CHEM 130 (online): **Chemistry for Allied & Public Health** Spring 2026

Credits: 3 credit hours (lecture only)

Course Description**:** CHEM 130 is a one-semester online 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 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

Tuesday 1:00-2:00pm, in Chem 317. Zoom appointments available. See D2L for additional 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 assessments is also through D2L. Your exam grades will be posted on D2L. Lecture core slides 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 frequently for important announcements and material.***

Course Schedule and Class 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.

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 either in person or via Zoom. See the separate Tutor Schedule document on D2L for TA tutor hours and corresponding zoom links.

TA: Devin Pontigon email: dpontigon@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: Students are expected to prepare for each lecture by carefully reading the assigned sections found in the schedule (reading assignments) before watching the videos and completing the corresponding reading assessments (RA) in Aktiv.

Homework

This course uses the online homework system *Aktiv Chemistry*. The Aktiv program is needed to complete weekly homework, as well as reading assessments. 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 / Pay One Price program. Inclusive Access materials can be reached from the CHEM 130 D2L site through the VitalSource app on D2L is entitled: HOMEWORK and TEXTBOOK (VitalSource App). The link to this app 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 throw the VitalSource App mentioned above.

You automatically have FREE access to the course materials through **January 27, 2026.**

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, Jan 27, 2026.** 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 Aktiv Chemistry. *In case of any technical/computer issues related to the homework assignments, please contact Support at **(646)798-5323** or go to www.aktiv.com/support*

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 in D2L 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 9, March 2, March 30, April 20

If you miss an exam, it will be recorded as a zero. 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. IP addresses are tracked and recorded. All exam material is copy protected. Distributing or uploading course material or exam questions is prohibited and will result in an academic integrity investigation.

Homework (75 points)

26 online problem sets will be assigned weekly using Aktiv 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. One assignment (your lowest score) will be dropped. Each assignment is worth 3 points.

Pre-Lecture Reading Assessments (75 points)

26 pre-lecture reading assessments will be assigned using Aktiv Chemistry. These assignments are required, and no late assignments are accepted. Reading Assessments are due before each class, Tuesday and Thursday at 10:30am. One assignment (your lowest score) will be dropped. Each assignment is worth 3 points.

Participation Quiz (45 points)

16 participation quizzes will be administered weekly throughout the semester. These will help you determine your competency with core concepts. Your lowest score will be dropped. Each assessment 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 will be due **February 24 at 11:59pm.**

Final Exam (150 points)

A cumulative final will be administered online: **Monday May 11 from 7:00am-9:00pm**
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. Missed exams will be recorded as zero.

Grading Scale and Policies

Grades will be based on the following:

Midterm Exams (3 of 4)	300 points
Cumulative Final	150 points
Online Homework (Mastering, 25 out of 26)	75 points
Pre-Lecture Reading Assessments (Aktiv, 25 out of 26)	75 points
PlayPosits	50 points
Lewis Structures	25 points
Participation Activities (15 of 16)	45 points
Total	695 points

Some exams or quizzes may include bonus points or extra credit questions. 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 = 90.00/80.00/70.00/60.00, with an expectation that the class average should be in the 70s percentile (to satisfy the standard 90.00/80.00/70.00/60.00 per cent scheme). **The instructor may revise letter grade cutoffs** (in the easing direction only) based on the final point distribution. This means that earning 90.00% 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 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. Exams may be adjusted similarly, where points may be added across the board to bring the class average in alignment. The above adjustments are intended to ensure a fair and balanced final grade distribution, regardless of the difficulty of the exams.

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.

Scheduled Activities

*Online Aktiv Homework is due Sunday at 11:59pm. Homework is graded on accuracy and no late work is accepted. Online Aktiv Reading Assessments are due on lecture days, Tuesday and Thursday, 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 25** at 11:59pm.

Exam dates are as follows: February 9, March 2, March 30, April 20

Exam keys and reviews: The midterm quizzes and final exams are assessment instruments, rather than study tools. Students are advised to review the homework assignments and worksheets (which *are* intended as study tools) in preparation for each exam. All exams in this class are confidential and copy-protected.

***** A cumulative final will be administered online via D2L: **Monday May 11 from 7:00am-9:00pm** 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.

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, stay home. Except for seeking medical care, avoid contact with others and do not travel.

Notify your instructor(s) if you will be missing a course meeting or an assignment deadline.

Non-attendance for any reason does **not** guarantee an automatic extension of due date or rescheduling of examinations/assessments.

- Please communicate and coordinate any request directly with your instructor.

If you must miss the equivalent of more than one week of class, you should contact the Dean of Students Office DOS-deanofstudents@email.arizona.edu to share documentation about the challenges you are facing.

- Voluntary, free, and convenient COVID-19 testing is available for students on Main Campus.
- If you test positive for COVID-19 and you are participating in on-campus activities, you must report your results to Campus Health. To learn more about the process for reporting a positive test, visit the Case Notification Protocol.
- COVID-19 vaccine is available for all students at Campus Health.
- 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 or laptops for material other than course content (such as viewing a periodic table) in the classroom are strictly forbidden. Remember, your devices are visible to other students and your screens are a distraction. 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. Be aware that accommodations must be requested through DRC each semester for each course.

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.

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

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.

Safety on Campus and in the Classroom: For a list of emergency procedures for all types of incidents, please visit the website of the Critical Incident Response Team (CIRT): https://cirt.arizona.edu/case-emergency/overview
Also watch the video available at
https://arizona.sabacloud.com/Saba/Web_spf/NA7P1PRD161/common/learningeventdetail/crtfy000000000003560

University-wide Policies Link: Links to the following UA policies are provided here, http://catalog.arizona.edu/syllabus-policies:

- Absence and Class Participation Policies
- Threatening Behavior Policy
- Accessibility and Accommodations Policy
- Code of Academic Integrity
- Nondiscrimination and Anti-Harassment Policy
- Subject to Change Statement

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.

Bonus for Reading the Syllabus

If you email me a chemistry meme (and explain why you think it's funny), you'll receive one extra credit point.