Chem 30B Spring 2025 Syllabus

Introduction to General, Organic, and Biological Chemistry

Term: Spring 2025
Instructor: Dr. Semere Bairu
Class Schedule: Section 20 Lecture MW 5:30 pm – 7:20 pm in G6
Section 20 Lab W 7:30 pm – 10:20 pm in SC2210
Office Hours: M 7:30 pm to 8:30 pm in G6
Holidays: June 19 - Juneteenth Holiday - no classes, offices closed
April 20 - Last day to drop classes without a W
May 30 - Last day to drop classes with a W

About the Course

This course is entirely in-person and meets twice a week. Attendance at both sessions is mandatory, and punctuality is essential. The course includes weekly in-person labs, which are a required component and must be attended on time. The lecture portion of the course will take place during these in-person sessions, and students are expected to come prepared, having completed any assigned materials beforehand. Students unable to attend the in-person components should not enrol in this course.

Course Webpage

The course webpage is hosted on De Anza Canvas, and students are automatically added to the Canvas shell upon enrolment. Waitlisted students, however, will not have access to Canvas. The webpage is best viewed on a web browser rather than the Canvas student app. Be sure to enable Canvas notifications to stay updated on class announcements, inbox messages, and comments or feedback on assignment submissions.

Community Statement

Welcome to the class! Every person here is an important and valued member of our group, no matter your personal background or identity. Your experiences matter, and we encourage you to share them when relevant. It's important to know that no one is expected to represent everyone from any group, and you have the right to define your own identity. Feel free to let me know the name you'd like to be called and the pronouns you prefer, and remember, these can change at any time. If you ever feel that any part of the class, whether it's the instruction, content, or environment, is creating obstacles to your full participation, please don't hesitate to let me know privately. There's no fear of reprisal, and I'll do my best to address any concerns. We're all here to learn together, and I'm committed to continually improving to support everyone in this class.

About Your Instructor

Instructor: Dr. Semere Bairu

E-mail: bairusemere@fhda.edu; Phone Number: 269-365-8814 (not preferred)

The most reliable way to contact me outside of class is through **Canvas Inbox**. Generally, you can expect a reply within 12 hours.

Office hours

Office hours are a great opportunity to meet with me outside of regular class time. You can bring your homework, notes, readings, or any other assignments to discuss. Feel free to ask questions about course material, practice problems, or anything related to your educational journey. My office hours are open to all students, and you're welcome to stop by in person every **Monday from 7:30 PM to 8:30 PM**, right after our lecture, for your convenience. I look forward to meeting with you.

My Teaching Philosophy

My goal for this course is for every student to develop an appreciation for the power of chemistry and the beauty of the natural world, particularly as it relates to organic and biological chemistry. This course builds upon your understanding of general chemistry and will explore the ways that chemistry directly impacts health and the biological systems that sustain life.

I aim to create a learning environment that is accessible to students from diverse educational, cultural, and socioeconomic backgrounds while maintaining high intellectual and academic standards. I value consistent, sustained effort throughout the quarter, and I am committed to helping each student succeed. My ultimate objective is for every student to pass with a reasonable grade, ensuring you are equipped to continue your educational or career journey, especially in fields where a deep understanding of health-related chemistry is crucial.

Course Description

This course is designed for students entering allied health fields and serves as the second part of an Introduction to General, Organic, and Biological Chemistry series. The focus is on organic chemistry and biochemistry. Topics in organic chemistry include hydrocarbons, alcohols, thiols, ethers, carboxylic acids, esters, amines, and amides, with an emphasis on their physical and chemical properties, nomenclature, and structural features. In biochemistry, topics cover carbohydrates, fatty acids and lipids, amino acids and proteins, nucleic acids, and DNA, examining their physical and chemical properties. The course also provides a brief introduction to metabolism.

Dr. Bairu's Course Description

Chemistry 30B offers a general overview of organic chemistry and biochemistry, presenting these typically year-long upper-division subjects in a more accessible and engaging format. The course is divided into two main sections, with some overlap: the first focuses on organic structure, nomenclature, and reactivity, while the second explores biomolecules and their biological functions. This approach makes complex topics both exciting and approachable for students.

Required Materials

Textbooks: General, Organic, and Biological Chemistry, 1st edition, by Kalyn shea Owens, Jeff Owens and Ann Murkowski will be used this quarter. It is accessible via Canvas through Access Pearson after purchasing the access code.

Supplementary textbook: *Access it freely at https://open.umn.edu/opentextbooks/textbooks/the-basics-of-general-organic-and-biological-chemistry*

Lab Handouts: Laboratory handouts will be uploaded to Canvas. It is your responsibility to bring a printed copy to the lab for ease of use, safety, and so that you can easily record your results**.**

Computer and Printer Access: This is a hybrid course with extensive technological requirements. Is it strongly recommended that you have regular and consistent access to a computer with a camera and microphone. You will also need to be proactive in reaching out to technical and support services for the many platforms that we use. Start your work early so that you do not fall behind.

Scanner: Throughout the quarter, you will submit handwritten reports by creating a PDF and uploading it to Canvas. Recommended apps for this purpose include GeniusScan and CamScanner. Please avoid using Adobe apps, as the resulting files are often too large to read. Make sure all documents are scanned and combined into a single PDF file with a clear file name. I do not accept multiple image files, as it is difficult to grade them online in Canvas.

Lab Goggles: Eye protection is essential Personal Protective Equipment (PPE). You must bring department-approved ANSI (Z.87) lab goggles to each lab period.

Access Pearson: We will use Pearson Access for Mastering Chemistry as our reading platform (e-text) as well us for quizzes, practices and assignments this quarter. Please purchase the etextbook with mastering chemistry as mentioned in my first announcement. You will have courtesy access through the second week of the quarter. By then, you should purchase an access code either directly from Pearson or through the campus bookstore.

Enrolment

Prerequisites: To enrol in Chemistry 30B, you must have completed Chemistry 30A, 25, 1A, or 1AH with a grade of C or better. Additionally, EWRT 211 and READ 211 (or LART 211), or ESL 272 and 273, are required.

It is recommended that students have taken Chemistry 30A or 1A in person at De Anza College within the past six months. If your recent chemistry background does not align with this, I strongly encourage you to reach out early and frequently to me, as well as to campus tutoring and academic support services, if any issues arise.

Add Codes Policy

Add codes will only be provided if space is available during the first week of class for waitlisted students. If you're interested in joining, you must attend the lecture this week. If you miss the first lecture as a waitlisted student, priority will be given to someone who attended. However, no waitlisted students are allowed to attend a lab. Add codes will not be given out after the first week of class. If you are on the waitlist, I strongly encourage you to enrol in an open section instead.

Similarly, if you are enrolled in the course and miss the first lab meeting, you will be dropped from Chemistry 30B.

Time Commitment and Expectation

This is a 5-unit course, and you should plan to dedicate approximately 15 hours per week to class assignments. To avoid becoming overwhelmed, divide this workload throughout the week and establish a consistent time and place to focus on class materials daily.

Course Objectives

We will cover the following topics in Chemistry 30B:

- Examine the chemistry of simple organic molecules, focusing on structural features and nomenclature.
- Explore the chemistry of unsaturated hydrocarbons, including their nomenclature, structure, and reactivity.
- Analyse and assess the properties and reactivity of alcohols, thiols, ethers, aldehydes, and ketones.
- Evaluate the properties and reactions of carboxylic acids, esters, amines, and amides.
- Study the chemistry of carbohydrates and their biological significance.
- Investigate the chemistry of fatty acids, lipids, and the structure of cell membranes.
- Explore the chemistry and function of amino acids and proteins.
- Examine the structure and function of nucleic acids and summarize the process of protein synthesis.
- Inspect various metabolic pathways and connect them to energy production mechanisms.

Student Learning Outcomes (SLOs):

- Analyze and predict the physical and chemical properties of simple organic molecules and biological macromolecules based on their structure and functional groups.
- Apply the principles of organic and biochemistry to explain the roles of carbohydrates, lipids, proteins, and nucleic acids in biological systems.
- Assess the relationship between metabolic pathways and energy production within living organisms.

Active Course Outline

The active course outline for this class may be found online at:
https://www.deanza.edu/catalog/courses/outline.html?cid=chemd030b

Important Dates

First Day: April 7, 2025 - First day of class! Attendance is *mandatory*.

Withdraw: May 30, 2025 - Last day to withdraw from the course.

For a full list of important dates, please see https://www.deanza.edu/calendar/

If circumstances beyond your control prevent you for completing the course, you may qualify for an **excused withdrawal**. Please see the following website for more information.

https://www.deanza.edu/admissions/withdrawals.html

Attendance Policy

Your punctual attendance is expected at all class meetings. To be marked "present" and receive credit for the day's activities, you must arrive within the first 5 minutes of class. Late arrivals may result in missing important information.

If you need to miss a class for any reason, notify me via Canvas message as soon as possible. Communicating about absences or tardiness reflects responsibility and respect for yourself and your fellow students.

In the case of a documented emergency (e.g., hospitalization, court appearance, or car crash), I may excuse you from that day's work. These situations will be evaluated on a case-by-case basis. Please note that travel is not considered an emergency or valid grounds for an excused absence.

It is the student's responsibility to obtain notes or missed information from a classmate.

Syllabus Statement

This syllabus serves as a contract for the course. Please read it thoroughly and completely before asking questions about the course schedule, content, requirements, grading, or other details. You are expected to adhere to the De Anza College Student Code of Conduct (Administrative Policy 5510) at all times. *Find the pdf document in canvas.*

This syllabus is a living document and subject to updates. Any corrections or changes will be communicated through Canvas.

Class Structure

This course consists of two in-person instructional periods: a lecture period (MW) for covering the primary course material and a lab period (W) for conducting experiments. All students attend the same lecture and lab sessions, as there is only one lab section. At De Anza College, the lab and lecture cannot be taken as separate courses under any circumstances.

Late Work Policy

Most assignments must be submitted on Canvas or Mastering Chemistry site. Late work will be accepted until **the last Wednesday before the final exam at 11:59 PM**, with a 10% deduction per day. To qualify for the late penalty, the work must be your own.

If you would like the late policy reconsidered for a specific assignment, include a submission comment explaining your circumstances. I will review your comments and take them into consideration. Please note, I do not grant extensions or exceptions via email or Canvas Inbox. Submit the assignment when possible and include your explanation in the submission comment.

How to Learn Chemistry

Chemistry is a broad subject with a reputation for being challenging. This class will leverage various resources to help you build the skills, knowledge, and understanding needed to apply chemical principles across multiple areas of study. Lectures will provide structure and context for the topics, while assigned readings will help you explore the details in depth.

How to Succeed in This Course

- **Attend all class sessions**: Be punctual and actively participate in both lecture and lab sessions.
- **Stay organized**: Keep track of deadlines, assignments, and exam dates using a planner or digital calendar.
- **Review material regularly**: Study lecture notes, readings, and lab material consistently throughout the week.

- **Complete assignments on time**: Submit all work on Canvas/Mastering Chemistry by the deadlines to avoid late penalties.
- **Ask for help**: Reach out to me during office hours, or via Canvas Inbox with questions. Utilize campus tutoring and academic support services if needed.
- **Form study groups**: Collaborate with classmates to review material, work on practice problems, and discuss challenging concepts.
- **Practice problems**: Work through practice problems to strengthen your understanding of the material and prepare for exams.
- **Use recommended tools**: Ensure you have the required scientific calculator and PDF scanner app for assignments.
- **Communicate proactively**: Notify me in advance of any issues or absences and provide explanations for late submissions when necessary.

Academic Integrity

Academic integrity is essential in this course, and students are expected to adhere to De Anza College's academic integrity policy. All submitted work must represent your own understanding, written in your own words, with collaboration only allowed on specific assignments where the final submission reflects individual effort. Cheating, copying, or plagiarism, including the use of prohibited online resources such as Chegg, CourseHero, or Reddit, is strictly forbidden. Assessments are closed resource, and using internet answers or unauthorized help is not allowed. Incidents of academic dishonesty, no matter how minor, will be reported to the Dean and may result in penalties to your course grade, including retroactive grade changes within two years of course completion. Reputable tutoring resources are encouraged, but services that provide direct answers without promoting learning are prohibited. Students should seek clarification about resources or policies when unsure and are encouraged to engage with the instructor and peers for support. Violations may lead to significant changes in course structure, such as oral exams or exit interviews, to ensure academic standards are maintained.

Lecture

Attendance and active participation are expected at every lecture. If you are unable to attend, notify me via email as soon as possible, even if it's shortly before or after class starts. You are responsible for obtaining notes or missed information from a classmate. Arrive on time and stay for the entire class, as late arrivals and early departures can be distracting for everyone.

Take your own notes during lectures for better engagement and understanding. While we may use electronic devices for certain activities, refrain from using them for non-course-related purposes. Ensure your phone is on silent or Do Not Disturb mode during class. In case of an emergency call, quietly step out of the room before answering.

Mastering Chemistry Homework Guidelines

Homework questions for each chapter are available under Mastering Chemistry (via Pearson Access). You can also access the homework through the **Modules** section (linked to Mastering Chemistry). These assignments are designed to support your learning and prepare you for exams.

You will have up to three attempts to answer each question of the homework assignment, with a penalty of 10% after your first attempt, allowing you to practice and strengthen your understanding. Assignments are subject to a penalty of up to 10% per day, with a maximum penalty of 60%. Be sure to stay on track and complete your assignments on time to maximize your success in the course.

Recommended Practice Problems

Consistent practice is essential for mastering the material. In addition to required quizzes and homework assignments, additional practice problems (end-of-chapter quizzes and problems) from the eTextbook are available for you. While these practice problems will not be graded, we will review some of them weekly during class, as they are crucial for your success.

To further reinforce your understanding, a graded quiz will be administered by the end of each week, based on the content covered. Mandatory in-person attendance is required for these sessions, providing valuable opportunities to address questions and strengthen your understanding. Regular engagement and consistent practice are vital to your success in this course.

Assessments

Quizzes and Exams Policy

There will be **13 quizzes** conducted throughout the quarter, typically during class after reviewing practice problems, if time allows.

Two midterm exams will be conducted during the course. Midterm Exam 1 is scheduled for **May 5, 2025**, and Midterm Exam 2 will take place on **June 9, 2025**. Please refer to the study guides below for preparation for both exams. All exams will be conducted in person, proctored, and subject to exam rules, which must be followed to receive credit

Exam 1 covers *Chapter 13, 14, 15, 16, & 17.*

Exam 2: Covers *Chapter 18, 19, 20, 21, & 22.*

Final Exam: Covers *Chapter 21, 22, 23, 24 and 25 + IUPAC Naming of all functional group covered*

- Nomenclatures of all types of functional groups discussed. *(20%)*
- Biochemistry part of Chapter 21 – 25. *(80%)*

Final Exam

The final exam is sort of comprehensive, with 20% focusing on naming of the organic compounds and 80% exclusively covering the biochemistry portion of the course. The exam will be conducted in person, proctored, and subject to exam rules, which must be followed to receive credit. The final exam is scheduled for **Monday June 23, 2025, from 6:15 PM to 8:15 PM.** Early or late exams will not be offered, and missing an exam will result in a score of zero.

If you require accommodations, you must be approved by DSPS, (https://www.deanza.edu/dsps/). For extended-time or reduced-distraction accommodations, you must schedule your exam with the DSPS office to coincide with the normal class time. The final exam will include multiple-choice and short-answer questions. To receive credit for any answer, you must clearly show your work and thought process. Plan to meet these requirements and ensure your success on the final exam

Phones, smart watches, and other computers are not permitted in any circumstances. If I see you on your phone or other electronic device, you will receive a zero on the exam. The first two exams will be administered during the scheduled lecture time. The final exam will be administered during the designated final exam period above and will take place at the same lecture location.

Laboratory

Laboratory Policies

Chemistry is an experimental science, and the laboratory is a vital component of this course. De Anza College does not offer make-up labs, and you must attend the laboratory section for which you are registered to complete the required labs.

- **Attendance**: Everyone is allowed one excused absence without a grade penalty. A second absence, regardless of the reason for the first, will result in a zero for the lab and all associated assignments. After a third lab absence, you will automatically receive an "F" in the course.
- **Timeliness**: Arrive on time for every lab. The beginning of the lab period is reserved for a required lab lecture that includes essential safety information. If you miss the lab lecture, you will not be permitted to complete that lab and will receive a zero for all related assignments.
- **Clean-Up and Check-Out**: You must clean your work area before leaving. Failure to do so will result in a point deduction for that lab. Before leaving, you must check out with me and have your data in your lab notebook signed. Credit for the lab will not be given without my signature.
- **Lab Assignments**: Assignments include pre-labs, conducting experiments with accurate data collection, and analyzing data thoughtfully.

Adhering to these policies is crucial for both your success and the safe functioning of the lab.

Lab Safety

Safety Contract: All students must review, print, sign, and scan the safety contract into a PDF format before participating in any lab activities. The contract is available on Canvas and must be uploaded to Canvas by the end of the first lab day. Retain the original signed copy for your reference throughout the course. This requirement is mandatory, and students who fail to submit the contract will be excluded from all lab activities until compliance is met. Safety is a top priority, and adherence to these rules is non-negotiable**.**

Safety Video: You are required to watch the designated safety video playlist, which will be available on Canvas, at the beginning of the quarter, regardless of whether you have viewed the videos in a previous class. I will show the videos during the first lab session as part of the safety orientation and prior to lab check-in. Watching the safety videos is mandatory, and failure to comply will result in exclusion from lab activities until this requirement is fulfilled.

Safety Quiz: You must complete and pass the safety quiz, which will be available on Canvas, with a **100% score** prior to participating in any wet lab activities. This is a mandatory requirement to ensure lab safety.

Lab Handouts and Assignments

All required lab handouts are available on Canvas under Modules. You are required to **print and bring these handouts** to the lab for use. These handouts provide detailed instructions and essential information for each lab experiment. The nature of each assignment and the points available will vary based on the specific lab activity. Failure to bring the required handouts may impact your ability to successfully complete lab activities.

Pre-lab Assignments

Pre-lab assignments are designed to prepare you for each lab session and will vary by experiment. These assignments typically include assigned reading, safety preparation, and an introduction to the experiment. To prepare for the pre-lab assignments, use the background notes provided in the handouts to thoroughly answer the pre-lab questions. Each completed pre-lab assignment is **worth 5 points**, so be sure to put in the necessary effort to earn full credit and set yourself up for success in the lab. You will need either an iPad or laptop to answer the questions online. An **access code** will be provided, which will allow you to take the quiz during the first 5-10 minutes of the lab period.

Post-lab Assignments

Lab reports are a critical component of your lab work, designed to help you analyze and communicate the results of each experiment. Each lab report is **worth 20 points**, so it is important to put in the necessary effort to produce high-quality work.

When completing your lab reports, ensure that you carefully review the handouts provided for each experiment and answer every question included in the report. Do not leave any question unanswered.

All responses must be written in complete sentences and should clearly address the subject matter. Avoid vague or incomplete answers; instead, provide detailed, thoughtful, and accurate explanations. Your lab report should reflect your understanding of the experiment, including its objectives, methodology, results, and conclusions. Thorough and well-written lab reports are essential for earning full credit and demonstrating your mastery of the material.

Lab Preparation and Submission Guidelines

- **Preparation**: You are expected to arrive at the lab fully prepared to complete each experiment efficiently and with minimal delays.
- **Submission**: lab reports must be submitted on Canvas as a single PDF file uploads and are generally due after about a week and on the day before the next lab period***, every Tuesday 11:59 PM.***
- **Grading**: Refer to the **Canvas submission rubric** to understand how your lab assignments will be evaluated before submitting your work.

Class Schedule

Course Content and Schedule: Chemistry 30B will cover material from *Chapters 13–25 of* General, Organic, and Biological Chemistry, 1st edition, by Kalyn shea Owens, Jeff Owens and Ann Murkowski. Throughout the quarter, we will also review topics from Chemistry 30A to reinforce foundational knowledge. Detailed reading assignments for each topic will be posted on Canvas, and students are expected to stay up to date with the readings.

Every effort will be made to adhere to the class schedule provided below. However, if we fall significantly behind, the content of the exams will be adjusted to align with the material covered in class. Please note that exam dates will remain fixed unless extraordinary circumstances require a change. Staying current with the schedule, readings, and lectures is critical for success in this course. Regular updates and any necessary adjustments will be communicated through Canvas.

Lecture Schedule

Week	Monday	Wednesday
1	Mastering Chemistry Enrolment *(1st 30 min)* Chapter 13: Introduction to Organic Molecules	Chapter 13: Introduction to Organic Molecules; Chapter 14: Alcohols, Ethers, Thiols, and Chiral Molecules, **Quiz 1**
2	Chapter 14: Alcohols, Ethers, Thiols, and Chiral Molecules; **Quiz 2**	Chapter 15: Aldehydes and Ketones
3	Chapter 15: Aldehydes and Ketones; Chapter 16: Carbohydrates; **Quiz 3**	Chapter 16: Carbohydrates; **Quiz 4**
4	Chapter 17: Carboxylic Acids, Esters and Amides	Chapter 17: Carboxylic Acids, Esters and Amides, **Quiz 5, Exam 1 Review**
5	**Exam 1 (May 7)** **5:30 pm – 6:30 pm**; Chapter 18: Lipids	Chapter 18: Lipids; **Quiz 6**
6	Chapter 19: Amines and Neurotransmitters	Chapter 19: Amines and Neurotransmitters**;** Chapter 20: Amini Acids and Proteins; **Quiz 7**
7	Chapter 20: Amini Acids and Proteins **Quiz 8**	Chapter 21: Enzymes – Biological Catalysts
8	Chapter 21: Enzymes – Biological Catalysts; Chapter 22: Nucleic Acids, DNA, and Genetic Testing**; Quiz 9**	Chapter 22: Nucleic Acids, DNA, and Genetic Testing**; Quiz 10**
9	Chapter 23: RNA and Protein Synthesis,	Chapter 23: RNA and Protein Synthesis Chapter 24: Metabolism; Generating Energy from Carbohydrates, **Quiz 11**
10	**Exam 2 (June 9)** **5:30 pm – 6:30 pm;** Chapter 24: Metabolism; Generating Energy from Carbohydrates	Chapter 24: Metabolism; Generating Energy from Carbohydrates, **Quiz 12**
11	Chapter 25: Metabolism of Lipids and Proteins **Quiz 13**	**Final Exam Review**
12	Final Exam; Comprehensive: June 23, 6:15 pm to 8:15 pm in G6	

See Lab Schedule and Grading Policy Below.

Laboratory Schedule

Week of	Week	Mon	Tu	Wed	Th	Fr
4/6/2025	1			Check-in		
4/13/2025	2			Organic Compounds		
4/20/2025	3			Polymer – Nylon 6-10		
4/27/2025	4			Polarimetry & Fisher Project.		
5/4/2025	5			Carbohydrate and Tests		
5/11/2025	6			Carbohydrate Modeling		
5/18/2025	7			Synthesis of Aspirin		
5/25/2025	8	**Memorial Day**		Analysis & % yield		
6/1/2025	9			Hydrolysis of Aspartame		
6/8/2025	10			Protein reaction and Tests		
6/15/2025	11			Final Lab Exam and Check-out		
6/22/2025	12			No Lab		

Grading Policies and Schemes

To succeed in this course, you will need to exhibit ***consistent and sustained effort*** throughout the quarter. This will be demonstrated through in-class participation, laboratory preparation and data analysis, and examinations. Assignment types are assigned a weight; not all points are created equally!

Lecture	**70.6 % of total grade**
13 Canvas Homework's (260 pts.) - online via canvas	23.5 %
3 Exam (300 pts.) – in-person	29.4 %
2 Worksheets (50 pts.) – upload to canvas (group upload)	5.9 %
13 in Class Quizzes (130 pts.) – in-person	11.8 %
Lab	**29.4 % of total grade**
8 Pre-labs (40 pts.) – in-person	5.9 %
8 Lab report (160 pts.) – upload to canvas	23.5 %

Final Percentage	Grade
> 100	A+
> 90	A
88 – 89.9	A-
85 – 87.9	B+
80 – 84.9	B
78 – 79.9	B-
75 – 77.9	C+
68 – 74.9	C
63 – 67.9	C-
55 – 62.9	D
<55	F

Student Learning Outcome(s):

- Differentiate the general reactions of the principle organic functional groups.
- Evaluate the major classes of biological compounds from a chemical perspective.

Office Hours:

F	8:00 AM - 9:00 AM	Zoom
F	9:00 AM - 10:00 AM	Zoom