physical and chemical changes.
6. Identify names and symbols of elements, ions, ionic compounds and molecular compounds.
7. Apply information in the periodic table of elements to describe chemical reactions.
8. Identify, complete and balance chemical equations.
9. Perform simple stoichiometric calculations.
10. Identify limiting reactant and calculate percent yield from a given balanced chemical equation.
11. Describe atomic structure and the electrical nature of matter.
12. Apply quantum numbers for the identification of atomic orbitals.
13. Write electron configurations of neutral elements and ions.
14. Analyze periodic trends of atomic properties. Draw Lewis diagrams and predict molecular geometry.
15. Apply the kinetic molecular theory to discuss the behavior of gases.
16. Use gas laws to perform a variety of calculations involving gases and gas stoichiometry.
17. Describe the preparation and properties of solutions.
18. Use units of concentration in solution stoichiometry calculations.

Selected Student Learning Outcomes (SLOs)

1. Analyze major chemical reactions and predict outcomes of simple chemical reactions from given reactants

2. Write reactions with correct chemical names, formulas and balanced chemical equations.
3. Solve stoichiometry problems and unit conversion problems with appropriate conversion factors and significant figure

Key dates are found in the Schedule of Classes.

Be mindful of drop with refund, drop with a 'W' grade etc.

Lecture Schedule and Laboratory Schedule are in separate documents on my web page.

Classroom and Laboratory Conduct

Students agree to conduct outlined on Cabrillo College's Behavior Policy at address:

http://www.cabrillo.edu/services/tlc/teachingonline/netiquette.html

It reads as follows:

Class Online Behavior Policies

Behavior Expectations:

1. Be respectful and professional in all correspondence at all times. To do otherwise is **disruptive behavior** and will not be tolerated. Examples of disruptive behavior are unacceptable, disruptive language as follows:
    1. use of profanity or unprofessional offensive language.
    2. use of sarcasm.
    3. use of language that threatens or teases anyone in any way.
    4. use of language that is racist, homophobic, misogynistic, hateful or otherwise offensive. This applies to the SEVERE CLAUSE (see below.)

1. Log-in and participate in class discussions, on time as scheduled.
2. Complete and submit assignments on time.
3. Do your own work. Plagiarism/cheating is not acceptable under any circumstances.

Consequences for Disruptive Behavior:

1st offense
Student will be warned via email.

2nd offense
a. Student will be blocked from class (no access to email, discussion board or course information/lecture notes) for 1 week. Student will get a zero for missed assignments.
b. Student will meet with instructor and agree on proper behavior before being allowed to access the class.
c. A *Disruptive Student Behavior Report Form* will be completed and sent to the Dean of Student Services.

3rd offense
a. Student will be dropped from the class.
b. A *Disruptive Student Behavior Report Form* will be completed and sent to the Dean of Student Services.

SEVERE CLAUSE — For very serious, intolerable behaviors, such as 1d. above:

- Dropped from class immediately, no 2nd or 3rd chance.
- *Disruptive Student Behavior Report Form* completed and sent to the Dean of Student Services.

CHEMISTRY 2 Homework

Week of	M/T Lecture	W/Th Lecture	Laboratory Session
Homework	*Ch 1: 7, 9, 11, 17 Ch 2: 1, 17, 27, 31, 33, 41, 43, 45, 47, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69bc, 79, 83, 87b, 91, 95, 99, 101, 103, 109*		
Homework	*Ch 3: 13, 15, 33, 35, 39, 51, 59, 73, 75, 77, 81, 89, 93, 95, 103, 109*		
Homework	*Ch 4: 23, 27, 35, 37, 47, 55, 67, 71, 77, 79, 81, 89, 93, 95, 99, 101, 109, 111*		
Homework	*Ch 5: 1, 7, 37, 39, 41, 43, 45, 49, 51acd, 55cd, 57ab, 61ace, 65, 67abcd, 69, 71, 73bcd, 75, 89abc, 99*		
Homework	*Ch 6: 13, 23, 25, 33, 41, 49, 53, 65c, 67c, 75, 83, 87, 91, 97ab, 99, 109, 115, 127* *Ch 7: 3, 5, 11, 29, 37, 39, 43, 45, 51, 53, 57, 59, 61, 63, 67ab, 69cd, 83ab, 93, 101a*		
Homework	*Ch 8: 9, 11, 21, 29, 31, 41b, 43, 51b, 55b, 57b, 61, 65, 77, 85, 87, 89*		
Homework	*Ch 9: 29, 31, 37, 43, 49, 51, 75, 76, 77, 81, 93, 97* *Ch 10: 35, 45, 47, 48, 49, 50j, 51, 57, 65, 75, 76*		
Homework	*Ch 11: 1, 5, 19, 29ab, 39, 45, 49, 57, 59, 69, 75, 85, 95, 101, 105, 107,117,121, 131*		
Homework	*Ch 12: 11, 17, 19, 35, 37, 49, 57, 61, 89, 93, 105*		
Homework	*Ch 13: 1, 3, 13, 15, 17, 25, 33, 41, 65, 75, 77, 83, 87, 93, 95, 115, 117, 133*		
Homework	*Ch 14: 3, 11, 17, 37, 39, 41, 43, 51bc, 55, 57, 73, 75, 77, 101, 109*		

LABORATORY SYLLABUS

Laboratory:
There are no make-up experiments. A missed experiment will earn zero points. All chemicals and laboratory equipment will be removed from the laboratory room immediately after completion of the assigned experiment. Safety glasses or goggles are to be worn at all times. Every student is responsible for reading the corresponding experiment and completing the pre-lab assignment **BEFORE** coming to the laboratory session.

Laboratory Reports:
While working on their experiment, students will record their experimental data and observations on their lab manual. After the data collection is finished, students must proceed with the analysis of their experimental data and their calculations. Finally, students need to answer any required post-laboratory questions and submit their laboratory report before leaving the laboratory room. Each report is worth 20 points and is due immediately after the corresponding experiment is finished.

Laboratory report grading rubric:
The laboratory report includes the pre-lab assignment.

Category	**Points**
Data Recording (appropriate uncertainty and units)	2
Significant Figures	2
Show all work	5
Answer all discussion and post-lab questions using the scientific method	5
Neatness	1

Laboratory maintenance and technique:
This item is worth 5% of the overall class grade. To keep a safe working environment, all students are responsible for:

- maintaining fume hoods, balance areas and working stations clean at all times;
- disposing of chemicals and other materials according to instructions in the safety video or given by the instructor;
- following the proper procedure to use laboratory equipment and chemical instruments;
- reporting any accident to the instructor immediately

Grade assignments will be done by visually inspection of compliance with these responsibilities throughout the semester.

Safety Points:
We have no time for unsafe behavior in the lab. There is a **-5 point** penalty (loss of 5 points) for engaging in specifically discussed unsafe behavior such as not wearing safety goggles or horseplay.

Basic Laboratory Rules and Procedures:

1. Read experiment before coming to the lab.
2. Be on time, the explanation of the experiment is the first order of business.
3. Place back-packs, sweaters, coats, purses, etc. away from the working area.
4. No eating, drinking, smoking or chewing gum in the lab.
5. All equipment, balance area, fume hoods, benches and chemical bottles or containers need to be left in the same condition as they were found.
6. Make sure you put lids back (tightly) on to corresponding chemical containers to avoid contamination and spills.
7. Dispose of paper and solid waste in waste baskets. If contaminated with chemicals, dispose as instructed.
8. Dispose of chemicals as instructed.
9. Keep your lab bench and common areas clean. Wipe spills immediately.
10. Clean all glassware immediately after use.
11. Do not leave you drawer equipment in the fume foods, by the balances or instruments.
12. Take care of computers and equipment.

13. Hot plates, magnetic stirrers, spectrophotometers, and computers must be turned off before you leave.
14. Wipe you working area clean every time immediately before leaving the lab room.

Thank you for keeping the chemistry laboratory clean and safe!

LABORATORY EXPERIMENTS:

Scheduled experiments are conducted in Lab 606. Be mindful of time. Lecture starts promptly after lab.

LABORATORY CHECK-IN:

Lab materials are shared, but students must be responsible for common equipment.

LABORATORY SAFETY AND PREPARATION:

For your protection, safety goggles or visorgogs with indirect ventilation and an ANSI minimum rating of Z87 must be worn **AT ALL TIMES** in the laboratory. *It is expected that you put safety first in the laboratory, and if you deliberately neglect the directed safety rules, then you will be dropped from this course.* For each experiment, you must read and understand both the background information and the procedure **BEFORE** coming to the laboratory. You must arrive on time for lab lecture. ***If you are late for lab lecture, you may not be allowed to perform the scheduled experiment.*** The laboratory schedule for this course is on the web site.

LABORATORY ASSIGNMENTS AND QUIZZES:

The nature and due date of each laboratory assignment will be specified during the laboratory lecture. *For some experiments, you may be collecting and sharing data with a partner, however you must do your own calculations and formulate your own conclusions for each experiment.* There will be **NO MAKE-UP EXPERIMENTS;** however your lowest laboratory assignment score will not count towards your final grade.

SUBJECTIVE EVALUATION:

A subjective laboratory evaluation will be assessed by the instructor at the end of the quarter to reward your preparedness for lecture and laboratory sessions, your ability to follow both written and verbal instructions, your adherence to the safety rules, your cleanliness practices, and your overall respect for the laboratory through the proper care and use of all laboratory equipment.

Safety Quiz Study Sheet:

HANDLING CHEMICALS SAFELY:

Why should you pour from smaller containers versus larger ones?

How do you safely smell a chemical?

Do you place unused or excess chemicals back into their containers? Why?

What should you do if you spill a chemical?

What 3 things should you do when you finish with an experiment?

BUNSEN BURNER AND GLASSWARE SAFETY:

Why do you check the gas hose for cracks?

When using a Bunsen burner, what color/shape indicates a hot flame? What color flame is never used in the laboratory? Why?

When using a Bunsen burner, what 3 indicators tell you to immediately stop the flow of gas?

Why is it important to check glassware prior to heating for cracks and stars in the glass?

How do you safely heat a chemical in a test tube using a Bunsen burner?

DRESSING FOR SAFETY:

What type of shoes should you wear in the laboratory? Why?

Why should you not wear contact lenses in the laboratory?

What are you required to wear to protect your eyes in the laboratory? When is it okay to remove your eye protection in the laboratory?

BEHAVIOR IN THE LABORATORY:

Why is horseplay not tolerated in the laboratory?

Do food and drinks belong in the laboratory?

Where do your personal items (backpack, jacket, purse, etc.) belong in the laboratory? Why?

When is it okay to sit on the laboratory bench?

EMERGENCY EQUIPMENT:

Who do you notify in the event of an accident? What kinds of accidents do you expect may occur in the laboratory?

Where do you go and for how long do you stay if a toxic chemical spills onto your body? into your eyes?

What is the best, immediate solution if your clothes catch on fire in the laboratory? How can you avoid this emergency?

KNOW YOUR WAY AROUND THE LAB: Be able to locate the following features in the lab

- Waste disposal: broken glass and waste from experiments

- Community drawers for clamps, beaker tongs, Bunsen burners, ring stands, lost and found, etc
- Safety shower and eye wash
- De-ionized water tap and squeeze bottles