

Chemistry 10 – Introductory Chemistry

**Instructor:** Dr. Semere Bairu (he/him)

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**Course Webpage:** All class information will be communicated through Canvas including emails.

### Class Meeting Times

**Lecture:** TuTh 5:30pm – 7:20pm

Lecture Link: <https://fhdaedu.zoom.us/j/85337832992>

**Lab (43Z):** Tu 7:30 pm – 10:20 pm

Lab Link: <https://fhda-edu.zoom.us/j/86380993751>

Office hrs. Th 7:30 pm – 8:30 pm

Zoom Link: <https://fhda-edu.zoom.us/j/83314179013>

*Note that, you must attend this lab session.*

### 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.

### Course Objectives

1. 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.
2. Assess the importance of the mole concept in stoichiometric calculations.
3. Explore the relationship between the molecular structures of compounds and their effects on 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 the ethical issues and environmental effects, from local to global, that have arisen from the extraction, use, and disposal of chemicals.

### 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.
- **Lab Resources:** <https://phet.colorado.edu/>
- **Calculator** A scientific calculator with natural log functionality (non-graphic) is necessary and sufficient for this class.
- **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.

## Academic Policy and Integrity

**Time Requirement:** This class includes appx. 4 hours of lecture and appx. 3 hours of lab per week. In order to receive a "C" or better grade, you should allow 8-12 hours of studying, reading, and preparing outside of class per week. Help yourself to do your best by making time to keep up with the reading and homework. If this time commitment is not possible given your current situation, please consider taking this class at a later date when you do have more time available.

**Lecture Attendance:** Your punctual attendance is expected at all online class meetings. 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 later, I cannot guarantee that I will see you in the waiting room, and you may miss important information. If you will have to miss a class session for any reason, let me know by Canvas message as soon as possible. Notifying your instructor of absences or tardiness shows that you take your responsibility towards yourself and your fellow students seriously. There are no make-up assignments for missed class meetings. 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. Travel does not constitute an emergency or excused absence. Plan ahead and submit assignments in advance. It is the student's responsibility to notes from a classmate for missed information.

**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/academicintegrity.html>.

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 10% 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.

## 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.

This is an online class, and **an online 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
> 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. Bairu 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
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 submitted one week after (every Tuesday). You should print the worksheet from Canvas/PhET and bring it with you to the meeting.

### 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.

### Lab Schedule

The expected laboratory schedule for Winter 2024 is given below. Lab assignments will be posted on Canvas and submitted at the beginning of each lab online. Please note that daily activities and due dates are subject to change.

Week	Tuesday
1 (week of 01/07)	Check-In
2 (week of 01/14)	Taking Measurements
3 (week of 01/21)	% Water in Popcorn
4 (week of 01/28)	Electron Dot Structures <b>Exam 1</b> (60 minutes)
5 (week of 02/04)	Molecular Shapes
6 (week of 02/11)	Solutions
7 (week of 02/18)	Upset Stomach <b>Exam 2</b> (60 minutes)
8 (week of 02/25)	How Much Fat
9 (week of 03/03)	Organic Molecules
10 (week of 03/10)	DNA Capture
11 (week of 03/17)	Check-Out <b>Exam 3</b> (60 minutes)
12 (week of 03/24)	<b>Finals</b>

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

Even though the modality of the lab is online, knowledge and understanding of the following lab safety notes is very important. 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.

<i>The Nature of Matter</i>		
Week	Week of	Lecture Reading
1	01/09	<b>Chemistry 10 Essentials</b> <i>Tro</i> Chapter 1 Growth Mindset
	01/11	<b>Quantitative Tools for Learning Chemistry</b> <i>Tro Chapter 2</i>
2	01/16	<b>Atoms &amp; Elements</b> <i>Tro Chemistry in Focus</i> Chapter 3
	01/18	Atoms & Elements continued
3	01/23	Atoms & Elements continued
	01/25	<b>Molecules, Compounds, and Chemical Reactions</b> <i>Tro Chemistry in Focus</i> Chapter 4
4	01/30	<b>Molecules and Compounds</b> , continued
	02/01	<b>Chemical Reactions</b> , continued
<i>What is a Greenhouse Gas?</i>		
5	02/06	<b>Chemical Bonding</b> <i>Tro Chemistry in Focus</i> Chapter 5
	02/08	<b>Chemical bonding</b> , continued
6	02/13	<b>Light and Color</b> <i>Tro Chemistry in Focus</i> Chapter 7
	02/15	<b>The Air Around Us</b> <i>Tro Chemistry in Focus</i> Chapter 11
7	02/20	The Air Around Us, continued.
	02/22	The Air Around Us, continued.
<i>Chemistry and the Environment</i>		
8	02/27	<b>The Liquids and Solids Around Us, Especially Water</b> <i>Tro Chemistry in Focus</i> Chapter 12
	02/29	<b>Water</b> , continued
9	03/05	<b>Acids and Bases: The Molecules Responsible for Sour and Bitter</b> <i>Tro Chemistry in Focus</i> Chapter 13
	03/07	Acids and Bases continued
10	03/12	<b>Oxidation and Reduction</b> <i>Tro Chemistry in Focus</i> Chapter 14
	03/14	<i>Tro Chemistry in Focus</i> Chapter 14
11	03/19	<b>Nuclear Chemistry</b> <i>Tro Chemistry in Focus</i> Chapter 8
	03/21	<i>Tro Chemistry in Focus</i> Chapter 8
12	03/25 – 03/29	<b>Finals Week</b>

**Office Hours:**

Thursday from 7:30 pm – 8:30 pm (online)

**Zoom Link:** <https://fhda-edu.zoom.us/j/83314179013>

**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:**

TH    07:30 PM    08:30 PM    Zoom