Chemistry 25: Preparation for General Chemistry

De Anza College Winter 2025 2023 (1/6 - 3/28/2025)

Class times:

Section /CRN	Lecture Room FOR3	Laboratory Room SC2208
CHEM D025.43 CRN35685	Tuesday and Thursday 12:30 PM-02:20 PM	Tuesday 02:30 PM-05:20 PM
CHEM D025.44 CRN35686	Tuesday and Thursday 12:30 PM-02:20 PM	Thursday 02:30 PM-05:20 PM

Instructor:

Dr. Margarete Leclerc, email: leclercmargarete@fhda.edu
Office Hours: Tuesday and Thursday: 11:15-12:20 SC1200. In case you need to speak to me outside office hours, please reach out and we will find time for a Zoom meeting.

Course Description:

This course is an introduction to the core theory and problem-solving techniques of chemistry as preparation for CHEM D001A and CHEM D01AH and other science-related fields, as well as gravimetric and volumetric analysis, rudimentary laboratory equipment and operations, and the preparation and maintenance of a laboratory notebook.
Requisites: Prerequisite: MATH 114 or MATH 130 or equivalent.
Advisory: EWRT 1A or EWRT 1AH or (EWRT 1AS and EWRT 1AT) or ESL 5.
Hours: Lec Hrs: 48.00 Lab Hrs: 36.00
Out of Class Hrs: 96.00

Course Objectives:

1. Explore the core concepts of modern atomic and molecular theory.
2. Assess the importance of the mole concept in stoichiometric calculations.
3. Apply fundamental mathematical concepts to the proper collection and evaluation of experimental data.
4. Explore the various gas laws and understand the relationships between pressure, temperature, and volume of a gas.
5. Differentiate between standard classes of chemical reactions.
6. Acquire an elementary understanding of thermochemistry
7. Explore the discipline of chemistry from a cultural, historical, and societal perspective.

Laboratory Topics Covered:

1. Develop sound laboratory methodology by learning how to maintain a laboratory notebook and writing laboratory reports

2. Familiarize with what chemical safety means by studying Materials safety data sheets (MSDS), learning proper chemical disposal methods and separation of waste streams and thinking about environmental hazard of improper waste disposal
3. Learn to maintain a clean laboratory environment
4. Learn proper way to label chemicals by hazards and learn about secondary containment.
5. Learn to about personal safety in the laboratory by use of safety goggles, by limiting chemical exposure by dressing properly, by learning the locations of safety showers, eyewash stations, and fire extinguishers
6. Learn what to do in Emergency Situations such as fires and earthquakes.
7. Investigate physical measurements including but not limited to gravimetric analysis, and boiling points
8. Get familiar with basic laboratory techniques such as proper way to ignite a bunsen burners, use of pipettes
9. Explore various concepts by carrying out chemical analyses such as: gravimetric analysis of a hydrate, acid-base titrations and use of indicators, determination of density, classes of chemical reactions, physical vs. chemical properties, stoichiometric analysis.

Throughout all topics we will stress both conceptual and mathematical problem-solving techniques in order to prepare students to tackle these topics more in depth in following classes.

Course Format:

The course is divided into two separate instructional periods. A lecture period, and a lab period. These sections will both be conducted in person. Studies have shown that students who are present and pay attention in classes are more successful in the class. So, I strongly encourage each of you to attend the lectures. Attendance at each is actually mandatory. At De Anza College, the lab and lecture may not be taken as separate courses under any circumstances.

Required Course Material:

1. Text Book: Introductory Chemistry, 7th edition by Nivalde Tro **WITH** Modified Mastering Chemistry with eText Student Access. The course eText, study aides, reading assignments and graded online homework are delivered in the "Access Pearson" Tab in Canvas. You must sign up for this online access to Mastering Chemistry through the "Access Pearson" Tab in Canvas. The price for this required course material is about $45.
2. Lab Manual: Preparation For General Chemistry Lab Manual ♣ Author: Subramaniam, ISBN: 978-1-307-81770-6 . This is a custom lab manual that can only be purchased from the De Anza Bookstore. **You must bring your paper copy of the lab manual to each lab meeting**.
3. **Access to Canvas: Assignments and course material will be provided on Canvas.** Turn on Canvas notifications to receive class announcements.
4. **Lab Safety Goggles:** You will need full safety goggles (not safety glasses) that seal on the sides, not just safety glasses. The googles need to meet the ANSI Z87.1 or Z87+ specification
5. **Lab Notebook:** Permanently bound, composition notebook. NO SPIRAL NOTEBOOK.
6. **Scientific Calculator.** Logarithm and exponential functions required, No graphing calculators. Phones will not be allowed for calculations during tests so be sure to bring a calculator every day.
7. **Supplemental Texts**: OpenStax Chemistry, 2nd edition. Available free online at openstax online textbook

Registration details:

Class Registration. This class is a lecture and laboratory-based course, so the registration limit is strictly set at 30 students per section based on the number of people able to safely conduct experiments in the space provided.

Dropping the Course. Students that choose to drop this course are responsible for requesting a withdrawal through the admissions and records department **before** the deadline. Students who drop the class are to be also required to officially check-out of the lab locker.

Course drops, withdrawals, and other deadlines

All registrar deadlines for winter quarter are as follows:

Adding the course	Sunday 1/19/2025
Dropping the course without a W	Sunday 1/19/2025
Dropping the course with a W	Friday 2/28/20257

Resources: Learn about **Student services** Academic support and Information about tutoring can be found at the Math Science and Technology Resource Center .

Academic Integrity: By enrolling in classes at De Anza College, you agree to the academic integrity policy and are held to all standards. Specifics can be found at Academic Integrity and it is your responsibility to understand what academic dishonesty involves. Cheating during an exam or quiz will not be tolerated and will result in zero for that quiz/exam regardless of what percentage of the work is from cheating and the offending student will be reported to the Dean of Student Affairs. For laboratory work you will have to write your own lab report and show your own data analysis even when the data in lab was collected with a partner.

Disability Service Support: De Anza is committed to providing support for students with disabilities. Please contact me as soon as possible if you require special accommodation and I will be happy to do what I can to help. For more information, visit Disability Service Support

Missing class: You are responsible for all the material covered in this course, and it is expected that you will attend and participate in all of the lecture and laboratory sessions. **If you miss a lab or lecture on the first day of class, you will be dropped from the course unless previous arrangements have been made with the instructor.** Regular participation in class is essential for success in class. **Please know that instructors can drop students who miss class in the first two weeks of the quarter.**

Grades/Evaluations:

Your grade will be determined through assignments and assessments in lecture and lab. Here are the approximate percentages that each assignment groups contributes to the final grade:

Assignment groups	Approximate Overall %
Homework (lowest scored of 11 will be dropped)	10
In-class assignments and lecture quizzes (lowest score	10
Lecture Exams (lowest score of 3 will be dropped)	34
Lecture Final (1)	16
Lecture Total	**70**
Lab assignments	22
Lab Final (1)	8
Lab Assignments Total	**30**
Course total	**100**

Grade Assignment. Grade cut offs are as follows:
A+ (97.0), A (92.0), A- (89.0), B+ (86.0), B (81.0), B- (78.0), C+ (75.0), C (69.0), D (59.0), F (0-58.9)
I reserve the right to adjust the grade cut off if necessary.

NOTE: You must receive **at least** 55.0% on the combined lab assignments+ lab final **AND** 55.0% on the combined lecture exams for a passing grade of C in addition to achieving 69% or higher overall.

Assignments fall into the following categories.

Graded Homework through Mastering Chemistry: You need to sign up for Mastering Chemistry through the Canvas interface

In class assignments and lecture quizzes: A variety of assignments and low stakes quizzes

Lecture Exams. There will be three lecture exams to test comprehension throughout the quarter, the dates are indicated in the lecture schedule. Exams will cover material from lectures, homework, and book chapters. If you have difficulties completing the homework without outside help you need to get additional support before you take the exam. There are **no automatic make-up exams** if you miss an exam. Missing a midterm will result in zero credit. The lowest midterm score will be dropped from the overall point calculation.

There may be special circumstances that require **written proof** for an excused absence such as a police report, an official doctors note, etc. Only one make-up per quarter may be grated in a accepted excused absence special situations.

Lecture Final. A comprehensive final will cover all material from the course. The time is set by the final schedule for Thursday 3/27/2025 11:30am-1:30pm. Please do not sign up for this class if you can't make the final time.

Lab assignments. They consist of Pre-labs, Lab quizzes, Lab reports which will be a mixture of worksheets and discussion submissions and a Lab final on the last lab days. The lab points represent 30% of your final grade.

Participation & Attendance & Late Work Policy

Regular lecture participation is highly encouraged. There are no make-ups for missed lecture quizzes or in-class assignments. There are no automatic make-up dates for lecture exams. Please contact me if you have a documented medical or other emergency to address missed exams as soon as possible. You must take the final at the date indicated in the final schedule to pass the class.

Work Expectation: Each week there are two lectures, and 1x 3 hour lab section. Expect to spend an additional 8-12 hours a week on the course. You are expected to join class having done some related reading and chapter assignments. You will spend additional time preparing for the labs (PreLab), completing Homework, and writing up the results from the labs (Lab WriteUp or Post Lab Activity), as well as preparing for Quizzes and Midterms.

Lab class is in-person and mandatory for this course. Missing three labs will result in an automatic failing grade in the course. Please review the lab description below carefully and approach me with any questions you may have regarding lab attendance.

Late work is accepted on Mastering Chemistry after the due date until the day before finals 3/26/2025. There is a late submission penalty of 5% each day after the due date, however you can get not less than a 50% reduction. Lab reports are due a week after the lab session. There is a late submission penalty of 5% each day after the due date. Lab reports are accepted up to **1 week late after the due date**. After being 1 week late, I will not accept the lab report for credit. Each student can once get the late penalty waved once or can request a specific extension for lab reports.

How to be successful in Chemistry:

1. Prepare for lecture by reading and previewing the textbook chapter *before* attending lecture. This will make the presented material much easier to understand and you will be able to engage in exercises and discussion about the material. Pre-reading the textbook before class will allow you to sort the presented information more effectively and therefore will help retain the concepts.

2. Attend lecture. Attending lecture will clarify material and will also include additional active learning activities that will help you make deep connections with the material. In lecture additional information may be presented that is not in your textbook. Also, Chemistry concepts are build on previous concepts and foundational knowledge. If you miss too many lecture classes, you will increase the likelihood that you may fail the class. Be ready to start class at the scheduled time. Please arrive on time and plan on staying the entire session as late arrivals and early departures distract everyone. Please turn OFF your cell phone when you enter the class or lab. You may NOT take calls or texts during either, except for emergencies.

3. Review the lecture material and complete additional practice problems or questions we covered as you review the material. By engaging with the material through problem solving, you actively learn the material! There is not enough time to go over every concept in detail in lecture, so re-reading the textbook in connection with problem solving is essential to master the concepts. Don't wait until the midterm exam is approaching: Review the material promptly such as within 1 day of the lecture!

4. Complete the HW as your self-assessment, treat is as a quiz/exam question. The homework should inform you if you have mastered the concepts of the chapter and uncover gaps you need to work

on closing. Ultimately, you will need to be able to solve the questions without assistance from your notes, the textbooks, friends, the internet etc. to score high on the exams.

5. Don't fall behind. Make sure to set aside time to complete your assignments weekly by the due date. Cramming before exams without studying the material during the weeks leading up to an exam does not usually work. Also, in chemistry, each new topic will build on the previous, so it is essential to understand the topics as they are presented (hence do the practice problems). Following a lecture when you do not understand the previous material is not an effective method for learning and will lead to further problems. To avoid falling behind…

6. Get help. If you are having a difficult time with a topic, it is your responsibility to get help promptly. There are plenty of resources for aiding in material comprehension, but it all starts with you making an effort to get this help. You are encouraged to find a study group, working with peers is extremely helpful for mastering material. **Come to office hours** to get any follow-up questions answered.

Laboratory:

Lab class is weekly in-person and mandatory for this course. Please refer to the lab schedule below. DeAnza College Chemistry Department doesn't offer make-up labs.

Missing the initial discussion and demonstration may prevent you from performing the experiment on that day and will count as missing lab that day. Missing lab will result in a zero for that lab session assignment. The lowest lab report grade will be dropped. Be aware that you need to get 55% of lab points in order to achieve a overall passing grade in addition to achieving 69% or higher overall.

LABORATORY PROCEDURES AND POLICIES

All students are expected to arrive at the lab on time and to come to lab prepared to carry out the experiment scheduled for that session. This means that you have studied the experiment for the day, have a basic understanding of its purpose and procedure, and have prepared your laboratory notebook for the experiment prior to the start of lab.

LABORATORY SAFETY

Laboratory safety is an everyday assignment. Being safe in the lab is a top priority. The importance of safety in the laboratory will be reviewed the first day of lab. Any unsafe behavior, intentional or not, will be noted and may be cause for dismissal from the class. For your protection, safety goggles with indirect ventilation and an ANSI minimum rating of Z87 must be worn AT ALL TIMES in the laboratory.

LABORATORY LECTURE

The beginning of each laboratory session is designated as a laboratory lecture period for which you must be on time in order to perform the scheduled experiment. I will use this lecture period to outline important details of the procedure, overview theory and calculations, and to emphasize safety hazards and proper chemical disposal. If you are more than 10 minutes late for lab lecture, you may not be allowed to do the experiment for that day and you will receive zero points of all the assignments of the lab session.

ATTENDANCE/PARTICIPATION

Your participation is required at all scheduled laboratory sessions. No participation will result in zero points for the related assignments.

You demonstrate your participation by:

Being on time: If you are more than 15 minutes late for lab lecture, you will not be allowed to do the experiment for that day and you will receive zero points of all the assignments of the lab session.

Be prepared: Failure to bring your copy of the lab manual or being unaware of the goals or learning objectives

of the lab indicates your lack of preparedness. Prelab assignments will help you to be prepared.
Complete the lab activities in the allotted time: Labs will regularly take the total amount of time allotted. Do not plan on leaving lab early and complete the hands on and written parts of each lab during lab time. Lab reports are due a week after the lab session. There is a late submission penalty of 5% each day after the due date. Lab reports are accepted up to 1 week late after the due date. After being 1 week late, I will not accept the lab report for credit. Each student can get the late penalty waved once or can request a specific extension. The lowest score lab report will be dropped.

CHEMICAL DISPOSAL

As a concern for the environment and to follow county, state and federal law, proper chemical disposal is essential. Students who do not comply with directed procedures may be expelled from the lab or failed in the course for repeated offenses. Check with the instructor if you have any questions.

LAB REPORTS

All lab reports must be completed and turned in to receive a passing grade in this class. Using another student's data or making up data is plagiarism and data falsification and will result in a zero for the assignment and referral to the dean. In cases where a student was unable to complete a lab due to special circumstances, please speak to me to evaluate what can be done to salvage at least parts of the assignment for partial credit.

Lab Schedule:

WEEK OF	WEEK	Activity/Experiment
1/5/2025	1	CHECK-IN
1/12/2025	2	MEASUREMENTS
1/19/2025	3	DENSITY & GRAVITY
1/26/2025	4	ATOMIC STRUCTURE & PERIODIC TABLE
2/2/2025	5	IONIC COMPOUNDS
2/9/2025	6	EMPIRICAL FORMULAS
2/16/2025	7	CHEMICAL REACTIONS
2/23/2025	8	***MOLAR VOLUME***
3/2/2025	9	VINEGAR ANALYSIS
3/9/2025	10	COVALENT COMPOUNDS
3/16/2025	11	Lab final and check out
3/23/2025	12	Finals week. No Lab meetings

Student Learning Outcome(s):

• Assess the fundamental concepts of modern atomic and molecular theory.
• Evaluate the standard classes of chemical reactions.
• Demonstrate a fundamental understanding of mathematical concepts pertaining to chemical experimentation and calculations.

Office Hours:

T,TH	11:15 AM	12:15 PM	In-Person	SC1200