

Fall 2023

CHM 341: Elementary Physical Chemistry

Hongwu Xu

Chemistry 341 Online (#89042 & #89043)

General Course Information (3 credit)

Instructor:

Prof. Hongwu Xu, PSB 261; Phone: 602-543-3198; Hongwu.Xu@asu.edu

****All emails must include CHM341 in the subject line to ensure they are not missed****

Office Hours: Tuesday & Thursday 1:30-3:00 pm MST via Zoom:

<https://asu.zoom.us/j/86582533399> and upon request via email

Teaching Assistant: TBA

Textbook: *Elements of Physical Chemistry, 7th ed*, Peter Atkins & Julio de Paula, Oxford University Press; **ISBN:** 978-0-19-879670-1

Course Description:

Physical Chemistry is a diverse and fascinating branch of science that addresses the “HOW?” of chemical reactions and processes. This course introduces fundamental concepts of physical chemistry including topics on the nature of ideal and real gases, heat and work, the laws of thermodynamics, the nature and interactions of solid, liquid and gas, phase boundaries, phase transformations, chemical and phase equilibria, the thermodynamics of mixtures and solutions, chemical kinetics, and quantum mechanics. For students in premedical, biological, and educational curricula.

Prerequisite

Prerequisite(s): CHM 114, 116, or 118 with C or better; CHM 231, 233, or 333 with C or better; MAT 251, 265, or 270 with C or better; PHY 101, 112, or 131 with C or better; Credit is allowed for only BCH 341 or CHM 341 OR Visiting University Student.

Course Format:

It is important to watch lecture videos and to study actively. Weekly reading assignments from the textbook will be assigned. Homework problems will be posted (total of 7, #7 for extra credits), and correct solutions submitted by the due dates will receive a total of 120 points (20 points each) towards the total score (420 points). Each student is responsible for his or her own work, but you are encouraged to work on the analysis as a group. Solutions will be posted right after the due date/time, implying that no late homework will be accepted. Understanding the homework materials and being able to solve them is essential to performing well on the exams (total of 6). Attend lectures and make sure that you understand the concepts. Check the derivation of equations at your own pace. Importantly, begin the homework assignments as soon as they are posted so that you can ask questions if you do not know how to set up problems. If you are falling behind, **seek help immediately** from the instructor or teaching assistant.

Attendance:

- All lectures are recorded and posted online for asynchronous viewing. Attendance at lectures will NOT BE monitored. It is the student's responsibility to ensure that they have watched each

lecture, and read the relevant sections of the textbook. In the event that class must be missed due to illness or family emergency, students are expected to notify the Professor through email prior to class.

- Information on excused absences related to religious observances/practices that are in accordance with [ACD 304-04](#) "Accommodations for Religious Practices."
- Information on excused absences related to university sanctioned events and activities that are in accord with [ACD 304-02](#) "Missed Classes Due to University-Sanctioned Activities."

Grading Policy:

The course grade will be based on all homework assignments (20 points each), exams (50 points each). Homework assignments are to be uploaded at their assigned times unless special arrangements are made in advance. Grading problems need to be addressed within a week of returning homework, or exam. Grades will not be changed after that deadline.

Exam Procedures:

1. Every effort should be made to prepare for and to take the examinations as scheduled. This implies that you should work consistently throughout the semester.
2. Calculators are allowed, but not electronic devices that have communication capabilities (cell phones and computers).
3. A score of zero will be entered automatically for missed examinations. If you are prevented by some verifiable serious turn of events from taking any examination at the scheduled time, it is your responsibility to contact the instructor.
4. KEEP your returned examinations and homework papers. In the event of any questions relating to your grade, your papers are likely needed to resolve them. Your TA or instructor will grade and return your graded homework assignments and exams.
5. If, after examining your returned homework paper or exam, you feel that you have been unfairly graded, you should request a meeting with the TA/instructor within three weekdays of the return to discuss.

Final grades:

Exam 1	50 points
Exam 2	50 points
Exam 4	50 points
Exam 3	50 points
Exam 5	50 points
Exam 6	50 points
6 Homeworks (20 points each)	120 points
Total	420 points

Note: Homework #7: Extra Credit (20 points)

Grades will be assigned on a standard letter system with plusses and minuses.

A+	97% of total possible score and above
A	94 to 96%
A-	90 to 93%
B+	87 to 89%
B	84 to 86%
B-	80 to 83%
C+	77 to 79%
C	70 to 76%
D	60 to 69%
E	59 or lower

Student Conduct and Academic Integrity

Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>. Additionally, required behavior standards are listed in the [Student Code of Conduct and Student Disciplinary Procedures](#), [Computer, Internet, and Electronic Communications policy](#), and outlined by the [Office of Student Rights & Responsibilities](#). Anyone in violation of these policies is subject to sanctions.

[Students are entitled to receive instruction free from interference](#) by other members of the class. An instructor may withdraw a student from the course when the student's behavior disrupts the educational process per [Instructor Withdrawal of a Student for Disruptive Classroom Behavior](#).

The Office of Student Rights and Responsibilities accepts [incident reports](#) from students, faculty, staff, or other persons who believe that a student or a student organization may have violated the Student Code of Conduct.

Academic Integrity and Ethics

All contents of course materials, including lectures, exercises, exams, etc. are under copyright protection. In accordance with [ACD 304-06 Commercial Note Taking Services](#), students may NOT distribute, post, sell, or buy any notes, exercises, quizzes or exams without the instructors' written permission.

ASU Policy on Academic Dishonesty:

"In the 'Student Academic Integrity Policy' manual, ASU defines *plagiarism* [as], 'using another's words, ideas, materials or work without properly acknowledging and documenting the source'. Students are responsible for knowing the rules governing the use of another person(s) work or materials and for acknowledging and documenting the source appropriately. You can find this definition at:

http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm#definitions.

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act as amended (ADAAA) of 2008, professional disability specialists and support staff at the Student Accessibility and Inclusive Learning Services (SAILS) center facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities.

[Qualified students with disabilities may be eligible to receive academic support services and accommodations](#). Eligibility is based on qualifying disability documentation and assessment of individual need. Students who believe they have a current and essential need for disability accommodations are [responsible for requesting accommodations and providing qualifying documentation](#) to the SAILS. Every effort is made to provide reasonable accommodations for qualified students with disabilities.

Qualified students who wish to request an accommodation for a disability should contact SAILS by going to <https://eoss.asu.edu/accessibility>, calling (480) 965-1234 or emailing Student.Accessibility@asu.edu. To speak with a specific office, please use the following information:

ASU Online and Downtown Phoenix Campus

University Center Building, Suite 160
602-496-4321 (Voice)

Polytechnic Campus

480-727-1165 (Voice)

West Campus

University Center Building (UCB), Room 130
602-543-8145 (Voice)

Tempe Campus

480-965-1234 (Voice)

Title IX

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling> is available if you wish to discuss any concerns confidentially and privately. ASU online students may access 360 Life Services, <https://goto.asuonline.asu.edu/success/online-resources.html>.

Policy against threatening behavior:

Harassment against myself or other students will not be tolerated. ASU has a policy against threatening behavior (Student Services Manual [SSM 104-02](#) "Handling Disruptive, Threatening or Violent Individuals on Campus"):

All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

CANVAS:

The course will use *Canvas* for posting course information. Canvas works both as a course website and as an interactive forum. Log in to Canvas regularly to view announcements for the course. This syllabus is posted under Course Information.

Prohibition of Commercial Note Taking Services

In accordance with [ACD 304-06 Commercial Note Taking Services](#), written permission must be secured from the official instructor of the class in order to sell the instructor's oral communication in the form of notes. Notes must have the notetaker's name as well as the instructor's name, the course number, and the date.

Grade Appeals

Grade disputes must first be addressed by discussing the situation with the instructor. If the dispute is not resolved with the instructor, the student may appeal to the department chair per the [University Policy for Student Appeal Procedures on Grades](#).

Contract:

The course syllabus is a “contract” between student and instructor. We will do our best to uphold our end of the deal, and we expect you to behave in a mature, responsible and ethical fashion as outlined in this document. **If you do not accept the rules for conduct in this class, please drop the course now.**

Technology Requirements:

ASU Sync classes can be live streamed anywhere with the proper technology. We encourage you to use a PC or Apple laptop or desktop equipped with a built-in or standalone webcam. You will need an internet connection that can effectively stream live broadcasts. It is recommended that your internet download speed is at least 5.0 mbps. You can use this tool to test your current connection.

We do not recommend the use of iPads or Chromebooks for ASU Sync as these devices do not work for class exams that may be proctored remotely.

If you are not able to personally finance the equipment you need to attend class via ASU Sync, ASU has a laptop and WiFi hotspot checkout program available through ASU Library.

Who is eligible?

- Any currently enrolled ASU student is eligible to checkout a laptop. The current availability of laptops can be found [here](#).
- Borrowing and returning laptop rules
- Laptops are lent on a first-come, first-serve basis, and cannot be reserved in advance. They can be returned at any time but will be due at the conclusion of the semester.
- Rentals are limited to one laptop per student.
- Laptops are available for checkout at the following libraries on all four campuses.
([Please check online for current library hours](#))
 - Downtown Phoenix campus Library
 - Polytechnic campus Library
 - Tempe: Hayden and Noble Libraries
 - West campus: Fletcher Library
- Return laptops to any ASU Library Information Desk (not at the drop box or other location)
- [Refer to ASU Library Computer Use Policy and ASU Computer, Internet, and Electronic Communications Policy.](#)
- Borrowers are responsible for loss, damage, and theft of the laptop while in their possession. Borrowers should verify the condition of the laptop at the time of check-out and upon check-in.

Syllabus Disclaimer

The syllabus is a statement of intent and serves as an implicit agreement between the instructor and the student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. Please remember to check your ASU email and the course site often.

CHM 341 Online Course Schedule

Date	Lect #	Topic	Reading
Aug 17-18	1	The Properties of Gases	Focus 1A
	2	The Properties of Gases	Focus 1B
Aug 21-25	3	The Properties of Gases	Focus 1C
	4	The First Law of Thermodynamics	Focus 2A-2B
	5	The First Law of Thermodynamics	Focus 2B-2C
	6	The First Law of Thermodynamics	Focus 2D
	7	The First Law of Thermodynamics	Focus 2E
Aug 23	Homework 1 (Focus 1)		
Aug 27	EXAM 1 (Focus 1)		
Aug 28-Sept 1	8	The First Law of Thermodynamics	Focus 2F
	9	The First Law of Thermodynamics	Focus 2F
	10	The Second Law of Thermodynamics	Focus 3A
	11-12	The Second Law of Thermodynamics	Focus 3B
	13-14	The Second Law of Thermodynamics	Focus 3C
Aug 30	Homework 2 (Focus 2)		
Sept 3	EXAM 2 (Focus 2)		
Sept 4	Class excused – Labor Day		
Sept 5-8	15	The Second Law of Thermodynamics	Focus 3D
	16	Physical Transformations	Focus 4A
	17-18	Physical Transformations	Focus 4B
	19	Physical Transformations	Focus 4C
Sept 6	Homework 3 (Focus 3)		
Sept 10	EXAM 3 (Focus 3)		
Sept 11-15	20	Physical Transformations	Focus 4D
	21	Physical Transformations	Focus 4E
	22	Physical Transformations	Focus 4F
	23	Chemical Change	Focus 5A
	24	Chemical Change	Focus 5B
	25	Chemical Change	Focus 5C
Sept 13	Homework 4 (Focus 4)		
Sept 17	EXAM 4 (Focus 4)		
Sept 18-22	26	Chemical Change	Focus 5D
	27	Chemical Change	Focus 5E
	28	Chemical Change	Focus 5F
	29	Chemical Kinetics	Focus 6A
	30	Chemical Kinetics	Focus 6B
	31	Chemical Kinetics	Focus 6C
Sept 20	Homework 5 (Focus 5)		
Sept 24	EXAM 5 (Focus 5)		
Sept 25-29	32	Chemical Kinetics	Focus 6D
	33	Chemical Kinetics	Focus 6E
	34	Chemical Kinetics	Focus 6F
	35	Chemical Kinetics	Focus 6G
	36	Chemical Kinetics	Focus 6H
	37	Chemical Kinetics	Focus 6I
Oct 1	Homework 6 (Focus 6)		
Oct 2-4	38	Quantum Theory	Focus 7A
	39	Quantum Theory	Focus 7B
	40	Quantum Theory	Focus 7C
Oct 5	EXAM 6 (Focus 6)		
Oct 6	Homework 7 (Focus 7) (extra credit)		