

Chemistry 10: Introductory Chemistry
Dr. Brophy**Spring 2023****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**Lecture** TuTh 8:30 am – 10:20 am (Zoom)**Lab (01Y)** Tu 11:30 am – 2:20 pm (SC2204)**Lab (02Y)** Th 11:30 am – 2:20 pm (SC2204)

Note that each section meets once a week for lab. You must attend the lab session that you are registered for.

Chem chats (Drop in and talk to me about chemistry, open to all students)

Monday / Wednesday 12:45 pm – 1:35 pm SC1220 (coming from MLC103)

Tuesday / Thursday 2:20 pm – 3:10 pm SC1220 (coming from SC2204)

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.

Please note that Chem 10 is **not** equivalent to Chem 25 or Chem 30A. Moreover, this class will not prepare you for Chemistry 1A. Please make sure that this is the correct class for you to take at this time in your academic journey.

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
- **Computer and internet access.** This class is being conducted online, and you will require regular and reliable access to a computer with webcam and a robust internet connection.
- **Genius Scan / CamScanner** Throughout the quarter, you will turn in handwritten assignments by creating a PDF file 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!*

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.

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.

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 8 – 12 hour per week 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 zoom meetings will not be recorded—if you miss class it is your responsibility to check-in with a classmate to find out what you missed.**

This is a hybrid class, and **in-person laboratory attendance is mandatory.** You must attend your scheduled lab meeting in week 1. You may miss one lab experiment without a grade penalty. If you miss three labs, you will automatically fail the course.

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}
Assignments (points will vary)	25%
Lab Activities (9 total, points will vary)	35%
Midterm Exams	20%
Final Project	20%

Problem Sets (Assignments category)

In general, homework assignments will be posted on Monday and due the following Friday at 11:59 pm. You will have a 48-hour grace period for late submissions. All answers and work must be handwritten, and assignments shall be submitted through Canvas as a PDF. Each problem set is worth 10 points and will be graded based on completion.

Lecture Assignments

Lecture assignments will be completed during the scheduled Zoom sessions. The nature of assignments and points may vary. You must be present in the meeting in order to complete the assignment.

Lab Reports

All lab activities will be completed in class during your scheduled lab section (see the lab schedule for the quarter). Lab report sheets will generally be collected at the end of lab. You should print the manual from Canvas and bring it with you to class.

Exams

There will be three midterm exams this quarter. Each midterm will be administered *in person* and *during your scheduled lab section*. You must be present in lab to take the exam.

Final Project

The final project will be due on **Monday, June 26th at 5 pm** and will be submitted online through Canvas. Additional details will be announced later in the quarter.

Lab Schedule

The expected laboratory schedule for spring 2023 is given below. Lab assignments will be posted on Canvas and submitted at the beginning of the lab period. Please note that daily activities and due dates are subject to change.

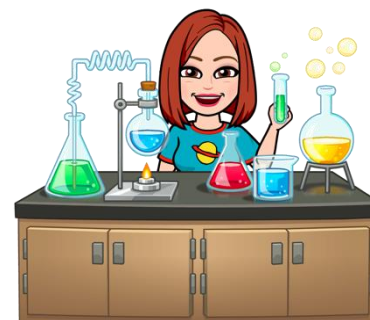
Note that in-person laboratory attendance is mandatory. Moreover, you are expected to arrive to lab *on time* and prepared to safely complete the lab activity. If you arrive late, you may not complete the lab experiment and it will count as an absence.

Week	Tuesday (01Y)	Thursday (02Y)
1	Check-In	Check-In
2	Taking Measurements	Taking Measurements
3	%Water in Popcorn	%Water in Popcorn
4	Electron Dot Structures Exam 1 (60 minutes)	Electron Dot Structures Exam 1 (60 minutes)
5	Molecular Shapes	Molecular Shapes
6	Solutions	Solutions
7	Upset Stomach Exam 2 (60 minutes)	Upset Stomach Exam 2 (60 minutes)
8	How Much Fat	How Much Fat
9	Organic Molecules	Organic Molecules
10	DNA Capture	DNA Capture
11	Check-Out Exam 3 (60 minutes)	Check-Out Exam 3 (60 minutes)

Lab Safety

All chemistry laboratories inherently come with associated risks and hazards. It is inevitable that some accidents will occur during your chemistry course work. When an accident occurs, **inform your instructor immediately** and **do not attempt to clean-up any broken glassware or spilled chemicals by yourself**. In order to ensure that the lab is as safe as possible, we must (1) **Recognize hazards**, (2) **Assess the risks of hazards**, (3) **Minimize the risks of hazards**, and (4) **Prepare for emergencies**.

You have the right to advocate for yourself. If you feel a particular procedure or chemical is unsafe, or a specific accommodation will enhance your lab experience, I welcome your feedback. I may not have an answer or solution for you right away, but I will work on your behalf to make sure that you can complete the labs safely.



From the American Chemical Society Safety In Academic Laboratories Guidelines, 7th Ed., the following mandatory minimum safety requirements must be followed by all students and be rigorously enforced by all chemistry faculty:

- 1) **Chemistry Department-approved safety goggles purchased from the De Anza College bookstore (NOT safety glasses) must be worn at all times once laboratory work begins, including when obtaining equipment from the stockroom or removing equipment from student drawers**, and may not be removed until all laboratory work has ended and all glassware has been returned to student drawers.
- 2) **Shoes that completely enclose the foot** are to be worn at all times; NO sandals, open-toed, or open-topped shoes, or slippers, even with socks on, are to be worn in the lab.
- 3) Shorts, cut-offs, skirts or pants exposing skin above the ankle, and sleeveless tops may not be worn in the lab: **ankle-length clothing must be worn at all times**.
- 4) Hair reaching the top of the shoulders must be tied back securely.
- 5) Loose clothing must be constrained.
- 6) Wearing "...jewelry such as rings, bracelets, and wristwatches in the laboratory..." should be discouraged to prevent "...chemical seepage in between the jewelry and skin...".
- 7) **Eating, drinking, or applying cosmetics in the laboratory is forbidden at ALL times, including during lab lecture.** *Food and drink containers are not allowed in lab at any time. If I see them, I will put them outside.*
- 8) Use of electronic devices requiring headphones in the laboratory is prohibited at ALL times, including during lab lecture.
- 9) Students are advised to inform their instructor about any pre-existing medical conditions, such as pregnancy, epilepsy, or diabetes, that they have that might affect their performance.
- 10) Students are required to know the locations of the eyewash stations, emergency shower, and all exits.
- 11) Students may not be in the lab without an instructor being present.
- 12) Students not enrolled in the laboratory class may not be in the lab at any time after the first lab period of each quarter.
- 13) Except for soapy or clear rinse water from washing glassware, **NO CHEMICALS MAY BE Poured INTO THE SINKS**; all remaining chemicals from an experiment must be poured into the waste bottle provided.
- 14) Students are required to follow the De Anza College Code of Conduct at all times while in lab: "horseplay", yelling, offensive language, or any behavior that could startle or frighten another student is not allowed during lab.
- 15) Strongly recommended: Wear Nitrile gloves while performing lab work; wear a chemically resistant lab coat or lab apron; wear shoes made of leather or polymeric leather substitute.

Reckless behavior will not be tolerated. If your actions endanger the health and safety of yourself or another person, you will be asked to leave and you will receive a zero for the lab and related assignments. In extreme cases, you may lose your lab privileges for the remainder of the quarter and/or fail the course.

Lecture Schedule

Week	Date	Lecture Topic Reading
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The Nature of Matter		
1	4/11	Chemistry 10 Essentials <i>Tro Chapter 1</i> <i>Growth Mindset</i>
	4/13	Quantitative Tools for Learning Chemistry <i>Tro Chapter 2</i>
2	4/18	Atoms & Elements <i>Tro Chemistry in Focus</i> Chapter 3
	4/20	Atoms & Elements continued
3	4/25	Atoms & Elements continued
	4/27	Molecules, Compounds, and Chemical Reactions <i>Tro Chemistry in Focus</i> Chapter 4
4	5/2	Molecules and Compounds , continued
	5/4	Chemical Reactions , continued
What is a Greenhouse Gas?		
5	5/9	Chemical Bonding <i>Tro Chemistry in Focus</i> Chapter 5
	5/11	Chemical bonding , continued
6	5/16	Light and Color <i>Tro Chemistry in Focus</i> Chapter 7
	5/18	The Air Around Us <i>Tro Chemistry in Focus</i> Chapter 11
7	5/23	The Air Around Us, continued.
	5/25	The Air Around Us, continued.
Chemistry and the Environment		
8	5/30	The Liquids and Solids Around Us, Especially Water <i>Tro Chemistry in Focus</i> Chapter 12
	6/1	Water , continued
9	6/6	Acids and Bases: The Molecules Responsible for Sour and Bitter <i>Tro Chemistry in Focus</i> Chapter 13
	6/8	Acids and Bases continued
10	6/13	Oxidation and Reduction <i>Tro Chemistry in Focus</i> Chapter 14
	6/15	<i>Tro Chemistry in Focus</i> Chapter 14
11	6/20	Nuclear Chemistry <i>Tro Chemistry in Focus</i> Chapter 8
	6/22	<i>Tro Chemistry in Focus</i> Chapter 8
12		Finals Week

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,W	12:45 PM	01:35 PM	In-Person	SC1220
T,TH	02:20 PM	03:10 PM	In-Person	SC1220