



CHEM 130: Chemistry for Allied & Public Health

Spring 2023

Credits: 3 credit hours (lecture only)

Course Description: CHEM 130 is a one-semester lecture course, designed to introduce students in nursing and public health majors to the fundamentals of chemistry as a foundation of many central topics in allied health fields. It provides an overview of the principles of general and organic chemistry and elements of biochemistry, emphasizing medical, nutritional, and environmental aspects of the discipline. Current topics in health sciences are used to guide students in developing a solid background in chemistry that may be applied in their future careers. Critical thinking and pattern recognition are utilized with the goal of developing skills in problem solving, applying the foundations of chemistry to new concepts. Students are taught to integrate their conceptual and modeling skills with quantitative data to make predictions regarding the behavior of molecules in different environments. The course adopts a flexible pedagogical approach allowing students to combine live (in-person) instructor-guided and self-paced study formats, depending on their individual circumstances, needs, and learning styles. This course is designed for non-technical students with minimum science or math backgrounds. **Algebra is recommended.**

Instructor and Contact Information

Laura Van Dorn, Ph.D.

Koffler 415

Email: Lvandorn@arizona.edu

Office Hours

Thursday 2:00-3:00pm, in Koffler 415 and on Zoom. Or by appointment. See D2L for dates, times, and links for access.

Course Objectives

The objective of CHEM 130 is to introduce the students to the fundamentals of general, organic and biochemistry, focusing on the applications to nursing and public health.

Expected Learning Outcomes

After completing CHEM 130, students will be able to:

- Use correct dosing and the metric system in areas such as medicine, units in environmental chemistry, safety, and toxicity.
- Use trends in periodic properties to predict chemical and physical properties of the elements. Construct a Lewis structure for a covalent compound, including compounds with expanded and incomplete octet configurations.
- Compare and contrast the properties of molecules based on VSEPR and polarity.
- Recognize chemical building blocks, how structure relates to function, chemical & physical properties, reactivity recognition, and hydrogen bonding in biological systems.
- Understand how substances interact and why, such as predicting whether a reaction will

- proceed, IV medication safety, pH & pharmaceutical design, and physiological processes.
- Carry out calculations involving limiting reactants, with a focus on green chemistry and reducing hazardous & chemical waste.
 - Be able to use critical thinking to make connections and associations between chemical principles.
 - Understand how the basic material and trends in the periodic table are relevant to new applications in organic reactions, naming, and identification.
 - Have a working knowledge of organic molecules and functional groups, as well as discuss their role in chemical reactions and physical interactions.
 - Use their ability to integrate conceptual and modeling skills with quantitative data to make predictions regarding the behavior of molecules in different environments.
 - Demonstrate understanding of key concepts in biochemistry including structure-function relationships in biologically important macromolecules, and the chemical basis of food metabolism including understanding the organic reactions and conditions involved.
 - Apply general, organic, and biological chemistry to topics in public health and nursing.

These outcomes apply to students of all majors and are also part of the integrated learning outcomes of the undergraduate programs in Chemistry and Biochemistry, described at <http://assessment.arizona.edu/sci/chembio>.

Class Website

<http://d2l.arizona.edu>.

After logging in using your NetID, information including lectures, readings, assignments, and instructor announcements will be available on the course D2L site. Access to the ebook, online homework and online reading assignments is also through D2L. Your exam grades will be posted on D2L. Recorded lectures will be posted to D2L. Changes to the course schedule and other announcements will be posted on this course website. ***It is the responsibility of each student to check the course website before and after every class for important announcements and material.***

Course Schedule and Meetings

The instructor's goal is to make the class format as flexible as possible, so that all students, can tailor their learning experience according to their unique needs, circumstances, and preferences. All necessary material will be provided online.

Live sessions of the class will be held Tuesday and Thursday at 3:30-4:45 PM in Koffler 204 on regular class dates. Online students may optionally attend in-person classes.

Course Modality

This course is designed to be taught online.

Teaching Assistant

The TA is responsible for assistance with class activities and helping students with homework and exam preparation during tutor hours. The TA tutor hours will be held via Zoom. See the separate Tutor Schedule document on D2L for TA tutor hours and corresponding zoom links.

TA: Andrew Erly email: erly@email.arizona.edu

Required Text and Online Homework

Textbook

General, Organic, and Biological Chemistry: Structures of Life 6th edition by Karen Timberlake, Pearson (2019)

Instructor's note: The textbook is a useful reference and study guide, but is only one tool. Lectures will not be strictly based on the textbook and the presentation of the material in lecture will deviate from the book's outline. Students are expected to prepare for each lecture video by carefully reading the assigned sections (reading assignments) and completing the reading assessments in Mastering.

Homework

This course uses the online homework system *Modified Mastering Chemistry*, hosted by the textbook publisher (Pearson). The Mastering program is needed to complete weekly homework. If you do not have access, then you will not receive any points for reading assessments or homework. Please see Inclusive Access below.

Inclusive Access

Course materials (including all homework assignments and your electronic text) are being delivered digitally via D2L through the Inclusive Access program.

Inclusive Access materials can be reached from the CHEM 130 D2L site through the VitalSource app on D2L entitled: [HOMEWORK and TEXTBOOK \(VitalSource App\)](#). The link is found under [Content](#).

VERY IMPORTANT: Please follow the instructions provided under the VitalSource app link on D2L under Content/eText & Homework. Hint for following the instructions: BrightSpace and D2L are for all intents and purposes the same thing.

Please access the material through D2L on the first day of classes to make sure there are no issues in the delivery. Do not sign up for any trials—if you are enrolled in the class, you should have access to the materials through the VitalSource App mentioned above.

You automatically have FREE access to the course materials through January 24, 2023.

Notification to students mandated by the University: You **must** take action (even if you have not accessed the materials) to opt-out if you do not wish to pay for the materials, and choose to source the content independently. **The deadline to opt out is 9:00 pm MST, Sept 24, 2023.** If you do not opt-out and choose to retain your access, the cost of the digital course materials will appear on your Bursars account.

Instructor's note: If you opt out of Inclusive Access, you will not be able to complete any of the homework assignments and will receive zeros for all of them. This will severely impact your learning and grade for the course. **DO NOT OPT OUT WITHOUT TALKING TO THE INSTRUCTOR FIRST!!!**

Please refer to the Inclusive Access FAQs at <https://shop.arizona.edu/textbooks/Inclusive.asp> for additional information.

IMPORTANT: Course instructor is not able to provide technical support for the online homework system hosted by the publisher (Pearson's Mastering Chemistry). In case of any technical/computer issues related to the homework assignments, please contact Support at Pearson.com: <https://support.pearson.com/getsupport/s/>

After submitting an assistance request, please make sure to capture your Pearson Tech Support Case Number ID for your reference.

Pearson FAQs:

https://help.pearsoncmg.com/mastering/student/ccng/TopicsStudent/gettingstartedwithmastering_student.htm

Required Materials

Calculator

A simple **nonprogrammable** scientific calculator (one that does exponents and functions) is recommended for this course. These can be purchased from the bookstore or office supply stores for \$15 or less.

Assignments and Examinations: Schedule/Due Dates

Exams (100 points each)

Four online exams will be given on the dates noted on the schedule. The exam will be available from 7am-9pm (all times listed in the syllabus are AZ time). **Once you start the exam you have 75 minutes to complete the exam.** The lowest exam grade will be dropped.

Exam dates are as follows: February 6, February 27, April 3, April 24

If you miss an exam, it will be the score that is dropped. Please note the date of exams, as **there will be no makeups**. All exams will be open book and administered through the Quizzes tab in D2L. Any discussion or interaction with others (in person or via electronic means) during an exam will be viewed as an academic integrity violation. Distributing or uploading exam questions is prohibited and will result in an academic integrity investigation.

Final Exam (150 points)

A cumulative final will be administered online: **Wednesday, May 10 from 10:30-12:30pm**
The exam will be open from 10:30am-10:30pm, students will have two hours to complete the exam once opened.

Any discussion or interaction with others (in person or via electronic means) during an exam will be viewed as an academic integrity violation.

There is **no makeup** for the final exam. Any discussion or interaction with others (in person or via electronic means) during an exam will be viewed as an academic integrity violation.

Homework (75 points)

28 online problem sets will be assigned weekly using Mastering Chemistry. These assignments are required and late assignments will not be accepted. Homework is due Sunday at 11:59pm. Each assignment is based on approximately one lecture period. Three assignments (your lowest scores) will be dropped. Each assignment is worth 3 points.

Pre-Lecture Reading Assessments (75 points)

29 pre-lecture reading assessments will be assigned using Mastering Chemistry. These assignments are required, and no late assignments are accepted. Reading assessments are due Tuesdays and Thursdays at 10:30am. Four assignments (your lowest scores) will be dropped. Each assignment is worth 3 points.

PlayPosits (50 points)

Active engagement and participation in in-class activities is essential for effective learning. Lecture videos have embedded activities (PlayPosits) required to proceed. To earn these points, the student will answer the posed questions. Points are distributed across the semester's lectures.

Lewis Structures (25 points)

Competency with Lewis structures is necessary for chemistry foundations. An online assignment designed to familiarize the student with bonding patterns and formal charges will be due **February 19** at 11:59pm.

Final Examination

A cumulative final will be administered online via D2L: **Wednesday, May 10**. The exam will be open from 10:30am-10:30pm, students will have two hours to complete the exam once opened.

Any discussion or interaction with others (in person or via electronic means) during an exam will be viewed as an academic integrity violation.

<https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and Final Exam Schedule, <http://www.registrar.arizona.edu/schedules/finals.htm>

THERE WILL BE NO MAKE-UP FINAL EXAM. Missing the final exam due to a documented emergency (assuming satisfactory performance for the duration of the semester) will result in a grade of Incomplete (I). Missing the final exam for any other reason will result in a zero for the exam.

Grading Scale and Policies

Grades will be based on the following:

Midterm Exams (3 out of 4)	300 points
Cumulative Final	150 points
Online Homework (Mastering, 25 out of 28)	75 points
Pre-Lecture Reading Assessments (Mastering, 25 out of 29)	75 points
PlayPosits	50 points
Lewis Structures	25 points
Total	675 points

Students will receive one point per week that they attend an SI session. If you attend sessions during at least ten weeks, you will receive an extra 5 points! Some exams may include bonus points or extra credit questions, in addition to the points stated above. Additional participation points may be available, and will be announced in advance to the class. The above are the only sources of points that can be earned in the class. No requests for extra-credit assignments to improve grades will be considered, because granting such requests would be in violation of this syllabus and unfair to other students. There are no required extracurricular activities.

GUIDELINES FOR GRADE CUTOFF ADJUSTMENT:

The exams in this class will nominally be based on the University of Arizona standard A/B/C/D/E = 90.0/80.0/70.0/60.0, with an expectation that the class average should be in the 70s percentile (to satisfy the standard 90.0/80.0/70.0/60.0 per cent scheme). The exam/HW/assignment scores will not be “curved”. However, **the instructor may revise the letter grade cutoffs** (in the easing direction only) based on the final point distribution. This means that earning 90.0% of the total points will guarantee you an ‘A’, while earning slightly less may result in either a lower grade or an ‘A’, depending on where the actual cutoffs are drawn. Similar for other grades. The cutoff adjustment is at the instructor’s discretion; it is neither promised nor guaranteed. Different cutoffs may be adjusted by different amounts, while some cutoffs may be left unchanged (for example, the D/E and C/D cutoffs may be lowered, while A/B and B/C held firm – or vice versa.)

SPECIAL NOTE ABOUT “THE CURVE”: The instructor will aim to ensure that the grade distribution is aligned with the National norms by adjusting the letter grade cutoffs, as explained above. The cutoff adjustment may have an effect similar to “curving”, the distinction being that different grade cutoffs may be adjusted by different amounts, while some of the cutoffs may even be left unchanged.

SPECIAL NOTE ABOUT REQUESTS TO “DISCUSS” GRADES: The grades will be based solely on your quantitative performance in the class and are not up for subjective negotiation. No other factors in addition to those described above may be considered (including, but not limited to, the need to get a certain grade to maintain a scholarship or get into a certain professional school). Since the grades are determined by objective mathematical factors only, the instructor will not respond to requests for higher grades or to requests for meetings to discuss or negotiate grades, except if a grading error has been made. The instructor is available to review the subject matter, learning strategies, and the grading policy.

SPECIAL NOTE ABOUT POSTED LETTER GRADES: It is always disappointing to find yourself just below the cutoff for the grade you really wanted or needed. The University requires that specific grades be assigned in accordance with the grading policy and the grade cutoffs have to be drawn somewhere. Unfortunately, no matter where they are drawn, no matter how much thought goes into determining the levels, *someone* will always be at the top of any grade range – and there is nothing that can be done about it. Bumping someone from the top of a lower grade range to the next grade level will result in someone else turning up at the top of the lower range. Please do believe that faculty have every desire to accommodate reasonable request from their students – after all, we work for your success – but requests for higher grades without any basis in the syllabus only create undue stress for everyone. This class will adhere strictly to the following policy:

ONCE POSTED, THE LETTER GRADES ARE FINAL AND NOT SUBJECT TO DISCUSSION OR NEGOTIATION

Except for extremely rare cases of grade miscalculation, the instructor reserves the right not to respond to communications about posted grades.

University policy regarding grades and grading systems is available at <http://catalog.arizona.edu/policy/grades-and-grading-system>

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively. A grade of “Incomplete” can only be obtained when all but a minor portion of the course work has been satisfactorily completed and a valid argument can be made as to why an Incomplete should be awarded. For example, missing the final exam due to a documented emergency (assuming satisfactory performance for the duration of the semester) will likely result in an Incomplete. To the contrary, realizing at any point during the semester that you are in danger of a failing grade is not a valid reason for granting an Incomplete.

Re-grading of Exams

Exams are graded automatically using D2L. If a question is deemed inaccurate or unfair by the instructor, points will automatically be adjusted in D2L. If you have questions, access the key and first discuss your concerns with the TA.

Scheduled Activities

*Online Mastering is due Sunday at 11:59pm. Homework is graded on accuracy and no late work is accepted. Online Mastering Reading Assessments are due on Tuesdays and Thursdays, at 10:30am. These reading assignments are designed to ensure each student has done the required reading and is prepared for class lecture, and no late assignments are accepted.

*The **Lewis structure assignment** is due **February 19** at 11:59pm.

*Exams are administered through the Quizzes tab in D2L. The day of an exam, students will have the opportunity to complete the exam between 7am-9pm, AZ time. Once a student opens an exam, they will have 75 minutes to complete it. No early or late submissions are accepted, and no makeup exams will be administered. It is the student's responsibility to ensure they have reliable internet access during the exam.

Exam dates are as follows: February 6, February 27, April 3, April 24

Syllabus Content

Students are responsible for knowing the content of this document. Questions about the Syllabus content may appear on some of the exams. The instructor reserves the right not to respond to emails with questions explicitly addressed in the Syllabus.

Classroom attendance

- If you feel sick, or may have been in contact with someone who is infectious, please stay home. Except for seeking medical care, avoid contact with others and do not travel.
- Notify your instructors if you will be missing an in person or online class.
- Campus Health is testing for COVID-19. Please call (520) 621-9202 before you visit in person.
- Visit the UArizona COVID-19 page for regular updates.

Absence and Class Participation Policy

Students are responsible for all information and materials presented in the lecture, whether they were present or not. Participating in the course and attending/viewing lectures are vital to the learning process.

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is at <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>.

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>. In accordance with the University policy, the instructor will provide reasonable accommodations for students observing religious holidays, if the dates of observed holidays overlap with the exams in the class.

The calendar of the religious holidays recognized by the University of Arizona is posted at <https://www.registrar.arizona.edu/religiousholidays/calendar.htm>. In order to receive accommodation, the students are required to inform the instructor in writing (by email) about the potential conflict between the observed holiday(s) and the scheduled exam dates. **Accommodation requests** for all holidays that occur during the semester **must be received by the instructor during the first week of classes**. The instructor is not obligated to provide accommodation for exams missed due to holidays, if the request is not submitted during the first week of the semester.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will

be asked to leave lecture and may be reported to the Dean of Students.

Eating, drinking, and the use of cell phones in the classroom are strictly forbidden. All phones and similar devices must be powered off before the start of the lecture. Absolutely no texting in class. The instructors reserve the right to feed any offending devices to Schrödinger's cat.

Violation of any part of the classroom behavior policy may result in loss of participation points.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

Accessibility and Accommodations

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520-621-3268) to explore reasonable accommodation. All testing accommodations must be arranged through DRC.

If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate. **Notice of 3 business days is required for DRC accommodations.** Please plan accordingly.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity>

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

UA Nondiscrimination and Anti-Harassment Policy

The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Additional Resources for Students

UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>
Student Assistance and Advocacy information is available at <http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

Academic advising: If you have questions about your academic progress this semester, please reach out to your academic advisor (<https://advising.arizona.edu/advisors/major>). Contact the Advising Resource Center (<https://advising.arizona.edu/>) for all general advising questions and referral assistance. Call 520-626-8667 or email to advising@arizona.edu

Life challenges: If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The [Dean of Students Office](#) can be reached at (520) 621-2057 or DOS-deanofstudents@email.arizona.edu.

Physical and mental-health challenges: If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520) 621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

Online Courses: Please see resources at [The Office of Instruction and Assessment](#) and/or the [Arizona Online's Digital Learning](#). To review frequently asked questions relevant to Fall 2021 teaching, please see the [COVID-19 Instructor FAQs](#).

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.