

Introduction to General, Organic and Biochemistry (Chem 30A)

Syllabus – Fall 2020

Contact Information

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I am available to answer questions and assist you with working through problems and strategizing for maximizing your success in the course. If my scheduled office hours do not work for you, please do not hesitate to contact me so that we can arrange for an alternate time. Chemistry is an unavoidably challenging subject, but my aim as an instructor is to make sure that you have the tools you need to rise to the challenge.

Meeting Times

Course Record Numbers: 21590 (Tue Lab) OR 21591 (Thu Lab)

Asynchronous Lecture: Delivered online through scheduled video modules in Canvas, to be viewed **before** the synchronous lecture period for a given week

Synchronous Lecture: Tue 11:30 am to 1:20 pm via Zoom

Lab: Tue 7:30 to 10:20 am OR Thu 7:30 to 10:20 am via Zoom

Office Hours: Wed 10:30 to 11:20 am, Thu 11:30 am to 12:50pm, Thu 5:30 to 6:50 pm or by appointment via Zoom

Overview

Course Description: Chem 30A is the first in a two-course sequence for students entering allied health fields. The focus of the first part of this class is an introduction to general chemistry. Topics include atomic structure, trends in the periodic table, the three states of matter, energy, chemical bonding in ionic and molecular compounds, nomenclature, measurement and the metric system, chemical reactions and equations, solutions, acids, bases, salts and electrolyte systems.

Prerequisite: A grade of C or better in MATH 114 or the equivalent.

Required Course Materials

Required

Lecture Text: In this course I will aim to provide you enough specific materials to make clear the body of content you are expected to learn, so that you can use the textbook as a supplementary resource, rather than a primary one. You may therefore feel free to use the freely available version of the text “The Basics of General, Organic and Biological Chemistry,” by David Ball et al., which can be found at the link below:

- [The Basics of General, Organic and Biological Chemistry](#) (Online and pdf versions available)

Alternatively, if you prefer, you may purchase the textbook currently used in the department (an earlier edition is fine):

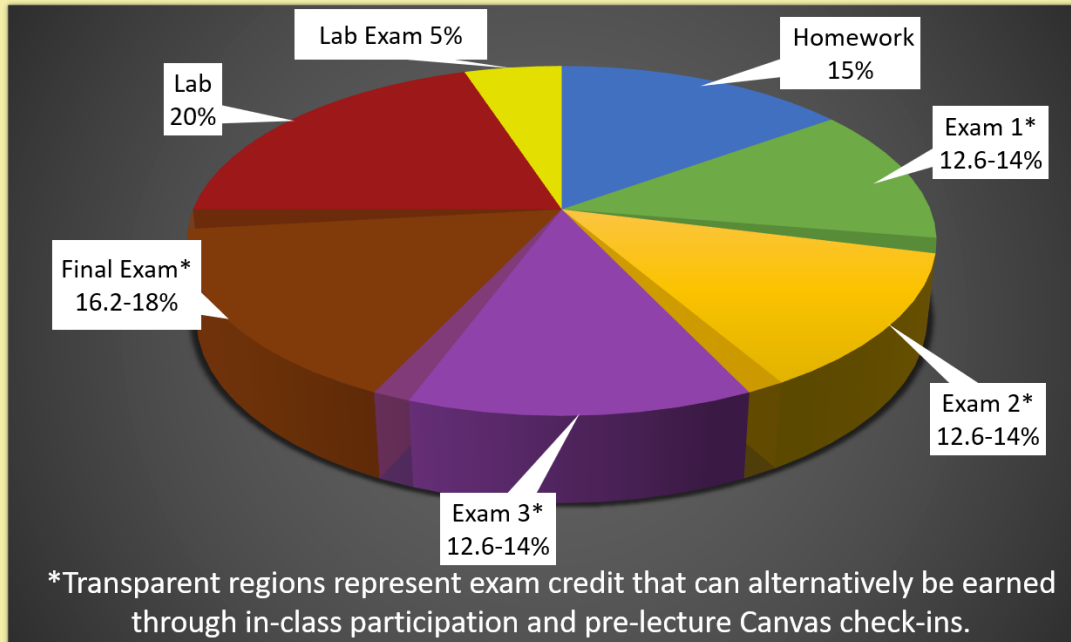
- Janice G. Smith, *General, Organic and Biological Chemistry*, 4th ed., McGraw-Hill. ISBN: 9781307334548
- One quarter access to the electronic text is also available through the publisher at a cost of \$30 by following the instructions on the Canvas home page.

Scientific or Graphing Calculator: You will need a calculator that is capable of handling the standard arithmetic operations, as well as logarithms and exponentials. Any standard scientific calculator is likely to be sufficient.

Lab Kit: Kits from Hands-On Labs are required to complete the laboratory portion of the course. These kits will be available through the bookstore after the course census date and should be ordered immediately to ensure that they are received in time for the first at-home lab in week 5.

Grading Breakdown

General



The general scoring breakdown for the course is shown here, with lab work accounting for 25%, homework for 15%, and lecture assessments the remaining 60%. Up to 10% of the weight each exam can be replaced by completion of pre-lecture Canvas check-ins and in-class exercises (reducing the weight of exams by a maximum of 6% to 54% of the overall course grade).

The rough grading scale for the course is shown here:

- >90% = A+/A/A-
- 80-90% = B+/B/B-
- 70-80% = C+/C
- 60-70% = D+/D/D-
- <60% = F

Exams are not curved, however the grading brackets may shift downward (i.e. in your favor) in the final grade calculation to allow for adjustment in the case that the difficulty of some assessments is overtuned in any particular term. The brackets will not, however shift upward (so for instance it is possible that the cutoff for an A- would ultimately shift to 89%, but it will not shift to 91%).

Homework

Homework assignments (200 points) are submitted through Chem101, accessed through the links in the weekly Canvas modules. Each unit has a primary homework assignment as well as a supplementary assignment. The primary assignment is the required homework necessary to provide basic exposure to the content being covered and to give you a sense of what you understand and what you need additional work on. The supplementary assignments are to give you extra practice on topics about which you are less confident. The supplementary assignments are not a separate portion of the course grade but may be used to make up for any points missed in the corresponding primary homework. For instance, if you completed the primary assignment for part 3, but were shaky on certain concepts and scored 7/10 points, you could complete problems from the supplementary assignment worth an additional 3 points to bring up your score for part 3 homework to 10/10. In this way it is possible for everyone to obtain 100% credit on the homework portion of the grade, even if they miss points along the way. Supplementary homework cannot be used to bring your homework score above 100%, though it can still be useful for extra practice if you find you are struggling with a particular concept.

Lecture Assessments

Assessments of lecture content knowledge will include three midterm exams, and one comprehensive final exam. The three midterm exams (140 points each) will be held during the Tuesday lecture periods **10/6**, **11/3** and **11/24**. The final exam (180 points) will be held during the time designated by the college on Tuesday, **12/8 from 11:30 am to 1:30 pm**. Exams will be administered on Zoom and students will be required to be on camera during the examination period.

Lab

The majority of the lab component of the course grade (200 points) will come from completion of the labs themselves and submission of the corresponding follow-up assignments. Some early lab sessions will involve completing worksheets related to basic principles of scientific analysis and chemical structure. The completed worksheets will be submitted through Canvas. The later lab sessions will include hands-on activities performed using lab kits. Associated online assignments will be submitted through the Hands-On Labs platform, and pictures documenting specific points in the lab exercise will be submitted through Canvas. Each lab session will begin with a synchronous meeting, and participation in this synchronous period is required to receive credit for the lab.

Lab Exam

The lab exam (50 points) will account for the remainder of your lab score and will be held during the final lab period on Tuesday 12/1 or Thursday 12/3. This exam will focus on your understanding of the underlying techniques that we have learned during the quarter, rather than on the procedural specifics of the exact experiments we performed.

Classroom Policies

Attendance

Lecture Videos: The initial presentation of lecture topics for this course takes the form of course videos accessible from the Canvas modules page. This means that you can take the lectures at your own pace and on your own time, slowing them down or speeding them up depending on how confident you feel about a particular topic, and rewinding to catch anything you missed. While you may watch the videos on your own schedule, they should be viewed **before the synchronous lecture period for the week in which they are assigned**, since the synchronous meeting will focus on practice with applying the knowledge gained from the videos, and will presume some exposure to the topics.

Lecture: Participation during the synchronous lecture is critical, as this is where we will engage with the broad range of topics covered in the course, and where I will make clear the level of mastery that I will be expecting to see from you when exam time rolls around. While missing lecture will not directly impact your grade if an assessment is not being given, frequent absences will substantially increase the likelihood that you will not perform well on assessments. The lecture will also include various in-class exercises, and your work from these exercises can be submitted for optional exam-replacement credit. These points, along with those for the pre-lecture Canvas check-ins, are not required, but may be used to reduce the weight of the lecture exams by up to 10%. For instance, the base value of the first exam is 14%, however if you submit the in-class exercises and Canvas check-ins associated with that assignment, the weight of the exam would be reduced to 12.6% and you would receive full credit for the remaining 1.4%.

Lab: The lab meetings for the course will include a synchronous meeting beginning at the start of the scheduled period, during which we will discuss the topics or techniques relevant to the week's lab exercise. After that discussion is complete, you will have the option to stay and complete the lab exercise synchronously, so that you can ask questions if any issues arise, or you may elect to complete the lab on your own time. In either case, all work associated with a lab must be submitted to Canvas and/or Hands-On-Labs by the due date, which is typically the Saturday of the following week.

Tardy Policy: Participation in lab includes arriving prepared and on-time to the synchronous meeting, as we will cover important issues related to lab techniques, as well as any safety issues to be considered in performing the lab. Any student arriving more than 10 minutes late to the synchronous period or leaving before the discussion has ended will be considered absent and will not receive credit for that lab. The lowest lab score will be dropped from your course grade, so one lab absence for any reason is allowed with no penalty. A second lab absence will result in zero points for that lab, and **three or more lab absences will lead to an automatic failing grade in Chem 30A.**

Behaviour

Lecture Participation: The aim of the lecture period is to aid students as much as possible in grasping the course material. To that end, your participation is critical to ensuring that we make optimal use of the limited time we have together. Answering questions that I ask, and asking questions when you are confused are the best ways to let me know what you do and do not understand yet. If you simply try to passively absorb lecture content without active engagement, you will inevitably find when you try to approach a complex problem on your own, that you are not sufficiently practiced in the kind of reasoning required to find your own path to the end.

Course Workload: Chemistry can be a challenging subject, so it is important to set aside the time you will need beyond the synchronous course hours to increase your mastery of the material, particularly if you are new to chemistry or know that you have found the subject to be challenging in the past. Most critically, this begins with making sure to watch the course videos before coming to the synchronous lecture period, so that you have a sense of the content being covered and can ask questions about any topics you were unclear on. In addition, you will need to set aside time for working through homework problems, as well as practice exams in weeks leading up to assessments. These practice exams will give you the best sense of what to expect on the actual exams. Overall, the most important thing you can do to succeed in this course is make sure to get to work early and not fall behind. We will cover a large number of topics in a short period, and later content builds on earlier concepts, so it is very difficult to catch up if you don't set aside enough time early on. It is much better to plan for more time than you need and discover later that you have some free time on your hands, than to find out halfway through the term that you should have planned for more study time when you have already fallen behind and the course continues to move at a brisk pace.

Respect for your Peers: The lecture is not only about your learning experience, but also about that of your fellow students. This means that it is important that you be respectful of their time by not engaging in behaviour that is disruptive. While you may use electronic devices in class for the purposes of aiding in your own learning process, you may not use them in a way that serves to distract your classmates or otherwise detract from their learning experience. In addition, the classroom is a place where students with diverse backgrounds and identities come together and work toward common learning goals. As we progress in our collective quest to surmount the neverending challenges that chemistry sends our way, we are all entitled to a collegial and supportive learning environment. Any behaviour or language that is hostile or demeaning to your fellow classmates is therefore not acceptable classroom behaviour (or good general practice as a human).

Safety in the Lab

Since you will be working at home rather than in the lab, the set of safety guidelines is slightly different from normal, but is no less important, and it is up to you to ensure that you follow them in order to avoid injuring yourself or those around you:

1. **Chemistry Department-approved safety goggles (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 not enrolled in the laboratory class may not be in the lab at any time after the first lab period of each quarter.
11. 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.
12. 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.

Important Dates

October 3: Last day to add

October 4: Last day to drop without a "W" grade appearing on transcript*

October 6: Midterm exam 1

November 3: Midterm exam 2

November 13: Last day to drop classes with a "W"*

November 24: Midterm Exam 3

November 26: Thanksgiving Holiday - no class

December 1 or December 3: Comprehensive Lab Exam

December 8: Comprehensive Final Exam – 11:30 am – 1:30 pm

* Note that dropping the course in advance of either the drop or withdraw deadline is your responsibility, and you will not simply be dropped because you stopped attending class at some point along the way.

Academic Accommodations

If you have the need for specific accommodations, such as extended-time or reduced-distraction testing, or the use of assistive technology, I am glad to work with you to arrive at an appropriate accommodation arrangement. All such requests must go through Disability Support Programs and Services (DSPS), located in the Advanced Technology Center (AT209). If you need accommodations but are not yet registered through DSPS, please make sure to contact them as soon as possible, as I am not able to provide accommodations without a written notice from that office. The DSPS website is found at www.deanza.edu/dsps.

Academic Integrity

Homework assignments are an opportunity to learn and practice the course material, and you should feel free to make use of resources that will help you to understand problems you are uncertain about, including your textbook, the course lecture videos or other tutorials, or outside tutors. You should make sure however that you are in fact using these resources to help you understand how to approach the problems, rather than simply entering the problem text into a search engine and copying any solutions you find.

Course exams are a time to demonstrate your own independent knowledge of the course content, and your use of outside help to assist you in answering exam questions is limited to specifically approved materials. Consultation with another person in answering exam questions, whether in person or via the internet, is considered cheating and will be handled as described below. The same is true for posting any portion of an exam online to solicit answers.

Cheating or plagiarizing in any form including but not limited to those above will not be tolerated. The first offense of academic dishonesty will result in a zero for the relevant exam or assignment, which may lead to failing the course. The offending student will also be reported to the Dean of Student Development, which may result in additional administrative consequences. For a fuller description of what constitutes a violation of academic integrity, see the De Anza College academic honor code the link below:

- www.deanza.edu/policies/academic_integrity.html

LECTURE SCHEDULE – CHEM 30A FALL 2020

Week	Dates	Lecture Videos	Textbook Sections (Ball et al.)	Textbook Sections (Smith)	Homework Due (Friday by 11:59 pm)
1	9/20-9/26	Parts 1-2	1.1-1.7, 2.1, 7.1-7.1	1.1-1.10, 2.1, 7.10	Parts 1 & 2 (9/23)
2	9/27-10/3	Parts 3-4	2.2-2.8, 5.5-5.6	2.2-2.7, 6.1	Parts 3 & 4 (10/2)
3	10/4-10/10	Exam 1			
4	10/11-10/17	Parts 5-6	3.1-3.4, 4.1-4.5, 5.1-5.2, 5.5	3.1-3.6, 4.1-4.6, 5.1-5.4	Parts 5 & 6 (10/16)
5	10/18-10/24	Part 7	5.3, 6.2-6.5	5.7-5.10	Part 7 (10/23)
6	10/25-10/31	Part 8	7.3, 8.1-8.2	4.7-4.8, 7.1-7.7, 7.11-7.12	Part 8 (10/30)
7	11/1-11/7	Exam 2			
8	11/8-11/14	Part 9	8.3-8.4	7.1-7.5	Part 9 (11/13)
9	11/15-11/21	Parts 10-11	9.1-9.4, 10.1-10.5	8.1-8.8, 9.1-9.10	Parts 10 & 11 (11/20)
10	11/22-11/28	Exam 3			
11	11/29-12/5	Parts 12-13	11.1-11.5	10.1-10.6	Parts 12 & 13 (12/4)
12	12/6-12/12	Final Exam			

LAB CALENDAR – CHEM 30A FALL 2020

Week	Dates	Lab Exercise	Lab Due Date (Following Friday by 11:59 pm)
1	9/20-9/26	Introduction to Lab Safety	10/2
2	9/27-10/3	Worksheet – Measurements and Sig Figs	10/9
3	10/4-10/10	Worksheet – Chemical Nomenclature	10/16
4	10/11-10/17	Worksheet – Molecular Shapes	10/23
5	10/18-10/24	HoL – Laboratory Techniques and Measurements	10/30
6	10/25-10/31	HoL – Introduction to Chemical Compounds	11/6
7	11/1-11/7	HoL – Observations of Chemical Changes	11/13
8	11/8-11/14	HoL – Limiting Reactants	11/20
9	11/15-11/21	HoL – Solutions and Dilutions	11/27
10	11/22-11/28	THANKSGIVING HOLIDAY – NO LAB	
11	11/29-12/5	Comprehensive Lab Exam	
12	12/6-12/12	FINALS WEEK – NO LAB	

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- ionic vs. covalent.