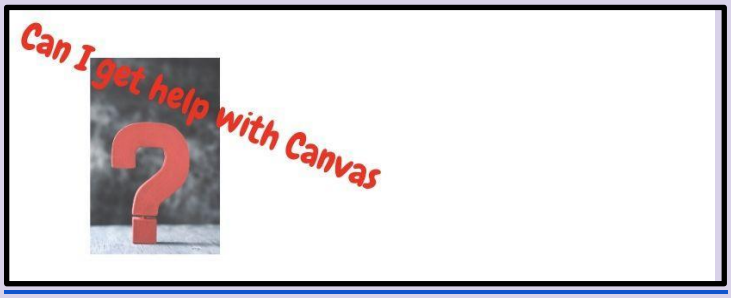
CHEM30A – Introduction to General, Organic and Biochemistry I (April 7-June 28)

A. INTRODUCTION:

- ***Instructor:*** **Burcak Artun, PhD (artunburcak@fhda.edu)**
- ***Course Website*: Canvas**



- ***Location & Times:***
  Lecture: Tue/Thu 2:30pm - 4:20pm, SC 1102
  Lab 23: Tue 11:30am - 2:20pm, SC 2202, Section 23
  Lab 24: Thu 11:30am - 2:20pm, SC 2202, Section 24
  Office Hours*:* Tue/Thu 10:20am-11:30pm Chem Offices/or by app

B. STUDENT RESOURCES:

De Anza student resource pages:
Your Guide to the Quarter
Student Services at DeAnza
Canvas Help:
Get Help With Canvas
Important Dates and Deadlines
DeAnza Academic Calendar

C. COURSE OVERVIEW AND OBJECTIVES

Overview and Description:

- This course is the first quarter of the general inorganic, organic, and biological chemistry course for students entering allied health fields. Introduction to General, Organic, and Biochemistry I focuses on an introduction to general chemistry. The course opens with an overview of the scientific method and chemistry as the study of matter and its transformations, followed by a discussion of measurement and unit analysis. The central topics include an introduction to elements, compounds, and types of bonding in

compounds, leading to a survey of classes of chemical reactions and stoichiometric calculations based on chemical equations. Subsequent discussion of intermolecular forces and phases and phase changes leads to a consideration of the properties of gases (the limit of weak intermolecular forces), and the course concludes with discussions of acid-base chemistry and nuclear chemistry.

- **Prerequisites:** Intermediate algebra or equivalent (or higher), or appropriate placement beyond intermediate algebra.
- **Advisory:** ESL 272. and ESL 273., or ESL 472. and ESL 473., or eligibility for EWRT 1A or EWRT 1AH or ESL 5
- **Hours: Fully ON-CAMPUS. This class meets on-campus each week on scheduled days and times as noted in the class listing.**
    - Weekly Lecture Hrs: 4.00
      Weekly Lab Hrs: 3.00

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.***

Course objectives:

- Solve scientific problems using dimensional analysis and report measured values to appropriate precision in standard or scientific notation.
- Examine the relationships between energy and matter.
- Examine the structure of the atom and summarize major properties of elements based on a discussion of the periodic table of elements.
- Examine the structure, properties and nomenclature of chemical compounds.
- Balance and classify chemical equations for common reaction types.
- Perform calculations based on stoichiometric relationships, given a balanced chemical equation.
- Examine the properties and behavior of ideal gases.
- Examine the chemical properties of solutions.
- Compare the properties of acids and bases.
- Discuss the theory and relevant applications of nuclear chemistry. perspective.

Laboratory objectives:

- Develop sound laboratory methodology by learning how to maintain a laboratory notebook and writing laboratory reports
- 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
- Learn to maintain a clean laboratory environment
- Learn proper way to label chemicals by hazards and learn about secondary containment.
- 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
- Learn what to do in Emergency Situations such as fires and earthquakes, by reviewing evacuation procedures
- Investigate physical measurements including but not limited to gravimetric analysis, and boiling points
- Get familiar with basic laboratory techniques such as proper way to ignite a bunsen burners, use of pipettes
- 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

D. REQUIRED MATERIALS

Either one of these texts are acceptable for our course. I will be following the Ball Libretext, and also Owens and Murkowski. Lab Manual is provided on Canvas.

Ball, David W. et al.	**"The Basics of General, Organic and Biological Chemistry"**	**Libretexts Chemistry**	**2022**
Owens, Owens and Murkowski	General, Organic, and Biological Chemistry, 1st edition (De Anza Bookstore)	Published by Pearson (May 28, 2022) © 2023	2022
Norick, Amanda	Lab Manual for CHEM 30A adapted for de Anza College	Will be provided by DeAnza Chemistry Dept	2023

- ***Supplemental Texts:***
  Fundamentals of General Organic and Biological Chemistry (LibreTexts)
  Available **free** online at OER textbook - Libretext
- ***Calculator:*** A simple scientific calculator with natural log functionality is necessary and sufficient for this class. You can use previously purchased ones, but graphing functionality will not be necessary to use.

Required Lab Materials

- ***Lab Manual***: *Lab Manual for CHEM 30A adapted for De Anza College is available on the Canvas Course Site*
- ***Approved laboratory safety goggles:*** (not safety glasses), available from the De Anza College Bookstore. I*n the case that the bookstore does not have as many goggles on hand as they typically would*, you may order goggles from Amazon or another source, such as this one compliant goggles from Amazon.

  If you choose to do this, you do need to purchase full safety goggles that seal on the sides, not just safety glasses, and that the goggles need to meet the ANSI Z87.1 or Z87+ specification, which will generally be listed in the product description.
- Disposable latex or nitrile gloves or a lab coat is optional.

E. COURSE WORK AND GRADING

1. Grading Breakdown

Lecture	***70% of Total Grade***
Homework	*10 % of Lecture*
Midterms	*60% of Lecture*
Final Exam	*25% of Lecture*
Participation	*5% of Lecture*
Lab	***30% of Total Grade***
PreLabs	*20 % of Lab*
Lab Exercises	*45 % of Lab*
Lab Exam	*30 % of Lab*
Participation	*5 % of Lab*

Grade Scale:

A+	97.0 – 100.0 %	C+	73.0 – 76.9 %
A	90.0 – 96.9 %	C	70.0 – 72.9 %
A–	87.0 – 89.9 %	D+	66.0 – 69.9 %
B+	84.0 – 86.9 %	D	63.0 – 65.9 %
B	80.0 – 83.9 %	D–	60.0 – 62.9 %
B–	77.0 – 79.9 %	F	0 – 60%

Notes on Grading:

- There will not be a curve in general unless deemed necessary by the instructor
- Final Exam is cumulative

2. Work Expectation:

Each week there are 2x 75 min lectures, and 1x 3 hour lab section. Expect to spend an additional 8-12 hours a week on the course.

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. You are expected to join class having done some related reading and chapter assignments.

A. Lectures

Quizzes and Midterms - 60% of Lecture Grade

- There will be two midterms. The schedule can be found in the course calendar. The assessments will consist of the material covered in lecture, and will also assess your problem solving skills. They might be a combination of multiple choice, True/False or free response questions.
- You will also have an online quiz each weekend from the material covered the week before. Lowest two scores will be dropped at the end.
    - ***I will be testing for concepts.***
    - ***I will provide Study Guides for the Midterms***

Final Exam - 25% of Lecture Grade

The final exam is a cumulative exam, covering all of the lecture material, and is worth 25% of your lecture grade. No make-up exam will be given if you miss the final. Final will take place during Finals week, on June 27th from 1:45 PM to 3:45 PM.

Homework - 10 % of Lecture Grade

Chemistry 30A will cover material presented in Chapters 1–11 of the Ball textbook ***Reading:*** Please read the assigned textbook chapters carefully **before** coming to lecture.

- ***Problem solving:*** Additionally, you will be assigned problems from the textbook to follow up and to reinforce your knowledge of the topics.There will be a homework problem set after every Chapter is finished, typically on the weekend. Schedule is subject to change. You will be graded on Completion. HW that is 70% or more complete will get a “complete” grade. Anything less will count as “incomplete”

  These problems will help increase your grasp of the material. Please make sure to work on and understand the sample problems available to you in your textbook before you attempt the assignment problems. Chapter assessments may include similar problems.

Participation - 5 % of Lecture Grade

As long as you show up and show effort, you will get full credit

> ***Do not hesitate to drop in to the office hours if for any reason you think you are falling behind, need reinforcement of material or simply to say hi. Office hours are a crucial part of the support system the students have.***
>
> ***Remember "practice makes perfect" and "mistakes are the stepping stones to learning". It is essential that you attempt as many problems as possible***

B. Labs

- ***PreLab - 20 % of Lab Grade***

Students **must submit** a pre-lab **before coming to the lab**. Students will not be allowed to perform the experiment if prelab hasn't been submitted.

PreLab will contain:

1- Your Name and Date
2- Title of the Experiment
3- Purpose of the experiment in your own words
4- Materials and Safety Information
5- Flowchart of Method
6- Data Tables (you may print/cut and paste or draw by hand)

PreLab needs to be submitted online **BEFOR**E lab starts.

- ***Lab Exam - 30% of Lab Grade***

You will have a lab exam at the end of the quarter (see schedule for the exact date), based on the discussions in class, testing concepts behind the lab procedures and ability to perform calculations such as those done in the lab. It will take place during lab class (likely during check out week or the week before).

- ***Lab Reports (Post Lab Calculations and Questions) - 45 % of Lab Grade***

Please read very carefully. We will go over the lab expectations within the first lecture.

There will be generally be some calculations and post lab questions that need to be answered. These must be answered in your notebook and copies of notebook pages must be submitted online. We will generally try to finish them in lab class.

Lab Reports, **if required**, are generally due on ***a date*** following the end of that particular exercise and must be submitted online. ***Note that exact due dates are listed on your schedule. There might be exceptions.***

A list of Exercises, Prelabs and Assignments are detailed in the course schedule.

Assignments *For some lab experiments, you might be asked to include an assignment with your lab writeup. Assignments will also be posted on Canvas*

- ***Participation- 5% of Lab Grade***

You will receive points based on your performance in the lab class that will take into account the following:

- whether you are prepared for the lab;
- whether you demonstrate that you have a strong understanding of the lab exercises;

F. LABORATORY SAFETY and PROTOCOLS

Laboratory Safety

All chemistry laboratories inherently come with associated risks and hazards. There will be mishaps. 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.

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.
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 someone else you will be asked to leave and you will receive a zero for the day. In extreme cases, you may lose your lab privileges for the remainder of the quarter

G. POLICIES

PLEASE READ THE FOLLOWING POLICIES VERY CAREFULLY

- ***Registration:*** ***Enrollment is strictly limited to 30 students per section.*** Spaces are filled in accordance with the official class roster from Admissions and Records, followed by the official wait list. Any errors must be addressed directly with Admission and Records. Waitlisted students **should attend** the first day of class, but may not be assigned a code until someone drops the course within the first two weeks

- ***Policy on attendance:*** Attendance of ***both*** the Lecture and Labs are required for the successful completion of this course. Unexcused absences will affect your grade. ***Attendance is expected for all lectures, all lab lectures and all labs. The De Anza College Chemistry Department does not offer make-up labs.***

- ***Policy on missing class:*** If you need to miss class you must notify me **at least 24 hours in advance** for approval. Missing a lab period may affect your grade negatively. If you have an excused absence, we can talk about ways to compensate for the missed lab.

You will be dropped from the course for any unexcused absences during the first two weeks of class.

Absences from lecture or lab will be evaluated on a case by case basis. It is your responsibility to contact the Instructor for any absences. Clear Communication is the best whatever the reason is.

If I don't know your reasons, I can't be reasonable...

- ***Policy on late assignments/lab notebooks/lab report:*** Items turned in late will receive an automatic 5 % per day, up to 6 days. The most points you can get on an assignment is 70 % if it is more than a week late

ALL assignments, lab write-ups, reports, and exams must be completed and turned in to receive credit for this course. No exceptions. It is the responsibility of the student to arrange for make-ups for missed work.

Make Up Labs are not offered at De Anza. You will risk getting a zero for lab reports or prelabs if you have an unexcused absence

- ***Policy on Final exams:*** Final exam dates are determined by the De Anza College and cannot be changed. Please find the exam dates from your course calendar, and put all of the dates into your calendar. ***There will not be a make up offered for a missed final exam.***
- ***Dropping the course:*** Dropping the course must be done through the Admissions and Records office. ***It's the student's responsibility to withdraw from the course by the deadline set by the Admissions and Records Office.*** Dropping the course after the deadline will result in a (W-withdrawal) on your transcript.

Policy on plagiarism ***There's a zero tolerance policy for academic misconduct.*** You should remember as a De Anza College student, you agreed to abide by the policies of the De Anza College Rules of Conduct. is expected that you are familiar with the code of conduct and disciplinary actions that may result from academic misconduct. ***All submitted work should be your own, and should represent your own grasp of the material. Cheating will not be tolerated.***

If you have any questions about what constitutes unfair collaboration or plagiarism, please contact the instructor. These policies are found in the De Anza College manual:
https://www.deanza.edu/policies/academic_integrity.html

Students who violate academic integrity policy (e.g. are caught cheating or plagiarizing) will be reported to the Dean of Student Services. Any plagiarized or copied material will receive a 0.

Student Learning Outcomes

- Solve scientific problems by applying principles of dimensional analysis, particularly in the context of reaction stoichiometry.
- Describe the structure and properties of chemical elements and compounds and identify common classes of chemical and nuclear reactions.

Student Learning Outcome(s):

• Solve stoichiometric problems by applying appropriate molar relationships.
• Identify the differences between elements and compounds and describe the chemical bonding in compounds- ionics vs. covalent.

Office Hours:

T,TH	10:15 AM - 11:15 AM	chem offices