Chemistry 10: Introductory Chemistry

De Anza College
Term: Fall 2024
Section: 22Z
Instructor: Dr. Brophy

Welcome to the online syllabus for Introductory Chemistry! This course is offered online with synchronous meetings during the fall quarter at De Anza College. Please confirm that this course fulfills your educational needs with any institution to which you intend to transfer these credits.

What Is This Class About?

I approach Chem10 as if this may be the only science class you ever take, and I hope to grow your appreciation for the field of chemistry as it intersects with our everyday lives. In addition to applying simple quantitative skills to scientific problems, we will discuss the intersection of chemistry and society and the role of scientific decision-making as global citizens.

Non-equivalency Statement

At De Anza College, Chem10 is our general education / liberal arts chemistry class. This class fulfills the general education requirement and is designed to give students an appreciation for chemistry as a science. Note that this class is ***not*** equivalent to Chem 25 or Chem 30A, and it does ***not*** fulfill the prerequisite to take Chem 1A.

Online Course

This section of Chem10, offered during the Fall 2024 quarter at De Anza College is entirely online with *no* in-person labs or in-person assessments. Please confirm *with your transfer institution* that the credits for this class fill your educational and professional needs.

Class Meeting Times

Lecture		**School Holidays**	
MW 9:30 am – 11:20 am	*Zoom*	November 11	Veteran's Day
Lab		November 28 – 29	Thanksgiving Holiday
W 11:30 am – 2:20 pm	*Zoom*		

Course Webpage

The course webpage is through De Anza Canvas. You will be automatically added to the Canvas shell as a student when you enroll in the course. Students on the waitlist do not have access to Canvas. This course webpage is designed to be

viewed on a web browser rather than the student app. ***Turn on Canvas notifications*** *to receive class announcements, Inbox messages, and submission comments on assignments.*

Community Statement

Every person in this class, regardless of personal history or identity categories, is a welcome and important member of this group. Your experiences are important, and you are encouraged to share them as they become relevant. No person in this group is ever expected or believed to speak for all members of any group(s).

You have the right to determine your own identity, to be called by whatever name you wish, and to be referred to by your pronouns. You have the right to adjust these things at any point. If you find any aspects of facilitation, instruction, subject matter, or program environment that result in barriers to your inclusion, please let me know right away, privately without fear of reprisal. We are all learning. It is my goal to continue learning and improving to support everyone in this class and, by extension, all my current and future students.

Syllabus Statement

This course syllabus is a contract. Please read it carefully and completely in its entirety before asking me any questions regarding the course schedule, content, requirements, grading, etc. You are expected to adhere to the De Anza College Student Code of Conduct Administrative Policy 5510 at all times. This syllabus is also a living document, and it may be necessary to make minor corrections or changes during the quarter. I will not make major changes to the syllabus except in cases of *force majeure* or following class discussion. ***All corrections and changes to this syllabus will be announced through Canvas.***

This class is divided into two separate instructional threads: a lecture portion devoted to the primary course material and a lab period for conducting lab experiments. At De Anza College, the lab and lecture may not be taken as separate courses under any circumstances

About Your Instructor

Contact Information

Instructor: Dr. Megan Brunjes Brophy
Real-World Office: SC1220
E-mail: brophymegan@fhda.edu
Phone Number: 408-864-8338 (*not preferred*)
*Please note that **Canvas Inbox** is the most reliable ways to get in touch with me outside of class. I do not reply to messages on evenings and weekends. In general, you can expect a reply from me in 2–3 business days.*

Drop-In Hours

Drop-in hours (aka office hours) are an opportunity for you to come talk to your instructor outside of regular class time. Please bring your homework, notes, reading, or any other assignments that you wish to discuss. You are welcome to talk to me about the course, your questions about the material or practice problems, and your educational path. Each of my office hours are open to all my students; please come say hi!

Day	Location	Time
Monday	PST Village (S55)	11:30 am – 2:20 pm

My Teaching Philosophy

My hope is that every student who takes one of my classes gains an appreciation for the power of chemistry and the beauty of the natural world. It is important to me to design a course accessible to students of varying

educational, cultural, and socioeconomic backgrounds while maintaining high intellectual and academic standards. I strive to reward consistent, sustained effort throughout the quarter, and my goal is for everyone who takes this class to pass with a C so that you can move on to the next stage of your educational or career pathway.

Required Materials

*Textbook *Chemistry for Changing Times* (Hill and McCreary)

The primary textbook for this class is *Chemistry for Changing Times* by Hill and McCreary. This textbook is available as an eBook rental from Pearson or you may use the roughly equivalent free version on LibreTexts.

*Computer and Internet Access

This is an online class with synchronous class meetings. You must be present in class meetings and you are expected to participate and collaborate with your classmates. You should have regular, reliable access to a computer (advanced tablet may be acceptable) with internet access.

*Calculator

A scientific calculator with natural-log and base-10-log functionality is necessary and sufficient for this class. If you have already purchased a graphing calculator for another class, you may use it this quarter.

Genius Scan

Throughout the quarter, you will turn in handwritten assignments by creating a PDF uploading this file to Canvas. Recommended apps include GeniusScan and CamScanner. *Do not use Adobe apps to turn your assignments in– the resulting file is often too large to display properly on Canvas.*

Course Description and Expectations

This is an introduction to the discipline of chemistry, including chemical laboratory techniques and methods and a survey of important chemical principles. The course emphasizes chemistry as a subject of scientific inquiry and is designed to give the student a general appreciation for chemistry as a science.

Course Outline of Record

Online at: https://www.deanza.edu/catalog/courses/outline.html?cid=chemd010
Please save a copy of the course outline of record. You may find it useful when you transfer.

Course Objectives

1. Examine the historical development of concepts concerned with the fundamental building blocks of matter– atoms and molecules– and their concomitant effect on our understanding of molecular structure.
2. Assess the importance of the mole concept in stoichiometric calculations.
3. Explore the relationship between the molecular structures of compounds and their effect on the chemical properties of compounds.
4. Explore the contributions of men and women from a variety of cultures and ethnic backgrounds to the field of chemistry.
5. Evaluate ethical issues and environmental effects, from local to global, that have arisen from the extraction, use, and disposal of chemicals.

Student Learning Objectives

1. Develop problem-solving techniques by applying the “Scientific Method” to chemical data.
2. Analyze and solve chemical questions utilizing the information presented in the periodic table of the elements.
3. Evaluate current scientific theories and observations utilizing a scientific mindset and an understanding of matter and the changes it undergoes.

Prerequisites

There are no formal prerequisites for this class; however, the department recommends that students taking this class be proficient in conversational English, and it will be helpful to have some background in math.

Advisory: EWRT 211 and READ 211, or ESL 272 and 273; MATH 212 or equivalent

Hours

The study of chemistry combines both macroscopic and microscopic views of the natural world with mathematical models to explain and predict phenomena. This is a 5-unit class, and ***I expect you to spend 2–3 hours a day on reading, lecture videos, and class assignments***. Set aside a time and place that you can work on class materials every day! Cognitive and neuroscience research tells us that our brains learn better when we practice a little bit everyday rather than attempting to cram information.

Attendance

Your *punctual* attendance is expected at all class meetings of the course. To be counted as “present” and receive credit for that day’s activities, you must arrive during the first 5 minutes of class. If you try to enter the Zoom class after that 5-minute window, I cannot guarantee that I will see you in the waiting room. If you will have to miss a meeting for any reason, let me know by e-mail or phone as soon as possible. Notifying your instructor of absences or tardiness shows that you take responsibility for yourself and your fellow students seriously. ***Class meetings will not be recorded—if you miss a class it is your responsibility to check-in with a classmate to find out what you missed***.

Help and Support

De Anza College is here to help you! You may find many resources at https://www.deanza.edu/resources/. If you are in need of any basic resources, your instructor can request campus offices to reach out to directly. Please send me an email with any relevant information as well as permission to share with college offices.

Academic Support

The MSTRC has tutoring for chemistry classes, and tutoring is available in many languages. Please see their website for additional information: https://deanza.edu/studentsuccess/mstrc/

Disability Support Services (DSS)

If you require accommodations such as extended time for assessments, please coordinate with Disability Support Services. https://www.deanza.edu/dsps/dss/

Grades and Assignment Types

To succeed in this class, you will need to exhibit consistent and sustained effort throughout the quarter. Your final grade will be based on your final percentage out of the total points possible. Lecture assignments will contribute to 80% of your overall grade, and lab assignments will contribute to 20% of your overall grade.

Grade Scale

Final %	Grade
>99.0	A+
>90.0	A
88.0 – 89.9	A–
85.0 – 88.9	B+
80.0 – 84.9	B
78.0 – 79.9	B–
75.0 – 77.9	C+
68.0 – 74.9	C
63.0 – 67.9	D+
55.0 – 62.9	D
<55%	F

Class Meeting Participation (10% of your final grade)

You are expected to attend synchronous lecture meetings and actively participate. This is not an asynchronous course, and it is not an anonymous class. Two points will be available each day, and your **four** lowest scores will be dropped.

Chapter Quizzes (20% of your final grade)

Chapter quizzes will be available on Canvas from Thursday – Sunday of each week. Each quiz will be worth 10 points (though the number of questions may vary), and will primarily consist of multiple-choice questions.

Midterm Exam (20% of your final grade)

The midterm exam will cover chapters 1–5 and will be graded out of 50 points. The midterm will be available on Canvas.

Special Topic Presentation (10% of your final grade)

You will choose a special topic to present on to the class. Because of the condensed nature of the quarter system, it is difficult to cover every relevant topic. My hope is that this presentation will give you an opportunity to learn about a topic that we did not cover in the rest of the class (e.g. water chemistry, farm chemistry, cosmetics) and teach that topic to the rest of the class. This assignment will be worth 20 points.

Final Exam (20% of your final grade)

The final exam will cover Chapters 6–8, 11, and 15 it will be graded out of 50 points. The final will be available on Canvas during the 12th week of the quarter, and it must be completed by Thursday, December 12th at 11:59 pm. The final will have a two hour time limit, and you may attempt the exam two times. Your highest score will be used to calculate your grade. Late exams will not be accepted under *any* circumstances, so plan to take the final early in the week.

Lab Activities (20% of your final grade)

Lab activities will primarily be synchronous activities.

Weekly Schedule

The class schedule presented below is tentative, and any changes will be announced on Canvas.

Unit 1: What is a greenhouse gas?		
Week 1	Monday 9/23	**Lecture:** Introductions and syllabus, Chemistry (Chapter 1)
	Wednesday 9/25	**Lecture:** Chemistry (Chapter 1) **Lab:** The scientific method is all around us
Week 2	Monday 9/30	**Lecture:** Atoms (Chapter 2)
	Wednesday 10/2	**Lecture:** Atoms (Chapter 2) **Lab:** Measurements and math workshop
Week 3	Monday 10/7	**Lecture:** Atomic Structure (Chapter 3)
	Wednesday 10/9	**Lecture:** Atomic Structure Continued (Chapter 3) **Lab:** Models of the atom through history *Chemistry Nobel Prize Announcement Day*
Week 4	Monday 10/14	**Lecture:** Chemical Bonds (Chapter 4)
	Wednesday 10/16	**Lecture:** Chemical Bonds continued (Chapter 4) **Lab:** Identifying greenhouse gases
Week 5	Monday 10/21	**Lecture:** Chemical Accounting (Chapter 5)
	Wednesday 10/23	**Lecture:** Chemical Accounting continued (Chapter 5) **Lab:** *Fighting Smog in Los Angeles*
Unit 2: Ch-ch-ch- (chemical) changes		
Week 6	Monday 10/28	**Lecture:** Gases, Liquids, Solids, … and Intermolecular Forces (Chapter 6)
	Wednesday 10/30	**Lecture:** Gases, Liquids, Solids, … and Intermolecular Forces (Chapter 6) **Lab:** Kinetic molecular properties of gases (PhET simulation)

	Midterm Exam available on Canvas	
Week 7	Monday 11/4	**Lecture:** Acids and Bases (Chapter 7)
	Wednesday 11/6	**Lecture:** Acids and Bases (Chapter 7) **Lab:** Titration simulation
Week 8	Monday 11/11	***No class for Veteran's Day***
	Wednesday 11/13	**Lecture:** Oxidation and Reduction (Chapter 8) **Lab:** TBD
Week 9	Monday 11/18	**Lecture:** Nuclear Chemistry (Chapter 11)
	Wednesday 11/20	**Lecture:** Nuclear Chemistry (Chapter 11) **Lab:** SLAC Virtual Tour
Unit 3: Matter and Energy Connections		
Week 10	Monday 11/25	**Lecture:** Energy (Chapter 15)
	Wednesday 11/27	**Lecture:** Energy (Chapter 15) **Lab:** Coffee cup calorimetry
Week 11	Monday 12/2	**Lecture:** *Special topics*
	Wednesday 12/4	**Lecture:** *Special topics* **Lab:** End-of-quarter presentations
Week 12 *Finals*	Final Exam	*On Canvas. Must be completed by Thursday at 11:50 pm.* *Grades will be finalized on Friday morning.*

Academic Integrity: Motivations, Expectations, and Consequences

The process of learning requires physical changes to occur in your brain. Cognitive research demonstrates that consistent practice and learning to recognize mistakes are key aspects of the learning process. As such, all students should be aware of the De Anza College policy on academic integrity outlined at https://www.deanza.edu/policies/academic_integrity.html The following text is reproduced from the De Anza College manual:

> *…the college is committed to providing academic standards that are fair and equitable to all students in an atmosphere that fosters integrity on the part of student, staff and faculty alike. The student's responsibility is to perform to the best of his or her potential in all academic endeavors. This responsibility also includes abiding by the rules and regulations set forth by individual faculty members related to preparation and completion of assignments and examinations.*

The primary motivation behind this academic integrity policy is to support your learning. When you take “shortcuts”-- as detailed below– you circumvent the learning process.

I expect that all work submitted for this class will represent your own understanding of the material and must be written in your own words. Cheating, copying, plagiarizing, etc. will not be tolerated. Due to the “online” nature of the class, students must take extra care to abide by the policies and expectations set forth for each assignment. While it is tempting to use the full weight of the internet, some sources may provide misleading or corrupt information. Students should focus on the required reading and recommended resources for the class, and any other sources must be vetted by the instructor. Tutoring resources are allowed for homework assignments; however, using a paid, static resource is forbidden. This can be particularly challenging as some websites that profess to provide tutoring services are destructive to the learning process. A good rule-of-thumb is that any tutoring service will help you solve a problem and arise at an answer *on your own*—this means that your brain is making new physical connections between neurons, and you are learning! If an online source professes to offer tutoring, but instead provides you with answers, this is cheating. The websites Chegg, CourseHero, Reddit, as well as any similar site are explicitly forbidden for all class assignments. Posting class assignments on these websites is considered intent to cheat and a violation of the academic integrity policy. I am happy to discuss appropriate resources with you, and I encourage you to ask for permission rather than forgiveness.

You may collaborate with your classmates on lecture homework assignments; however, the final work that you submit must reflect your own understanding of the material. Do not allow any other student to copy your work under any circumstance. If a student asks if they can copy your work or “just see it as an example”, ask them to reach out to the instructor for help. If two students turn in the same work, both students will have participated in academic dishonesty.

Class assessments are used to measure an individual student’s mastery of the material. They are all closed resource, and you will be provided with any physical constants or additional information as necessary. A common mistake that past students have made is to Google a question and copy an answer from the internet—this behavior is forbidden, and the consequences are described below. If I suspect cheating on a quiz, you will be required to meet with me face-to-face.

Any incident of cheating or plagiarism, no matter how minor, will be reported to the Dean of Student Development and the Dean of the Physical Sciences, Mathematics, and Engineering division. Administrative consequences are summarized in the college manual. Additional consequences will be applied to your course grade. **The first incident of academic dishonesty will result in zero points on the assignment, a grade penalty of up to 8% to be deducted from your final grade, and loss of any extra credit points for the quarter.** Any subsequent instances of academic dishonesty *no matter how minor* will result in failing the class. In short, academic dishonesty will have a negative impact on your grade and may result in disciplinary probation or expulsion. If academic dishonesty is discovered within two-years of your completion of the course, your official grade will be changed.

I recognize that these consequences may sound scary. Unfortunately, I have had students who did not pass this class as a direct result of academic dishonesty. I *am* committed to supporting you and your learning process, and I expect you to display high ethical standards. If you require an extension on any assignment, please reach out to me to arrange appropriate accommodations. Our class meetings are dedicated to working through practice problems, and I encourage you to bring questions and utilize the discussion boards for additional feedback. If you are not sure if a resource is allowed, or if something feels “off” to you, alert your instructor right away. I do reserve the right to make major changes to the class structure—including requiring an oral exam / exit interview—if there are class-wide violations of the academic integrity policy.

Student Learning Outcome(s):

• Develop problem solving techniques by applying the "Scientific Method" to chemical data.
• Analyze and solve chemical questions utilizing information presented in the periodic table of the elements.
• Evaluate current scientific theories and observations utilizing a scientific mindset and an understanding of matter and the changes it undergoes.

Office Hours:

M	11:30 AM	02:20 PM	In-Person	S55