Introduction to General, Organic and Biochemistry

(Chem 30B, Spring 23) Syllabus
Lecture 1: In-person (Friday 8:30 am – 10:20 am) – Room S34
Lecture 2: asynchronous (Friday 2:00 pm – 3:50 pm)
Lab: Friday 10:30 am - 01:20 pm - Room SC2210

Instructor: Dr. Semere Bairu, phone: (269) 365 - 8814, email (Best): bairusemere@fhda.edu

Description: This class is for students entering the allied health fields. The focus of the second part of Introduction to General, Organic, and Biochemistry is organic and biochemistry. The topics included in organic chemistry are hydrocarbons, alcohols, thiols, ethers, carboxylic acids, esters, amines, and amides. Various physical and chemical properties of these organic substances will be studied along with nomenclature and structural features. The topics included in biochemistry are - carbohydrates, fatty acids and lipids, amino acids and proteins, nucleic acids and DNA. Various physical and chemical properties of these biological molecules will be studied. A brief introduction to metabolism will also be discussed.

Prerequisites: Chemistry 30A or 25 or 1A. Advisory: English Writing 211 and Reading 211 (or Language Arts 211), or English as a Second Language 272 and 273.

Evaluation: Your grade will be based on your performance in the following:

3 Quizzes	90
11 Homework's *(15 pts. each)*	165
7 Labs *(20 pts.: 5 pts. Pre-lab and 15 pts. attendance and report)*	140
Cleanup Crew	20
Lab Final	100
3 Exams *(100 pts. each)*	300
1 Final *(200 pts.)*	200
Total	**1015 points**

Letter grades will be assigned according to the approximate scale:

A	90%
B	80%
C	70%
D	50%
F	< 50%

Attendance: Your attendance is urged for all lectures and required for all quizzes, exams, and labs. Unexcused exam, quiz, and lab absences score 0. It is the responsibility of the student to contact the professor regarding missed work. If an absence is anticipated, the student should make arrangements to complete the missed assignments prior to the absence. In an emergency, it is the student's responsibility to contact the instructor within one class period of an exam. There are no laboratory make-up days. Please sign the attendance sheet for each class.

Quizzes: Quizzes will be given during class on Friday as scheduled in syllabus and will have a time limit. Answer keys will be available after the quiz. If you miss the quiz, you will not have a chance to make it up after the KEY is posted. Contact your instructor a.s.a.p. if you have an excused absence and before the KEY is posted. Online quiz A and quiz B Given in the beginning of class will replace one of your lowest quiz score at the end of the quarter.

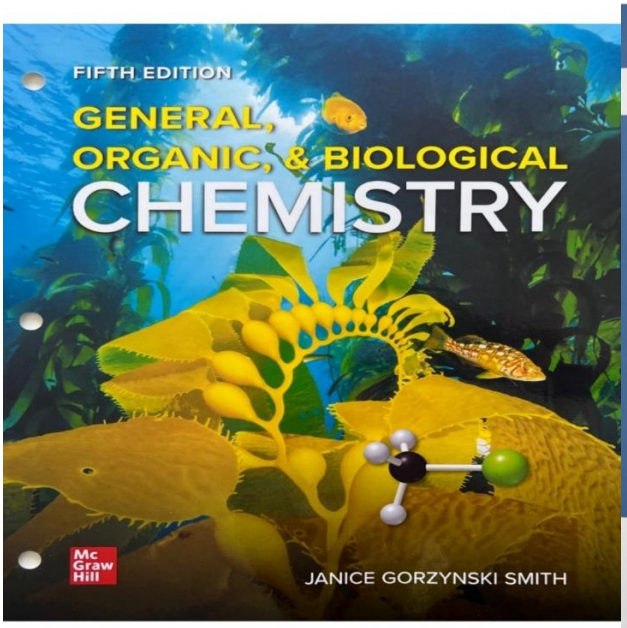
Take Home Quizzes: You are expected to do your own work on take-home quizzes. You may consult your notes, your text, your Power Point slides or your instructor, but not other students. Not following this rule will result in all future quizzes being given during class time without the benefit of any other assistance.

Exams: There will be three exams and one final exam. You must bring your own calculator, pencil and eraser for exams. You are permitted to bring a molecular model kit; the instructor must approve if it is assembled in any way. Cell phones may not be used at any time during the exam. Calculators may be used if approved by instructor. Once the exam begins you may not leave the room unless you turn in the exam, so plan to take a bathroom break *before* class. There is no chance to make up an exam after the KEY is posted. Please contact your instructor a.s.a.p. if you have an **excused** absence and before the KEY is posted. **No Cell Phones during Exam! Answer Keys will be available after the exam.**

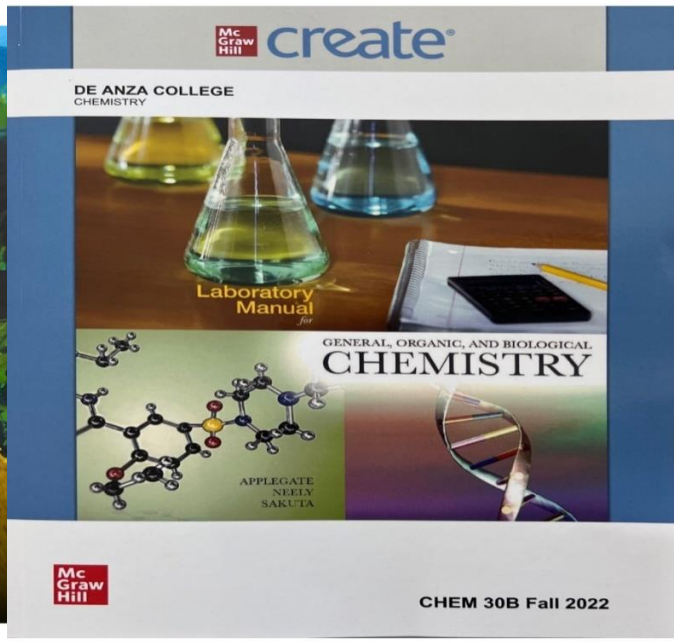
Labs: All 7 labs count towards your grade. No make-up labs. Late labs will incur a penalty. You **MUST** wear eye protection during lab! There is a 20-point cleanup obligation for each student. If you miss a lab, you may receive half credit if you complete the lab write up. Please contact your instructor a.s.a.p. after an **excused** absence. A schedule is available for sign-up. If you miss our cleanup assignment, you will not earn your 20 points and will get a zero. **Note: if you withdraw or drop this course, you must still checkout of lab during the normal checkout procedure. Contact me immediately after you withdraw or drop for instructions.**

Text: ***General, Organic, &Biological Chemistry***, Janice G. Smith, 5th ed, 2022, McGraw-Hill. **Optional** if the etextbook is enough for you as included in the **M-H connect**. See next page! See image of the textbook below anyway.

Lab Text: Laboratory Manual for Introduction to General, Organic and Biochemistry, Neely, Applegate and Sakuta, 1st ed, 2022, McGraw Hill Create. (Available through the De Anza Bookstore) See Image Below.

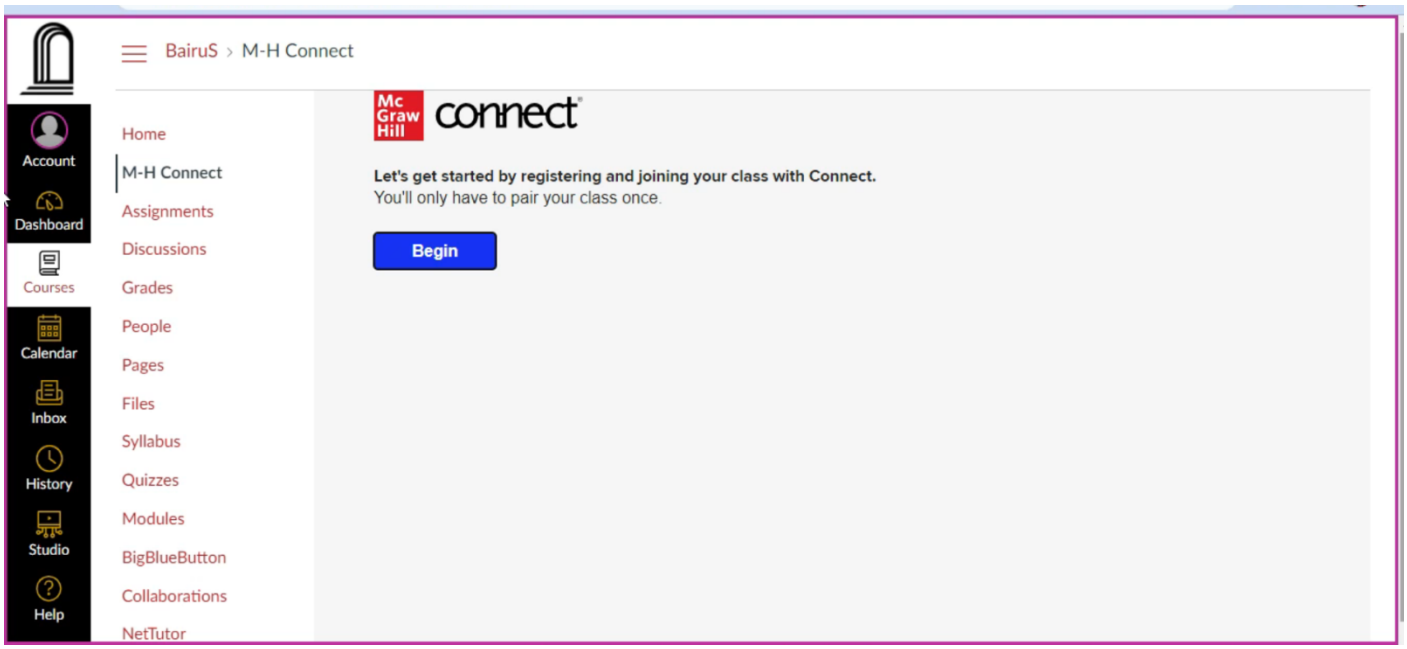


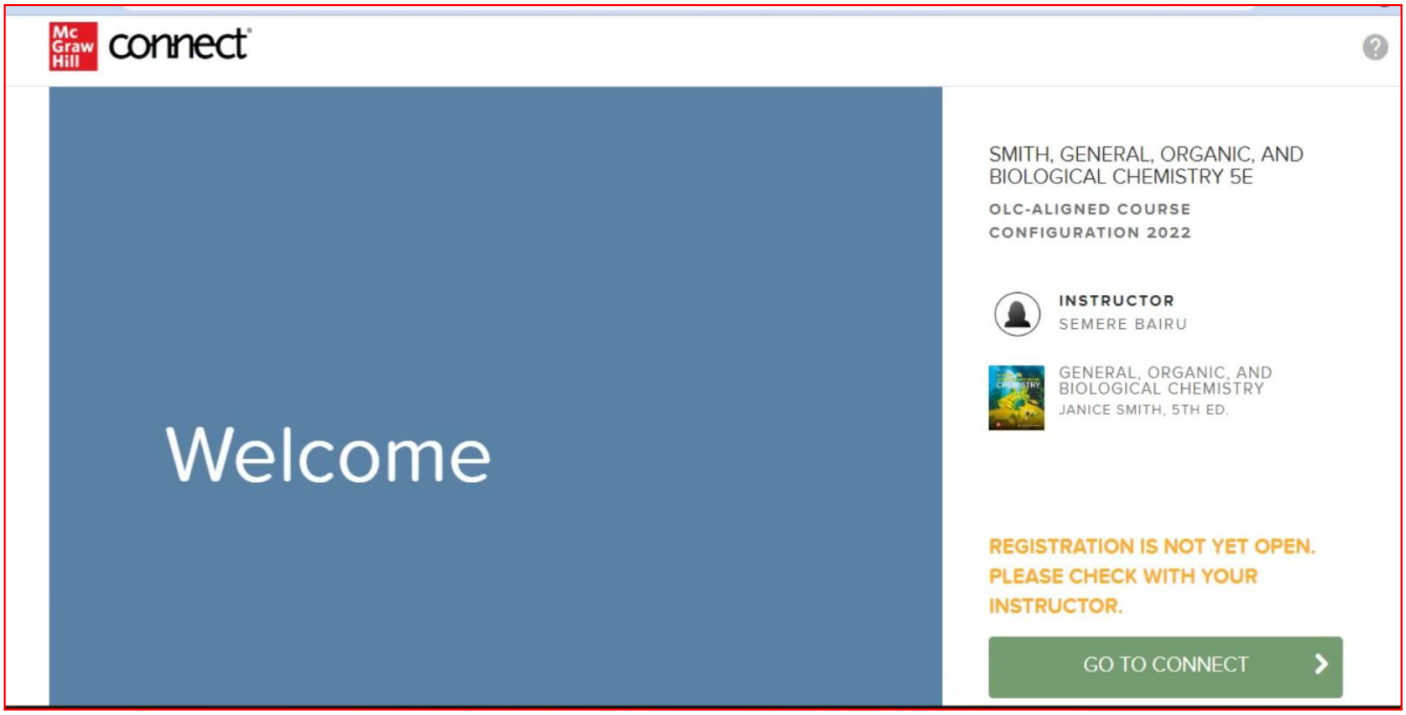
Chem 30B Textbook (optional)



Chem 30B Lab Manual

M-H Connect: Please use the following information to sign up for McGraw Hill Connect for assignments, homework's, and etextbook. Please visit canvas and click M-H Connect on the course navigation menu (left panel) and follow the commands to enroll. Register through canvas so that you will be able to see the instructors name and course name. See the two images below.





Important Date: 10 April: First Day of Class
22 April: Last Day to Add Classes
23 April: Last Day to Drop Classes without a W
27 – 29 May: Memorial Day Weekend - no classes; offices closed
2 June: Last day to drop classes with a W
19 June: Juneteenth holiday - no classes; offices closed
26 - 30 June: Final Exams

Final Grades: Your Official Final Grade will be posted by De Anza College. I will not be posting the grade or giving it out by email Please keep track of your own grades. I will return all graded Labs, Quizzes and Exam.

Lab Report: All 7 labs count towards your grade. No make-up labs. Late labs will incur a penalty. You MUST wear eye protection during lab! You may work with a lab partner. Requirements of the Lab Report are given below. You will need two (2) Composition Notebooks (Will alternate experiments into notebook). This will assist in grading. Your notebook will be Graded during lab and returned to you before you leave lab. Write Labs 1,3,5,7 in Book 1 and Labs 2, 4, 6 in Book 2. Notebooks to be sewn binding, available at office supply, grocery stores or drugstores, about $3 each (shown here). Lined pages please. Choose a color that is NOT black. See images below. Labs will be due for grading the week following the completion of the experiment. I will grade them during lab and return them to you.

What to include in the Lab notebook:

1. Name and Contact Information, include an email or phone number
2. Number each page from front to back in upper right hand corner. Number each side of the page.
3. Table of contents on First Page: Experiment name and Page Number. You will fill this in as the Quarter proceeds. I recommend recording Labs 1, 3, 5, 7 in Book I and Labs 2, 4 , 6 in Book II. I will grade one book as you work in the other.
4. Experiment Name
5. Experiment Objective (can summarize)
6. Materials list
7. Brief Discussion or Theory
8. Procedure: Summarize, but must be able to follow in class to perform the experiment.
9. Data Table as it appears in the lab book.
10. Discussion of Results including possible sources of error
11. Questions and Answers: Must be in Full Sentences
12. After each page is completed, sign and date the bottom of each page.
13. Errors are simplified through hand the correct information written in the available space. No white out, no messy crossing out errors. Must write in INK. No pencil. Must be neatly recorded.

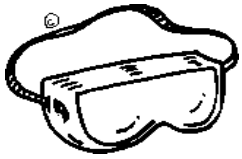
STEPS 1-9 MUST be completed before coming to Lab. Receive a Red Star Stamp from Instructor to verify. Labs are due One Week after the completion of the lab. Late labs may incur a penalty.

Academic Dishonesty: "Academic dishonesty is a serious offense, which includes but is not limited to the following: cheating, complicity, fabrication and falsification, forgery, and plagiarism. Cheating involves copying another student's paper, exam, quiz or use of technology devices to exchange information during class time and/or testing. It also involves the unauthorized use of notes, calculators, and other devices or study aids. In addition, it also includes the unauthorized collaboration on academic work of any sort. Complicity, on the other hand, involves the attempt to assist another student to commit an act of academic dishonesty. Fabrication and falsification, respectively, involve the invention or alteration of any information (data, results, sources, identity, and so forth) in academic work. Another example of academic dishonesty is forgery, which involves the duplication of a signature in order to represent it as authentic. Lastly, plagiarism involves the failure to acknowledge sources (of ideas, facts, charges, illustrations and so forth) properly in academic work, thus falsely representing another's ideas as one's own."

Tutor Help: If you need help with any aspect of this course, please contact your instructor first. You can also contact the Student Success Center at http://www.deanza.edu/studentsuccess/ to get help with tutoring or with reading, and writing, tutoring or academic skills. Please use this resource.

Calculator: You still need a simple scientific calculator not associated with your mobile phone for exams. It will cost about $15.00. My preference is the Texas Instruments Fundamental, Two-Line Scientific Calculator, 30XII. Put your name and phone number on your calculator for its return if it is lost.

Eye Protection: You must wear full goggles that are sold by the De Anza Bookstore ONLY and not safety glasses. Without them, you may not participate in lab and will receive a grade of zero for that lab. See illustration below. They are available at the De Anza bookstore.



Changes to Syllabus: This syllabus may change according to the instructor and the needs of the class. Please check with the syllabus posted.

Date Fri	Lecture Lab	Date Fri	Lecture
14 April	Intro to Course and Lab Ch.11: Intro to Organic Molecules and Functional Groups **Lab: Check-In**	14 April	Ch.11: cont. Ch.12: Alkanes
21 April	Ch.12: cont. Ch.13: Unsaturated Hydrocarbons **Lab1: Hydrocarbon Reactions, p33** **Signed Safety Document due**	21 April	Ch.13: cont. Ch.14: Organic Compounds That Contain Oxygen, Halogen or Sulfur
28 April	Ch.14: cont. **Lab2: Alcohols, p49**	28 April	**Quiz 1: Ch. 11 – 14 (online)** Review for Exam 1
5 May	**Exam 1: Ch.11-14 (In-person)** **Lab3: Aldehydes and Ketones, p63**	5 May	Ch.15: The Three - Dimensional Shape of Molecules
12 May	Ch.15: cont. Ch.16: Aldehydes and Ketones **Lab4: Carboxylic Acids and Esters, p107**	12 May	Ch.16: cont. Ch.17: Carboxylic Acids, Esters, and Amides
19 May	Ch.17: cont. Ch.18: Amines and Neurotransmitters **Lab5: Carbohydrate Tests, p91**	19 May	**Quiz 2: Ch. 15 – 18 (online)** Review for Exam 2
26 May	**Exam 2: Ch.15 – 18 (In-person)** Ch. 19: Lipids **L6: Amines and Amides, p121**	26 May	Ch.19: Lipids
2 June	Ch.19: cont. Ch.20: Carbohydrates Review for Exam 3 **Lab7: Proteins Reactions and Tests, p137**	2 June	Ch.20: cont. Ch.21: Amino Acids, Proteins, and Enzymes **Quiz 3: Ch. 19 – 21 (online)**
7 June	**Lab Final and Lab Check-Out** Review for Final Exam	7 June	**Exam 3: Ch.19 – 21 (In-person)** Review for Final Exam
14 June	Ch.21: Amino Acids, Proteins, and Enzymes		Ch.21: Amino Acids, Proteins, and Enzymes
21 June	**Final Exam REVIEW**		
28 June	**Final Exam: In-Person (10:30 am – 12:30 pm)**	**All quizzes are PROCTORED!!**	

Instructions for the Laboratory

1. Print out, read, sign and return to your instructor the safety statement in the link below. This must be returned by the second laboratory period **(April 21, 2023).** The lab safety statement is located on the Course Studio.

2. You must do your laboratory work at the time assigned. Attendance will be taken. Study the experiment carefully before coming to class so that you don't waste time going through the procedure during the lab. **NO MAKE UP LABS**.

3. You must do your own work unless you are told to work in pairs for an experiment. If you need guidance, let the instructor know.

4. Always think through the next step you are going to perform before starting it.

5. **Record all data in ink while you work.** Do not write data on paper towels or other pieces of paper, even temporarily. Make sure your data is complete. **Do not forget to write your name or record any unknown number**. Pay attention to significant figures and units. If you make a mistake, cross it out neatly with a **single** line.

6. All laboratory reports are due one week after the experiment is performed.

7. Children are not allowed in the lab.

8. No eating or drinking in the lab.

9. **ALWAYS WEAR YOUR EYE PROTECTION.** Failure to wear your eye protection will lead to dismissal from lab and a lowered grade for that experiment.

10. You **MUST WEAR LONG PANTS** and **SENSIBLE CLOTHING** when we are doing any lab that required Safety Goggles as discussed during the safety lectures. This is a school policy. If you wear shorts, sandals, or other clothing that is not consistent with safety, you will **NOT** be admitted to the laboratory. Wear a lab apron if you have one. **You can NEVER WEAR SHORT PANTS or SKIRTS or SANDALS during LABORATORY PERIODS.**

11. Always work with clean equipment. Clean also means **DRY**.

12. Carefully measure the quantity of each material to be used in the experiment.

13. Always place reaction vials, test tubes or flasks in a clean beaker when standing them on a laboratory bench.

14. Do not take reagent bottles to your laboratory work area. Use test tubes, beakers, or paper to obtain chemicals from the dispensing area. Take small quantities of reagents. You can always get more if you run short.

15. Check carefully the label on each reagent bottle to be sure you have the correct reagent. The names of many substances appear similar at first glance.

16. To avoid possible contamination, never return unused chemicals to the reagent bottles. Never interchange spatulas or droppers.

17. Do not insert droppers into large reagent bottles. Instead pour a little of liquid into a small beaker.

18. Be neat in your work; if you spill something, clean it up immediately.

19. Wash your hands anytime you get chemicals on them and at the end of the laboratory period.

20. Keep the mass balances and the area around them clean. Follow the directions given by the instructor on the proper weighing technique to use. Otherwise, do not place chemicals directly on the balance pans; place a piece of weighing paper or a small container on the pan first, and then weigh your material. Never weigh an object while it is hot.

21. Do not heat graduate cylinders, burettes, pipettes, or bottles with a burner flame.

22. Do not look down into the open end of a test tube in which the contents are being heated or in which are action is being conducted.

23. Do not perform unauthorized experiments.

24. After completing the experiment, clean and put away your glassware and equipment. Clean your work area and make sure the gas and water are turned off. A clean lab is a safe lab.

25. Dispose solid waste such as filter paper, litmus paper, and matches in the wastebasket, not in the sink. Dispose broken glass in the broken glass waste container. Dispose all other solid chemicals as directed by your instructor. Pour all the toxic liquids into the waste bottles provided or as directed by instructor.

26. **Cleanup Crew:** After each lab a crew of two or three students will be assigned cleanup duties for a total of 20 points each member of the crew. Failure to perform all cleanup procedures will result in loss of points equally for all crewmembers. If a crewmember is absent, they will be reassigned another lab.

27. **Cleanup Crew Duties:**

    A) Balance room clean of all debris and all doors on all balances closed.
    B) Balanced room closed and locked,
    C) All reagents used during lab are wiped down, lids secure and replaced in proper area as found at beginning of lab.
    D) All table tops cleaned and dry; floor is free of paper and spills.
    E) All stray paper and water spills cleaned.
    F) All Distilled water bottles refilled.
    G) Waste containers are properly labeled (review with instructor), wiped clean, lids securely closed and placed in proper secondary containment.

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 01:30 PM 02:20 PM In-Person Part time faculty office - second floor science building