

Chemistry 30B: Introduction to General, Organic, and Biological Chemistry II

Term: Spring 2024

Instructor: Dr. Brophy

Class Schedule

| | | | | |
|--|---------|-------------------------------------|--------------------------------------|--|
| Section 27Y CRN 48199 | Lecture | Friday 8:30 am – 10:20 am in G6 | Holidays May 27 June 19 | <i>Memorial Day</i> <i>Juneteenth</i> |
| | Lab | Friday 10:30 am – 1:20 pm in SC2210 | | |

This is a **hybrid** course with both in-person and remote components. The in-person labs are strictly mandatory, and your punctual attendance in both lecture and lab is expected every week. The lecture component will consist of both in-person and asynchronous online content. Any asynchronous online material and activities must be completed before Friday's lecture meeting. If you cannot attend the in-person meetings, you should not register for this course.

Course Webpage

The course webpage is through De Anza Canvas. You will be automatically added to the Canvas shell as a student when you enroll in the course. Students on the waitlist do not have access to Canvas. This course webpage is designed to be viewed on a web browser rather than the student app. **Turn on Canvas notifications to receive class announcements, Inbox messages, and comments/feedback on assignment submissions.**

Community Statement

Every person in this class, regardless of personal history or identity categories, is a welcome and important member of this group. Your experiences are important, and you are encouraged to share them as they become relevant. No person in this group is ever expected or believed to speak for all members of any group(s).

You have the right to determine your own identity, to be called by whatever name you wish, and to be referred to by your pronouns. You have the right to adjust these things at any point. If you find any aspects of facilitation, instruction, subject matter, or program environment that result in barriers to your inclusion, please let me know right away, privately without fear of reprisal. We are all learning. It is my goal to continue learning and improving to support everyone in this class and, by extension, all my current and future students.

About Your Instructor



Instructor: Dr. Megan Brunjes Brophy

E-mail: brophymegan@fhda.edu

Please note that **Canvas Inbox** is the most reliable ways to get in touch with me outside of class. I do not reply to messages on evenings and weekends. In general, you can expect a reply from me in 2–3 business days.

Office: SC1220

Phone Number: 408-864-8338 (*not preferred*)

Office Hours Study hall time (aka office hours)

is an opportunity for you to come talk to your instructor outside of regular class time. Please bring your homework, notes, reading, or any other assignments. You are welcome to come talk to me about the course, questions that you have about the material or practice problems, and your educational path. Each of my office hours are open to all my students; please come say hi! Canvas office hours are my dedicated time to quickly respond to message through the Canvas inbox and I will reply as quickly as possible to messages received during this time period.

| Day | Time | Location |
|-----------|-------------------|----------|
| Monday | 2:20 pm – 3:10 pm | Canvas |
| | 4:45 pm – 5:35 pm | SC1220 |
| Wednesday | 2:20 pm – 3:10 pm | Canvas |
| | 4:45 pm – 5:35 pm | SC1220 |

My Teaching Philosophy

My hope is that every student who takes one of my classes gains an appreciation for the power of chemistry and the beauty of the natural world. It is important to me to design a course that is accessible to students of varying educational, cultural, and socioeconomic backgrounds while maintaining high intellectual and academic standards. I strive to reward consistent, sustained effort throughout the quarter, and my goal is for everyone who takes this class to pass with a C so that you can move on to the next stage of your educational or career pathway.

Course 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.

Dr. Brophy's Course Description

Chemistry 30B provides a general overview of both organic chemistry and biological chemistry. Organic chemistry and biochemistry are both typically presented as year-long upper-division courses that require extensive prerequisite work, and it very exciting and fun to present these topics at a more accessible level. I break this class up into two main sections (with some overlap): we start with organic structure, nomenclature and reactivity and end the class with biomolecules and biological function.

Required Materials

- **Textbook**
General, Organic, and Biological Chemistry by Smith. Any edition is fine, and we will not use the publisher's online homework system this quarter. I encourage you to find any low-cost and affordable option
- **Molecular Modeling Kit** Many types are available, I like this kit from Duluth Labs: https://www.amazon.com/Duluth-Labs-Organic-Chemistry-Molecular/dp/B01N00GAPR?ref=ast_sto_dp&th=1
- **Lab Manual** *Laboratory Manual for General, Organic, and Biological Chemistry* (custom). The lab procedures for this class will be posted on Canvas, and you should print each lab and bring it with you to class.
- **Computer and printer access.** This is a hybrid course with extensive technological requirements. It is 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.*
- **Genius Scan** 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! If I can't open the file you send me, you will receive a zero on the assignment.*
- **Lab Goggles** Eye protection is essential PPE. You must bring department-approved ANSI (Z.87) lab goggles to each lab period.
- **Nitrile Gloves** You must provide your own gloves this quarter.

Supplemental Materials.

- **Calculator** Chemistry 30B is a "math-lite" chemistry course; however, we will occasionally perform mathematical tasks. 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

Enrollment

Prerequisites

Chemistry 30A, 25, 1A, or 1AH with a grade of C or better. EWRT 211 and READ 211 (or LART 211), or ESL 272 and 273.

Recommended Preparation

I generally assume that students enrolled in Chemistry 30B have taken Chemistry 30A or 1A in-person at De Anza College within the last 6 months. If that does not describe your recent chemistry background, I encourage you to reach out *early* and *often* to myself as well as the campus tutoring and academic support services as issues arise.

Late Adds and Add Codes / Drops

I will only give out add codes if space is available during the first week of class. If you are interested in joining the class, *you must attend lab and lecture this week.* Students who miss the first lab meeting will not be permitted to enroll in the course under any circumstances. Similarly, if you are enrolled in the course and miss the first lab, you will be dropped from the course during the lab period. ***I do not give out add codes after the first week of class,*** and I strongly encourage you to enroll in an open section if you are on the waitlist.

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 you should expect to spend **15 hours per week** on class assignments. Divide this work throughout the week so that you don't get overwhelmed. Set aside a time and place that you can work on class materials every day. Because this is a hybrid class, students are further required to work on additional assignments and lecture material throughout the week.

Course Objectives

We will cover the following topics in Chemistry 30B:

Course Objectives

- Examine the chemistry of simple organic molecules with an emphasis on structural features and nomenclature.
- Examine the chemistry of unsaturated hydrocarbons: nomenclature, structure and reactivity.
- Analyze and assess the properties of alcohols, thiols, ethers, aldehydes and ketones.
- Analyze and assess the properties of carboxylic acids, esters, amines, and amides.
- Examine the chemistry of carbohydrates.
- Examine the chemistry of fatty acids, lipids, and the cell membrane.
- Examine the chemistry of amino acids and proteins.
- Examine the chemistry of nucleic acids and summarize the process of protein synthesis.
- Inspect various metabolic pathways and relate them to energy production.

CSLOs

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

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>

Please save a copy of the active course outline for your records.

Important Dates

College Dates

First Day April 12, 2024

First day of class! In-person attendance is *mandatory*.

Withdraw March 1, 2024

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 from 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 counted "present" and receive credit for that day's activities, you must arrive during the first 5 minutes of class. If you arrive late, 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. 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 grounds for an excused absence. It is the student's responsibility to get notes from a classmate for missed information.

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 a living document. **All corrections and changes to this syllabus will be announced through Canvas.**

This class is divided into two separate instructional periods: a lecture period devoted to the primary course material and a lab period for conducting lab experiments. Everyone will have the same lecture period, but a different lab period depending

on which section you are enrolled in. At De Anza College, the lab and lecture may not be taken as separate courses under any circumstances.

Late Work Policy

With a few exceptions, all student assignments will be submitted on Canvas. Late work will be accepted until June 24th at 11:59 pm. The Canvas gradebook is set up such that any work submitted late will receive a 5% deduction per day or fraction thereof. I do not handle extensions or exceptions over email or through the Canvas inbox. Turn in the assignment when you can and leave me an explanation as to why it is late.

How to Learn Chemistry

Chemistry is broad subject that has a reputation for being hard. This class will utilize many resources in concert to help you gain skills, knowledge, and understanding for you to apply chemical principles to multiple areas of study. The lectures will provide organization and context for the topics that we cover, and you should use the assigned reading to fill in the details.

1. Know where to find relevant information for the course, in particular the assigned reading for both the labs and the lectures.
2. Complete the assigned reading before coming to class. Review 1A topics that are unfamiliar. Write down any vocabulary words that you do not understand as well as their definitions *from the textbook*.
3. Practice and develop your critical reading skills.
4. Take *handwritten* notes during class and review your notes regularly. Cognitive science tells us that we learn new information better when we write rather than type.
5. Review your notes early and often. Use the assigned reading to fill in details and redraw important figures.
6. Write down any questions you have. Bring these questions with you to office hours or the drop-in tutoring center.
7. Most of the “rules” that you learn in chemistry are guidelines. There are exceptions. You will recognize these exceptions more as your chemical intuition builds.
8. Do a little bit every day. After every lecture, review the reading assignment and complete in-chapter and end-of-chapter exercises. Spend at least an hour on chemistry every day.
9. Seek conceptual understanding. Memorization will follow.
10. Join a study group. Work on problem sets together. The best way to learn the material is to teach it to somebody else.
11. Utilize the free tutoring services on campus and online through the MSTRC.
12. Turn in and finish assignments as soon as you are able. Don't assume that you'll have time to do it later, or immediately before the deadline. Life is unpredictable.
13. Take care of yourself! Stay well-rested and drink water. Your physical health and safety are your priority. If you need assistance with any basic needs, please reach out to me to referrals to campus resources.



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 actually 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. I am happy to discuss appropriate resources with you, and I encourage you to *ask for permission*.

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. Please see the Grading Specifications Table for more information. 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. I encourage you to bring questions to class and utilize the class discussions 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 widespread violations of the academic integrity policy.*

Lecture

Your attendance and active participation are expected at every lecture period. If you know that you will not be able to attend lecture for any reason, let me know by email right away (even if only 5 minutes before class or 5 minutes after the start of class). You are responsible for communicating with a classmate to get any notes or missed information. Late arrivals and early departures are distracting for the whole class (and me!), so arrive on time and stay for the whole class period. I strongly encourage taking your own notes in lecture. We will sometimes use computers or other electronic devices; however, do not use your computers for non-course related activities during lecture. Put your phone on silent or Do Not Disturb while you are in class. If you must take a phone call in case of emergency, quietly leave the room before answering the phone.

Aktiv Chemistry Homework

Aktiv Chemistry is an online homework platform. You will have courtesy access to Aktiv during the first two weeks of the quarter. If you decide to stay enrolled in the course, you will need to purchase access to Aktiv for the remaining weeks. You may purchase access directly through Aktiv (recommended), or through the campus bookstore. Aktiv homework should be a learning opportunity to prepare you for exams. You will have 10 opportunities to answer each question with no penalty. Aktiv homework will typically be due on the Thursday of each week. Late work is accepted (with a 10% deduction per week or fraction thereof) until December 7th.

Recommended practice problems

Consistent practice is an essential component of learning, and homework questions will often be like exam questions. Recommended practice problems from the textbook will be posted for each chapter; however, recommended practice problems will not be graded. In general, the answers to these questions may be found in the back of the textbook and solutions are readily available online. It is your responsibility to keep up with suggested practice problems every week.

Collected lecture assignments.

Some lecture assignments will be collected and graded for completion. Bring loose leaf paper and a writing utensil to class with you. In-class assignments cannot be made up for credit under any circumstances.

Assessments

There will be a total of two quizzes, two midterms, and one cumulative final exam in this class. Make up exams and quizzes are not permitted; however, your one (1) lowest quiz score and one (1) lowest exam score will be dropped from your final grade calculation.

Quiz 1

Molecular structure review

IUPAC nomenclature conventions

Exam 1

Alkanes

Unsaturated hydrocarbons

Alcohols, ethers, alkyl halides, sulfur

Stereochemistry

Aldehydes, ketones, and carbohydrates

Carboxylic acids, esters, and amides

Quiz 2

Biomolecules overview and reactivity

Exam 2

Amines

Lipids

Alkaloids

Neurotransmitters

Amino acids, proteins, and enzymes

Nucleic acids

Glucose metabolism

Exam 3 / Final Exam

The final exam for this class is cumulative and comprehensive and will cover content from both the lecture and lab portions of the course.

You should arrive to class on time for the exams. I do not guarantee that you will be able to take the exam if you arrive late. I am unable to accommodate make-up exams at this time. If you require any accommodations for exams, you must be approved by DSPS. For extended-time or reduced-distraction exams, please schedule your exam in the DSPS office during the normal class time. Exams will consist of some multiple-choice questions with short answer questions with the opportunity for partial credit. You must show your work and thought process receive credit for any answer. **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. Exam 3 will be administered during the designated final exam time on **Friday, June 28th from 9:15 am – 11:15 am in G6.**

Lab

Chemistry is an experimental science, and the laboratory is a major component of the course. De Anza College does not offer make-up labs, and **you must attend the laboratory section that you are registered for** to complete the required labs. Everyone gets one excused absence with no grade penalty. A second absence, regardless of the circumstances of your first absence, 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.

Your timely attendance is expected at every lab. The beginning of each lab period is reserved for lab lecture. The lab lecture is a required component of the laboratory section and will include essential safety information. **If you miss lab lecture, you will not be permitted to complete that lab and you will receive a zero for all related assignments.**

You must clean up your work area before leaving each lab. Failure to do so will result in a loss of points for that lab. Before you leave lab, **check-out with me.** You will not receive credit for the lab unless I have reviewed your data and analysis.

Lab assignments will consist of pre-labs, completion of laboratory experiments and mindful data collection, and analysis of data.

ACS Laboratory Safety Course

The ACS Laboratory Safety Course must be completed by the second lab meeting and before you will be allowed to perform any lab experiments. *You will be dismissed from lab and receive a zero for the day if you have not completed the lab safety course.*

Pre-lab Assignments

Pre-lab assignments will vary by lab; however, they will generally include assigned reading, safety preparation, and an introduction to the lab experiment. **All lab procedures for this quarter are posted on Canvas.** I expect you to come to lab prepared to complete each experiment with minimal delays. Pre-lab assignments will be submitted on Canvas as file uploads (PDF or JPG) and will generally be due the day before the lab.

As a rough rubric, scoring 3/3 points on a pre-lab means that you have completed the pre-lab to a high standard (e.g. detailed and unambiguous schematic of the procedure, answer all questions in full sentences); 2/3 indicates the pre-lab is good but there is room for improvement; 1/3 indicates that the pre-lab is incomplete or lacks detail.

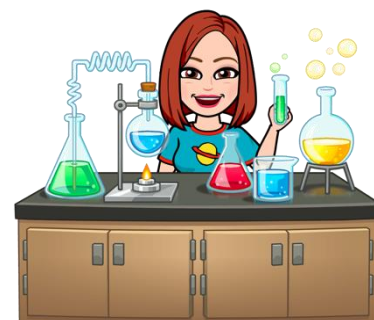
Lab Worksheets

Lab worksheets will be posted on the course webpage. The precise nature of the assignment and the number of points available will vary. Analysis worksheets must be printed and are typically due at the end of lab. *All lab worksheets must be submitted in lab– online and “after hours” submissions will not be accepted for credit.*

Laboratory 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.

Class Schedule

Chemistry 30B will cover material presented in chapters 11 – 24 of Smith's *General, Organic, and Biological Chemistry*. We will also review Chemistry 30A topics throughout the quarter. Detailed reading related to each topic will be posted in Canvas.

Every effort will be made to keep to the class schedule below. If we fall significantly behind this schedule, the content of the exams will be adjusted to reflect the material that we covered in class. Exam dates will not be modified except in cases of *force majeure*.



| Week | Lecture Topics <i>Required Reading</i> | Lab Topics |
|------|--|--|
| 1 | Introductions <i>Syllabus</i> Structure Review <i>Smith Chapter 4</i> Organic Chemistry Orientation <i>Smith Chapter 11</i> Alkanes <i>Smith Chapter 12</i> | Lab Safety Check-In |
| 2 | Unsaturated hydrocarbons <i>Smith Chapter 13</i> Alcohols, ethers, alkyl halides, sulfur <i>Smith Chapter 14</i> | Organic Structure and Nomenclature (<i>worksheet</i>) |
| 3 | Quiz 1: 8:30 am – 8:50 am (20 minutes) Chirality and chiral centers, Fischer Projections, Optical Activity <i>Smith Chapter 15</i> | Hydrocarbon Reactions <i>This is a wet lab and you <u>must</u> have PPE in order to participate in the lab.</i> |
| 4 | Aldehydes and Ketones <i>Smith Chapter 16</i> Carbohydrates <i>Smith Chapter 20</i> | Polarimetry and Fischer Projections <i>You will need a modeling kit to complete this lab.</i> |
| 5 | Carboxylic Acids, Esters, and Amides <i>Smith Chapter 17</i> Lipids <i>Smith Chapter 19</i> | Carbohydrate tests |
| 6 | Midterm 1 8:30 am – 9:20 am (50 minutes) Amines, Alkaloids, and Neurotransmitters <i>Smith Chapter 18</i> | Carbohydrate modeling (<i>worksheet</i>) <i>You will need a modeling kit to complete this lab.</i> |
| 7 | Amino Acids, Peptides, Proteins and Enzymes <i>Smith Chapter 21</i> | Aspirin Part I: Synthesis |
| 8 | Nucleic Acids, DNA and RNA, Replication, Transcription The Genetic Code | Aspirin Part II: Analysis and Percent Yield |
| 9 | Quiz 2: 8:30 am – 8:50 am (20 minutes) Translation and Protein Synthesis, Mutations, Recombinant DNA <i>Smith Chapter 22</i> | Hydrolysis of Aspartame |
| 10 | Metabolism of Sugars Glycolysis, TCA Cycle, Oxidative Phosphorylation <i>Smith Chapter 23 and 24.1–24.5</i> | Protein Reactions <i>Clean out lab drawers before you leave.</i> |
| 11 | Midterm 2: 8:30 am – 9:20 am (50 minutes) Metabolism free-for-all <i>Smith Chapter 24.6–24.9</i> | Check-out <i>Extra Credit Movie: The Poison Squad</i> |
| 12 | Final Exam 9:15 am – 11:15 am in G6 | Finals week: 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% of total grade |
|-----------------|--------------------|
| Homework | 10% |
| Quizzes | 10% |
| Exams | 50% |
| Lab | 30% of total grade |
| Lab assignments | 30% |

| Final % | Grade ^{1,2} |
|-------------|----------------------|
| >100.0 | A+ |
| >90.0 | A |
| 88.0 – 89.9 | A– |
| 85.0 – 88.9 | B+ |
| 80.0 – 84.9 | B |
| 78.0 – 79.9 | B– |
| 75.0 – 77.9 | C+ |
| 68.0 – 74.9 | C |
| 63.0 – 67.9 | D+ |
| 55.0 – 62.9 | D |
| <55% | F |

¹If your average in either the lab *or* lecture portion of the course is less than 55%, you will receive an F as a final grade.

²A+ grades will be given to students who demonstrate excellence in the following three areas: lecture, lab *and* class participation.

Note that grades will be entered in Canvas; however, the gradebook and assignment types may not be finalized until the end of the quarter. I encourage you to make your own spreadsheet to keep track of your letter grade throughout the quarter.

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:

| | | | | |
|-----|----------|----------|-----------|--------|
| M,W | 02:20 PM | 03:20 PM | Canvas | |
| M,W | 04:45 PM | 05:25 PM | In-Person | SC1220 |