FOUNDATIONS OF GENERAL, ORGANIC, AND BIOCHEMISTRY

Chem V104 | CRN 71290 | In-person

Instructor Information

Lecture

Howard Han (hhan@vcccd.edu)

Office Hours:

Tue and Thu:

10:30– 12:50 pm (SCI-320)

Lab

Crystal Serrano (cserrano@vcccd.edu)

Office Hours:

Tue: 02:20 – 04:00 PM (SCI-322)

Wed:, 01:00 – 01:30 AM (Zoom)

Thu: 09:00 – 10:30 AM (Zoom)

04:00 – 04:50 PM (SCI-322)

Class Information

This course is for biological and health science majors. General, organic, and biological chemistry are studied with an emphasis placed on medical applications. Topics in general chemistry will include the modern view of the atom, molecule structure, chemical formulas, and chemical reactions. Topics in organic chemistry will include hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids, amines, and amides. Topics in biochemistry will include carbohydrates, proteins, lipids, nucleic acids, and metabolism. This course is designed for students who are Allied Health Science majors. Formerly: CHEM V30; CHEM V30L.

Class Meetings

Lecture

TuTh 8:00 am-9:50 am @SCI-221

Lab

Tu 11:30 am- 2:20 pm @ SCI 218

Course Units

5.0 Units

Prerequisites

MATH V01, or one year of high school algebra, or placement as determined by the college's multiple measures assessment process.

Contacting Your Instructor

For email communication, use your **@my.vcccd.edu** account and include **"Chem V104"** in the subject line. Keep your message concise, write in full sentences, and sign your name. Emails sent **during business hours (M–Th, 8:00 am–5:00 pm)** will receive the fastest response. Messages sent after hours or on weekends/holidays may take up to 24 hours or until the next business day for a reply.

Course Required Materials

- Lecture Textbook: Timberlake, Chemistry: An Introduction to General, Organic, and Biological Chemistry (13th ed.)
- Lab Manual: Chem V104 (Chem V30L) Manual (Ventura College Bookstore, also available on Canvas)
- Non-graphing calculator (e.g., TI-30X), safety goggles, nitrile gloves, dish soap, Clorox wipes
- Canvas access and scanning app

Course Objectives

Upon successful completion of this course, the student will be able to demonstrate the following measurable skills and abilities:

Lecture

1. Distinguish the changes we see in the physical world as either physical or chemical changes.
2. Categorize the materials around us as mixtures or pure substances, elements or compounds and classify the different types of compounds.
3. Calculate mass, volume, and length measuring devices and their relative precision.
4. Develop a model of the atom.
5. Identify the symbols of common elements and the structure of simple molecules.
6. Identify formulas and names of inorganic salts, acids, bases, and molecular compounds.
7. Assess the principles of chemical reactions and the energy relationships involved.
8. Analyze saturated hydrocarbons.
9. Analyze unsaturated hydrocarbons and cyclical compounds.
10. Analyze carbon-hetero single bonds in alcohols.
11. Analyze carbon-oxygen double bonds in aldehydes and ketones.
12. Analyze organic chemistry reactions and their relationships to the human body.
13. Classify carbohydrates and their relationships to the human body.
14. Classify proteins and their relationships to the human body.
15. Classify lipids and their relationships to the human body.
16. Discuss nucleic acids and their relationships to DNA, RNA, and proteins.
17. Discuss metabolism and biochemical energy production.

Lab

1. Analyze the scientific method relative to chemistry problems, including developing hypothesis, hypothesis testing, evaluation, and modeling.
2. Calculate using the metric system, do metric/English conversions, use significant figures and scientific notation.
3. Measure using mass, volume, and length measuring devices properly & know their precision.
4. Use the data collected to calculate density.
5. Experiment using the techniques of chromatography, dialysis, filtration, and differential solubilities to separate and analyze mixtures.
6. Classify matter as metals, non-metals, inorganic, or organic compounds.
7. Determine whether a change is a chemical change or a physical change.
8. Analyze the interaction between both light and matter and electricity and matter.
9. Experiment with acids and bases and the pH scale.
10. Evaluate the structure, functional groups, and reactivities of organic compounds. Experiment with hydrocarbons, alcohols, aldehydes, and ketones.
11. Evaluate the structure of carbohydrates, proteins, and fats.
12. Experiment with DNA and enzymes.

Student Learning Outcomes

By the end of this class, you will be able to:

Lecture

1. Describe the structure and composition of matter and use knowledge of the particulate structure of matter in order to predict and explain macroscopic properties.
2. Solve quantitative Chemistry problems using dimensional analysis and algebraic equations involving the mole, pH, unit conversions, and other concepts.
3. Classify organic molecules, predict their properties based on their formula and structure, and represent their characteristic reactions.

Lab

1. Perform laboratory techniques correctly following written protocols and using appropriate safety procedures.
2. Analyze the results of laboratory experiments quantitatively.
3. Perform experiments with organic compounds and use the results of these experiments to classify and predict the behavior of organic compounds.

Classroom Policy

Attendance:

Attendance is required in both **lecture and lab**. Students must arrive on time, stay for the full session, and actively participate. Absence is **not** a valid excuse for missed assignments, quizzes, or activities, and **does not waive** late penalties. Students missing class due to emergency must notify the instructor **in advance or as soon as possible**. **Ventura College policy** allows instructors to drop students for excessive absences. Students are responsible for all materials and announcements regardless of attendance.

Drop thresholds

- Lecture: Missing 2 weeks' worth of class = drop.
- Lab: Missing more than 2 sessions = drop.

Timing

- Arriving 15+ minutes late to lab = denied entry for safety reasons.
- Three tardies = one absence (lab only).

Verification

- Attendance will be taken every session.
- Lab uses sign-in/out or electronic system.

First-week requirement

- Attendance during the first session (lecture or lab) is mandatory.
- Students who miss this session will be dropped.
- In lab, failure to complete Experiment 0 will also result in removal.

Participation

- Passive attendance does not count; students must engage in assigned work.

Classroom Conduct:

To maintain a respectful, distraction-free, and productive learning environment, all students are expected to adhere to the following guidelines:

General Expectations

- Arrive on time and be ready to engage.
- Bring your notebook, calculator, writing utensils, and full attention.
- Treat classmates and the instructor with courtesy and respect at all times.
- Show respect for diverse viewpoints and avoid disruptive behavior of any kind.

Use of Electronic Devices

- Electronic devices may only be used for class-related purposes (e.g., note-taking, accessing lecture slides).
- Activities such as texting, emailing, web browsing, or using social media are strictly prohibited.
- Repeated misuse will result in loss of device privileges for the remainder of the semester.

Classroom Etiquette

- Silence or turn off all electronic devices before class begins.
- Remove headphones and music players upon entering.
- End all private conversations once class starts.
- If arriving late, enter quietly and sit near the door.
- If leaving early, choose a seat near the door and notify the instructor in advance.

Consequences for Disruption

- Distracting behavior will result in a warning.
- Repeated disruption may lead to removal from class, grade penalties, and reporting to the Behavioral Intervention Team or Dean.
- For details on misconduct definitions, see Appendix VII in the College Catalog.

Drop assignment in Lab:

- There will be **No** make-up quizzes or experiments for any reason.
- To accommodate unexpected events, the two *pre-labs*, two *In-labs*, two *post-labs*, and two *quizzes* with the lowest grades will be automatically dropped from consideration.
- A missed quiz or experiment will still count as an absence toward the maximum allowed absences.

Lab Safety:

- The first day of lab we will cover various safety rules. If you do not follow these rules, you will be asked to leave and may be dropped for the course for your own protection as well as those around you.
- You are responsible for knowing the lab safety rules; therefore, carefully read the lab safety contract given to you at the beginning of the semester. You will need to sign the lab safety contract before being allowed to perform any experiments.
- Not wearing your goggles in lab because they are uncomfortable is not acceptable; make sure you buy a pair that is comfortable to wear for 3 hours straight.
- Showing up late for lab is a safety risk for yourself and others, since specific safety concerns and proper laboratory techniques are generally discussed at the beginning of lab.
- You can lose points or be removed from lab for not wearing your safety attire, eating or drinking in the lab, playing in the lab, not using appropriate waste containers, repeatedly breaking glassware/equipment, leaving a mess and not cleaning after yourself, improperly performing lab techniques, being unprepared for lab, etc.

Academic Integrity:

Cheating on or plagiarizing any assignment or examination is a serious breach of the Student Code of Conduct, is strictly prohibited, and will result in a zero for that assignment and a report sent to the Behavioral Intervention Team and Student Services. Cheating includes, but is not limited to, talking and using notes, references, or prohibited electronic devices during exams or quizzes or any other advantage not available to all students in the class. Plagiarism is copying homework assignments from online resources, tutors, or other students. Cheating, however minor or major, is always unacceptable no matter the circumstances.

Student with Disabilities:

If you think you may have a physical or learning disability that could impact your performance in this course, please don't hesitate to reach out to me and the Education Assistance Center (EAC) to get help at 805-654-6300 as soon as possible. They offer Valuable services and support that can help you succeed.

If you receive EAC accommodation and would like to obtain more accessible copies of any images or content found in this course, please contact the EAC for help.

Subject to Change Statement:

This syllabus and schedule are subject to change at the discretion of the instructor.

Grading Policy

Grading Breakdown Overview

Component Category	Subcategory	Points Each	Count	Total Points	% of Total Grade
Lecture	Exam	100 pts	4	400 pts	70%
	Worksheets	10 pts	17	170 pts	
	Error Analysis	20 pts	4	80 pts	
	Week 0 Assignments	10 pts	2	20 pts	
Laboratory	Pre-Lab	10 pts	16	160 pts	30%
	In-Lab	50 pts	15	600 pts	
	Post-Lab	20 pts	15	300pts	
	Lab Quizzes	10 pts	14	140 pts	
	Lab Practical	50 pts	1	50 pts	
	Total	100%			

Final grade = Weighted average: 70% from Lecture, 30% from Lab

Lecture Assignment Descriptions

Exams

Exams will be administered as scheduled. Most questions will be similar to homework problems, but may also include variations or extensions. Any material covered in lecture, the textbook, or assigned homework is eligible for testing. Calculators may be required, but **phones and calculator sharing are not allowed**.
If you require accommodations, please contact both the instructor and the Educational Assistance Center (805-289-6300) as early as possible.

Worksheets

Each chapter will include a required worksheet focusing on core concepts and problem-solving practice. These assignments are essential for reinforcing lecture content. Expect a mix of conceptual questions and quantitative exercises.

Exam Error Analysis

After each exam, students must submit an error analysis reflecting on their incorrect responses. This assignment involves correcting the problem, explaining the nature of the mistake, and outlining a strategy to prevent similar errors in the future. The purpose is to encourage reflective learning and support long-term improvement.

Lab Assignment Descriptions

Experiment Quizzes

Quizzes will be given throughout the semester and cover recent topics, with occasional cumulative questions. Formats may include multiple choice, short answer, matching, and diagrams. Quizzes serve as assessment tools. There are no make-up quizzes for any reason. The two lowest scores will be dropped. Students who miss more than two quizzes may be dropped or receive a failing grade.

Experiments

Each experiment includes a pre-lab, in-lab, and post-lab assignment. These must be completed by the posted deadlines and submitted through Canvas. Email or paper submissions will not be accepted. Assignments are graded for accuracy, completeness, clarity, and proper use of units. Collaboration is encouraged for discussion, but answers must be written individually.

Pre-Lab Preparation

Pre-lab questions are listed in the lab manual and must be uploaded before arriving to lab. Students without a completed pre-lab will either be penalized or asked to leave until the work is done. Pre-labs not submitted within the grace period may result in exclusion from the experiment, which will count as an absence. A completed pre-lab is required to participate in lab.

In-Lab Activities

In-lab assignments must be finished during the scheduled session and uploaded to Canvas. Students must stay until the end of the session and obtain the instructor's signature. Leaving early without a signature will result in a zero and count as an absence.

Post-Lab Assignments

Post-lab work must be submitted by the deadline and is only accepted from students who completed the corresponding in-lab activity. Work will not be accepted if the in-lab portion was missed or scored zero. Late or emailed submissions are not allowed.

Laboratory "Clean-up"

Students are assigned weekly clean-up tasks, such as returning materials and wiping down workspaces. Failure to complete

Tentative Lecture Schedule

	Tuesday	Thursday
1	8/12 Syllabus / Introduction Ch 1 & 2 : Intro to Chemistry and Measurements	8/14 Ch 3: Chemistry and Energy
2	8/19 Ch 4: Atoms and Elements	8/21 Ch 4: Atoms and Elements
3	8/26 Ch 6: Ionic & Molecular Compounds	8/28 Ch 6: Ionic & Molecular Compounds
4	9/2 Exam 1 Review	9/4 Exam 1 (Ch. 1 – 6)
5	9/9 Ch 7: Chemical Quantities & Reactions	9/11 Ch 7: Chemical Quantities & Reactions
6	9/16 Ch 8: Gases	9/18 Ch 8: Gases
7	9/23 Ch 9: Solutions	9/25 Ch 10: Acids, Bases & Equilibrium
8	9/30 Ch 10: Acids, Bases & Equilibrium	10/2 Exam Review
9	10/7 Exam 2 (Ch. 6 – 10)	10/9 Ch 11: Intro to Organic Chemistry
10	10/14 Ch 11: Intro to Organic Chemistry	10/16 Ch 12: Alcohol, Thiols, Ethers
11	10/21 Ch 12: Alcohol, Thiols, Ethers	10/23 Ch 14: Carboxylic Acids, Esters..
12	10/28 Ch 14: Carboxylic Acids, Esters..	10/30 Exam Review
13	11/4 Exam 3 (Ch. 11,12,14)	11/6 Ch 13: Carbohydrates
14	11/11 Veterans Day	11/13 Ch 13: Carbohydrates
15	11/18 Ch 15: Lipids	11/20 Ch 16: Amino Acids and Proteins
16	11/25 Ch 17: Nucleic Acids & Protein Synthesis	11/27 Thanksgiving Day
17	12/2 Ch 18: Metabolism	12/4 Exam 4 Review
18	Exam 4	

Chemistry V104 Lab (71293) Tentative Schedule (Fall 2025)

W	D	Date	Experiment	Pre Labs (due)	In Lab Activities	Post Labs (due)	Quizzes
1	Tu	8/13	Syllabus/ Exp. 0 Laboratory Safety		In Lab 0		
2	Tu	8/20	Exp 1 Dimensional Analysis Lab	Pre Lab 1 **(8/20)**	In Lab 1 **(8/21)**	Post Lab 1 **(8/27)**	Quiz 0 (8/21)
3	Tu	8/27	Exp 2 Density and Laboratory Measurements	Pre Lab 2 **(8/27)**	In Lab 2 **(8/28)**	Post Lab 2 **(9/3)**	Quiz 1 (8/28)
4	Tu	9/3	Exp 4 Elements and the Periodic Table	Pre Lab 4 **(9/3)**	In Lab 4 **(9/4)**	Post Lab 4 **(9/10)**	Quiz 2 (9/4)
5	Tu	9/10	Exp 5 Nomenclature, Lewis Structure	Pre Lab 5 **(9/10)**	In Lab 5 **(9/11)**	Post Lab 5 **(9/11)**	Quiz 4 (9/11)
6	Tu	9/17	Exp 5 Lewis Structure and M. Geometry (part 2)		In Lab 5 **(9/18)**	Post Lab 5 **(9/18)**	Quiz 5 (9/18)
7	Tu	9/24	Exp 6 Types of Chemical Reaction	Pre Lab 6 **(9/24)**	In Lab 6 **(9/25)**	Post Lab 6 **(10/1)**	Quiz 5a (9/25)
8	Tu	10/1	Exp 7 Stoichiometry Gravimetric Analysis	Pre Lab 7 **(10/1)**	In Lab 7 **(10/2)**	Post Lab 7 **(10/8)**	Quiz 6 (10/2)
9	Tu	10/8	Exp 8 Solutions, Osmosis and Dialysis	Pre Lab 8 **(10/8)**	In Lab 8 **(10/9)**	Post Lab 8 **(10/15)**	Quiz 7 (10/9)
10	Tu	10/15	Exp 9 Identifying Acids, Bases, and Buffers	Pre Lab 9 **(10/15)**	In Lab 9 **(10/16)**	Post Lab 9 **(10/22)**	Quiz 8 (10/16)
11	Tu	10/22	Exp 10 Introduction to Hydrocarbons	Pre Lab 10 **(10/22)**	In Lab 10 **(10/23)**	Post Lab 10 **(10/29)**	Quiz 9 (10/23)
12	Tu	10/29	Exp 11 Alcohols and Phenols	Pre Lab 11 **(10/29)**	In Lab 11 **(10/30)**	Post Lab 11 **(11/5)**	Quiz 10 (10/30)
13	Tu	11/5	Exp 12 Identification of Aldehydes and Ketones	Pre Lab 12 **(11/5)**	In Lab 12 **(11/6)**	Post Lab 12 **(11/12)**	Quiz 11 (11/6)
14	Tu	11/12	Exp 13 Carboxylic Acids, Esters, and Fragrances	Pre Lab 13 **(11/12)**	In Lab 13 **(11/13)**	Post Lab 13 **(11/19)**	Quiz 12 (11/13)
15	Tu	11/19	Exp 14 Carbohydrate	Pre Lab 14 **(11/19)**	In Lab 14 **(11/20)**	Post Lab 14 **(11/26)**	Quiz 13 (11/20)
16	Tu	11/25	**Holiday (No Class)**				
17	Tu	12/2	Lab Practical (individual) and Drawer Check-out	Pre Lab Practical **(12/3)**			Lab Practical