

PHYSICAL CHEMISTRY I

CHEM 3423 SEC 001 SPRING SEMESTER 2024

Instructor: Dr. Ulrich H.E. Hansmann

E-mail: uhansmann@ou.edu (Include "CHEM3423" in the subject-line of your email and address me as "Dr. Hansmann". Let me know how you would like to be addressed in my reply. Emails will only be answered weekdays between 9AM-5PM.)

Office: Stephenson Life Sciences Research Center 3040

Lectures: *MWF 10:30 am – 11:20 am, Dale Hall 0128*

Office Hours: *M 11:45 am – 1:00 pm (SLSRC 3040)*

***** Office hours are NOT for solving homework problems or tutoring *****

Online Course Management: <http://canvas.ou.edu>

Online Course Materials: <http://www.hansmann-lab.com/cbpc/hansmann/3423s.php>

Course Description: Thermodynamics, Chemical and Phase Equilibrium, Chemical Kinetics

Required Textbook: "Physical Chemistry", Fourth Edition, by Laidler, Meiser, and Sanctuary

Reference Textbook: "Physical Chemistry", Ninth Edition, by Atkins and de Paula

Lecture Schedule (tentative):

Chapter 1: The Nature of Physical Chemistry and the Kinetic Theory of Gases.

Jan. 17, 19, 22 (WS), 24, 26, 29 (WS), 31, Feb. 2

Chapter 2: The First Law of Thermodynamics.

Feb. 5 (WS), 7, 9, 12 (WS), 14, 16

Chapter 3: The Second and Third Laws of Thermodynamics.

Feb. 19 (WS), 21, 23, 26 (WS), 28, March 1, 4

Exam 1: Chapter 1 – 3 (March 6, Wednesday, 10:30am-11:20 am; Dale Hall 128)

Chapter 4: Chemical Equilibrium.

March 8, 11 (WS), 13, 15, 25 (WS), 27

Chapter 5: Phases

March 29, April 1 (WS)

Chapter 6: Phase Equilibrium.

April 3, 5, 7 (WS), 8

Exam 2: Chapter 4, 5, 6 (April 10, Wednesday, 10:30am – 11:20 am; Dale Hall 128)

Chapter 9: Chemical kinetics I.

April 12, 15, 17, 19, 22 (WS), 24, 26

Chapter 10: Chemical kinetics II.

April 29 (WS), May 1, 3

Final: Chapter 1, 2, 3, 4, 5, 6, 9, 10 (Tuesday, May 7, 8:00 – 10:00 am; Dale 0128)

Course Grading Scheme:

1. Homework Assignments (0%): Problem sets will be assigned weekly on the course web-site. It is essential that you work all of these problems and understand the course material at a satisfactory level. The problems encountered in the homework assignments will be of comparable difficulty as the problems encountered in the quizzes and examinations. On occasion, a problem from homework assignments may be used in exams with minor numerical changes. Homework assignments will **not** be corrected, discussed in class, or graded, but *solutions to the homework problems will be posted on the course web-site (not Canvas).*

2. Worksheets (24%): A 10-minute worksheet will be handed out on most Mondays at the beginning of the class. Unless instructed otherwise, you are only allowed to use the information provided on the quiz paper. You must bring your own (non-programmable) calculator. **I encourage you to discuss the problems in small groups, but you have to turn in the sheets individually, and the sheets will be graded individually.** Only the top EIGHT out of ten to twelve worksheets will be used to compute the final score, with each worksheet contributing **3%** to the final score

2. Examinations (36%): Two midterm examinations of 50 min length will be given, each counting 18% to the final grade. **NO MAKE-UP EXAMINATIONS WILL BE GIVEN.** You are only allowed to use the information provided on the examination paper. You must bring your own (non-programmable) calculator. No smart phone, smart watch or similar instruments are allowed during exam.

Date	Chapters
6 Mar	1,2,3
10 Apr	4,5,6,9,10

3. Final Exam Preparation Period. Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's Final Exam Preparation Period policy (<https://apps.hr.ou.edu/FacultyHandbook#4.10>).

4. Final Exam (40%): The final examination will be given on **Tuesday May 7, 8:00 am – 10:00 am**. It will be a comprehensive **two-hour** examination covering all of the course materials. **NO MAKE-UP FINAL EXAMINATION WILL BE GIVEN.** You are only allowed to use the information provided on the examination paper. You must bring your own (non-programmable) calculator. No smart phone, smart watch or similar instruments are allowed during exam.

5. Final Grade: The minimum final score for a GUARANTEE 'A' is **90%**; 'B' is **77%**; 'C' is **60%**; 'D' is **50%**. **The grade will be 'F' if the final score is below 50%.** According to the Provost office should students not completing 70% or more of a course they have to be issued a grade/mark of "I." The 70% refer to attendance to class and/or exams, i.e., if you are excused for more than 30% of class and/or exams you will receive an "I".

6. Grading Errors and Extra Credits: All grading mistakes have to be resolved within **one** week after the examinations are returned to the students. Grading mistakes found in the final examination have to be resolved immediately with the instructor. *Solutions to all examinations will be posted on the web within a week after they are graded.* No grade changes will be made at

the end of term on the basis of a student wishing to obtain a higher grade than was earned by point total. *No extra credit will be given.*

University Policies:

Copyright Syllabus Statement for In-Person or Online Courses: Sessions of this course may be recorded or live-streamed. These recordings are the intellectual property of the individual faculty member and may not be shared or reproduced without the explicit, written consent of the faculty member. In addition, privacy rights of others such as students, guest lecturers, and providers of copyrighted material displayed in the recording may be of concern. *Students may not share any course recordings with individuals not enrolled in the class or upload them to any other online environment.*

Codes and Policies of Behavior Policy: Each student has to be acquainted with the University codes, policies, and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination based on physical handicap.

Academic Integrity: Cheating is strictly prohibited at the University of Oklahoma, because it devalues the degree you are working hard to get. As a member of the OU community it is your responsibility to protect your educational investment by knowing and following the rules. For specific definitions on what constitutes cheating, review the Student's Guide to Academic Integrity at http://integrity.ou.edu/students_guide.html. In order to be successful in this class, all work on exams and quizzes must be yours, and yours alone. *You may not solicit or receive outside help.* On examinations and quizzes you will never be permitted to use your notes, textbooks, ect. *(I utilize plagiarism checkers and expect students to adhere to the academic integrity proscribed for OU students).* Should you see someone else engaging in this behavior, I encourage you to report it to myself or directly to the Office of Academic Integrity Programs. That student is devaluing not only their degree, but yours, too. Students engaging in academic misconduct (including cheating, plagiarism, and any other action that may improperly affect evaluation) will be subject to sanctions in accordance with the Norman Campus Academic Misconduct Code. *I will assign an "F" for the course and may recommend expulsion from the University for such violations*

Reasonable Accommodation Policy: The Accessibility and Disability Resource Center is committed to supporting students with disabilities to ensure that they are able to enjoy equal access to all components of their education. This includes your academics, housing, and community events. If you are experiencing a disability, a mental/medical health condition that has a significant impact on one or more life functions, you can receive accommodations to provide equal access. Possible disabilities include, but are not limited to, learning disabilities, AD(H)D, mental health, and chronic health. Additionally, we support students with temporary medical conditions (broken wrist, shoulder surgery, etc.) and pregnancy. To discuss potential accommodations, please contact the ADRC at 730 College Avenue, (ph.) 405.325.3852, or adrc@ou.edu.

Religious Observance: It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required classwork that may fall on religious holidays. Students who plan to observe a religious holiday should notify me as soon as possible in order to make appropriate arrangements for classwork or taking of examinations.

Title IX Resources and Reporting Requirement: Anyone who has been impacted by gender-based violence, including dating violence, domestic violence, stalking, harassment, and sexual assault, deserves access to resources so that they are supported personally and academically. The University of Oklahoma is committed to offering resources to those impacted, including: speaking with someone confidentially about your options, medical attention, counseling, reporting, academic support, and safety plans. If you would like to speak with someone confidentially, please contact [OU Advocates](#) (available 24/7 at 405-615-0013) or another confidential resource (see [“Can I make an anonymous report?”](#)). You may also choose to report gender-based violence and discrimination through other means, including by contacting the [Institutional Equity Office](#) (ieo@ou.edu, 405-325-3546) or police (911). Because the University of Oklahoma is committed to the safety of you and other students, I, as well as other faculty, Graduate Assistants, and Teaching Assistants, are mandatory reporters. This means that we are obligated to report gender-based violence that has been disclosed to us to the Institutional Equity Office. This includes disclosures that occur in: class discussion, writing assignments, discussion boards, emails and during Student/Office Hours. For more information, please visit the [Institutional Equity Office](#)

Adjustments for Pregnancy/Childbirth Related Issues: Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me or the Accessibility and Disability Resource Center at 405/325-3852 as soon as possible. Also, see the Institutional Equity Office [FAQ on Pregnant and Parenting Students’ Rights](#) for answers to commonly asked questions.

Emergency Protocol: During an emergency, there are official university procedures that will maximize your safety:

Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather *1. LOOK* for severe weather refuge location maps located inside most OU buildings near the entrances *2. SEEK* refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building. *3. GO* to the building’s severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows. *4. GET IN, GET DOWN, COVER UP.* *5. WAIT* for official notice to resume normal activities.

[Link to Severe Weather Refuge Areas , Severe Weather Preparedness - Video](#)

Armed Subject/Campus Intruder: If you receive an OU Alert to shelter-in-place due to an active shooter or armed intruder situation or you hear what you perceive to be gunshots: *1. GET OUT:* If you believe you can get out of the area WITHOUT encountering the armed individual, move quickly towards the nearest building exit, move away from the building, and call 911. *2. HIDE OUT:* If you cannot flee, move to an area that can be locked or barricaded, turn off lights, silence devices, spread out, and formulate a plan of attack if the shooter enters the room. *3. TAKE OUT:* As a last resort fight to defend yourself. *For more information, visit <http://www.ou.edu/emergencypreparedness.html>*

Fire Alarm/General Emergency: If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates: 1. *LEAVE* the building. Do not use the elevators. 2. *KNOW* at least two building exits 3. *ASSIST* those that may need help 4. *PROCEED* to the emergency assembly area 5 *ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues.* 6. *WAIT* for official notice before attempting to re-enter the building.

Mental Health Support Services: If you are experiencing any mental health issues that are impacting your academic performance, counseling is available at the University Counseling Center (UCC). The Center is located on the second floor of the Goddard Health Center, at 620 Elm Rm. 201, Norman, OK 73019. To schedule an appointment call (405) 325-2911. For more information please visit <http://www.ou.edu/ucc>.

Disclaimer: I reserve the right to change by addition and/or subtraction any and/or all materials contained in this syllabus. This includes, but is not limited to, course content, assignments, scheduled dates, and fraction(s) of the final grade assigned to individual items within the course. Although your attendance at the lecture is not required, you are responsible for any announcements made in class, including changes in the examination schedule, course content, assignments, scheduled dates, and fraction(s) of the grade assigned to individual items within the course. If changes become necessary, I will announce them as early as possible.

Last update: Jan. 12, 2024