

Chemistry 10: Introductory Chemistry
Dr. Brophy**Fall 2021****Instructor:** Dr. Megan Brunjes Brophy (she/her or they/them)**E-mail:** brophymegan@fhda.edu

Please note that **Canvas Messages** are the most reliable way to get in touch with me.

Course Webpage: Canvas. *Turn on Canvas notifications to receive class announcements. Following the welcome e-mail, all class information will be communicated through Canvas.*

Class Meeting Times

10.03Z (CRN 21939) Tuesday 07:30 pm – 9:50 pm *Class meetings are mandatory, and you should not enroll in the course if you cannot attend the scheduled class meetings.*

Virtual Office Hours: MTW 6:00 pm – 7:15 pm**Zoom Meeting Room:** *Please see Canvas for the link to the Zoom meeting room***Important Dates**

Add Day	October 2, 2021	Last day to <i>add</i> .
Drop Day	October 3, 2021	Last day to <i>drop</i> the course with a refund <i>and</i> without a withdraw being recorded.
Withdraw	November 12, 2021	Last day to <i>withdraw</i> from the course. A “W” will be recorded on your transcript.
Exam Dates	October 12, 2021 November 2, 2021 November 23, 2021 December 2, 2021	

Academic Integrity

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.

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.

Required Materials

- **Textbook** The textbook for this class is *Chemistry in Focus: A Molecular View of Our World* (any edition). You may purchase / rent the most recent version of the textbook through the De Anza College bookstore, Cengage, or any other online vendor. You may also use an older version of the textbook, which is likely to be the less expensive option.
- **Calculator** A scientific calculator with natural log functionality is necessary and sufficient for this class. If you have already purchased a graphing calculator for another class, you may use it on exams and quizzes; however, *we will not use the graphing functionality*. Recommended models:
<https://www.amazon.com/Texas-Instruments-MultiView-Scientific-Calculator/dp/B000PDFQ6K>
https://www.amazon.com/dp/B005QXO8J0/ref=dp_cerb_3

I do **not** recommend using Google as a calculator. There have been recent reports of the unit conversion function “breaking”, and performing the order of operations correctly is non-trivial.

- **Computer and internet access.** This class is being conducted online, and you will require regular and reliable access to a computer and the internet.
- **Genius Scan** Throughout the quarter, you will turn in handwritten assignments by creating a PDF filed and uploading this file to Canvas. Recommended apps include GeniusScan and CamScanner. *Do not use any Adobe apps to turn your assignments in—the files end up being too big for me to read!*

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.

Course Description

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.

Prerequisites

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.

Course Objectives

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

Attendance Policy

Your *punctual* attendance is expected at all class meetings of the course. In order to be counted “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 your responsibility towards 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 the instructor to find out what you missed.

Late work will not be accepted under any circumstances. In the case of a documented emergency (e.g. hospitalization, court appearance, car crash), I may excuse you from that day’s work. These instances will be handled and decided on a case-by-case basis.

Grading Essentials

To succeed in this course, 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 available.

Percentage in Class	Grade ¹
> 93%	A
90 – 92.9%	A–
87 – 89.9 %	B+
83 – 86.7%	B
80 – 82.9%	B–
77 – 79.8%	C+
70 – 76.9%	C
65 – 69.9%	D+
60 – 64.9%	D
<60%	F

NOTE: Dr. Brophy reserves the right to alter the grade scale at any point in the quarter.

The points are broken down into weighted categories—note that not all points are equal weight! Each category is described below.

Assignment Category	Percentage of Final Grade ^{1,2}
Homework (points will vary)	25%
Lab Activities (9 total, points will vary)	25%
Midterm Exams (3 total, 100 points each)	30%
Final Exam (100 points)	20%

Problem Sets

In general, homework assignments will be posted by Wednesday and due the following Monday at 11:59 pm. All answers and work must be handwritten, and assignments shall be submitted through Canvas as a PDF. Each problem set is worth 10 points.

MUD Cards

Mud cards are due every Friday and should be completed after you have completed the assigned reading and watched any assigned videos for the week. MUD cards are opportunity for you to tell what the *muddiest* or most confusing topic of the week was for you. I will review the MUD cards and address any common misconceptions. Each MUD card is worth 1 point.

Lab Activities and Discussions

Due to the COVID-19 pandemic, all labs will be “dry labs”. Lab activities may consist of a mixture of recorded demonstrations, online simulations, worksheets, and discussion topics. Labs will generally be posted by Tuesdays and are due the following Monday at 7 pm. Any worksheets with handwritten answers must be submitted through Canvas as a PDF. A summary of the lab topics is below.

	Title	Open	Due
Lab 1	The Scientific Method and a History of Chemistry	9/21/21	9/27/21
Lab 2	Models of the atom through history	9/28/21	10/4/21
Lab 3 Part A	Density of an Unknown Liquid—Data collection	10/5/21	10/4/21
Lab 3 Part B	Density of an Unknown Liquid– Data Analysis	10/12/21	10/11/21
Lab 4	Molecular structure	10/19/21	10/18/21
Lab 5	Greenhouse gases	10/26/21	11/1/21
Lab 6	States of matter	11/2/21	11/8/21
Lab 7	Air quality	11/9/21	11/15/21
Lab 8	Acids and bases	11/16/21	11/22/21
Lab 9	Acid rain	11/23/21	12/3/21

Practice Exams

There will be 12 practice exams this quarter, one for each chapter of the textbook that we cover. Each practice exam counts as **homework** and will be worth a total of 5 points. I encourage you to use the practice exams as a self-check for understanding and for extra practice leading up to the midterm exams.

Exams

There will be three midterm exams and one final exam this quarter. The two midterms will be 50-minute exams, and they will be administered as Canvas quizzes on October 12th and November 2nd and November 23rd. The exam will open at 7:30 pm and close at 9:50 pm. The final exam will be administered as a Canvas quiz on December 7th. The final will open at 8:30 pm and close at 10:30 pm. Requests for extended time must approved through Disability Support Programs and Services (DSPS). Once I have verification, I will add extended time to your exam in Canvas. ***Make-up exams are not permitted, and you should not sign up for the class if you cannot take the exams.***

Unit	Week	Date	Assigned Reading	Class Meeting Activity
The Nature of Matter				
1	1	9/21	Chemistry Basics and Quantitative Tools Tro <i>Chemistry in Focus</i> Chapter 1 Molecular Reasons Chapter 2 The Chemist's Toolbox	Introductions What is chemistry?
	2	9/28	Atoms & Elements Tro <i>Chemistry in Focus</i> Chapter 3	<i>The Poison Squad</i> discussion The nuclear atomic model The periodic table
	3	10/5	Molecules, Compounds, and Chemical Reactions Tro <i>Chemistry in Focus</i> Chapter 4	Molecular representations Balancing chemical reactions
What is a Greenhouse Gas?				
2	4	10/12	Chemical Bonding Tro <i>Chemistry in Focus</i> Chapter 5	Exam 1 7:30 pm – 9:50 pm Chapters 1 – 4
	5	10/19	Organic Chemistry Tro <i>Chemistry in Focus</i> Chapter 6	Ionic bonds vs. chemical bonds Lines and dots: representing bonds and electrons
	6	10/26	Light and Color Tro <i>Chemistry in Focus</i> Chapter 7	Where does color come from?
Chemistry in the Environment				
3	7	11/2	The Air Around Us Tro <i>Chemistry in Focus</i> Chapter 11	Exam 2 7:30 pm – 9:50 pm Chapters 5 – 7
	8	11/9	The Liquids and Solids Around Us, Especially Water Tro <i>Chemistry in Focus</i> Chapter 12	<i>Getting Rid of Smog in Los Angeles</i> discussion
	9	11/16	Acids and Bases: The Molecules Responsible for Sour and Bitter Tro <i>Chemistry in Focus</i> Chapter 13	
Powering Our Bodies and our World				
4	10	11/23	Oxidation and Reduction Tro <i>Chemistry in Focus</i> Chapter 14	Exam 3 7:30 pm – 9:50 pm Chapters 11 – 13
	11	11/30	Nuclear Chemistry Tro <i>Chemistry in Focus</i> Chapter 8	<i>We are made of star stuff</i>
	12	12/7	Final Exam Tuesday, December 7 th 8:30 pm – 10:30 pm Chapters 1 – 8, 11 – 14	

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.