

21:160:345 Physical Chemistry I

Class Time: 9/6/22 – 12/23/22 Monday and Thursday 1:00 PM - 2:20 PM

- Nov 22 Tuesday – Thursday classes
- Nov 24 Thursday – Thanksgiving Recess, no class

Location: Smith Hall 244

Map: <https://maps.rutgers.edu/#/?click=true&lat=40.740752&lng=-74.175870&selected=7223&sidebar=true&zoom=19>

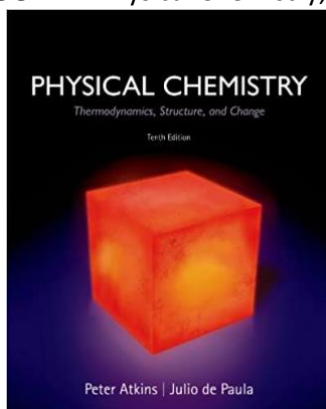
Instructor: Prof. Fei Zhang, Ph.D.

Email: fei.zhang@rutgers.edu

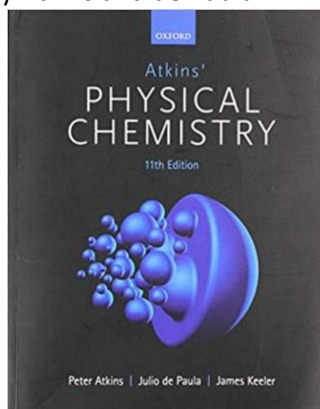
Office: Olson Hall 334

Office Hour: Thursday 9:00 AM – 10:30 AM (please email me before attending the office hour to confirm your time slot)

Textbook: Physical Chemistry, 10th or 11th ed., by Atkins and de Paula.



10th ed.



11th ed.

Course Guide

- Log in to Canvas using your NetID: <https://canvas.rutgers.edu/>. Check the course site weekly. Lecture materials will be also posted under “Modules”.
- The lecture materials only provide guidelines for the classes. We will have “e-chalk talks” to complete the notes.

Important Dates

2022 Fall Academic Calendar (Sch. 21)

<https://registrar.newark.rutgers.edu/office-registrar-fall-academic-calendar>

2022 Fall Final Exam Schedule

<https://sites.rutgers.edu/newark-oas/wp-content/uploads/sites/675/2022/06/Final-Exam-Schedule-Fall-2022-Final.pdf>

Add/Drop Period

9/6/22 – 9/15/22

Dropping with "W" Grade

9/16/22 – 10/31/22

Course Schedule

Lecture	Date	Topics
1	Thu SEP 08	Introduction
2	Mon SEP 12	Chapter 1: The Properties of Gases
3	Thu SEP 15	Chapter 1
4	Mon SEP 19	Chapter 1
5	Thu SEP 22	Chapter 1
6	Mon SEP 26	Chapter 2: The First Law
7	Thu SEP 29	Chapter 2
8	Mon OCT 03	Chapter 2
9	Thu OCT 06	Chapter 2
10	Mon OCT 10	Chapter 3: The Second and Third Laws
11	Thu OCT 13	Chapter 3
12	Mon OCT 17	Chapter 3
13	Thu OCT 20	Chapter 3
	Mon OCT 24	Exam 1: Chapters 1-3
14	Thu OCT 27	Exam 1 review
15	Mon OCT 31	Chapter 4: Physical Transformations of Pure Substances
16	Thu NOV 03	Chapter 4
17	Mon NOV 07	Chapter 5: Simple Mixtures
18	Thu NOV 10	Chapter 5
19	Mon NOV 14	Chapter 5
20	Thu NOV 17	Chapter 6: Chemical Equilibrium
21	Mon NOV 21	Chapter 6
22	Tue NOV 22	Chapter 6
	Mon DEC 28	Exam 2: Chapters 4-6
23	Thu DEC 01	Exam 2 review
24	Mon DEC 05	Chapter 20 (10 th ed) /17 (11 th ed): Chemical Kinetics
25	Thu DEC 08	Chapter 20/17
26	Mon DEC 12	Chapter 20/17 and Review
	Tue DEC 20	Comprehensive Final Exam

Homework

The text has three types of problems: discussion questions (D), exercises (E), and problems (P). In the table below, the first assigned problem is "E3a" which corresponds to EXERCISE 1A.3(a) in the 10th edition text and E1A.3(a) in the 11th edition. "P7" in the first line below, refers to PROBLEM 1A.7 (10th ed.) or P1A.7 (11th ed.) in the text.

Chapter	11 th Edition	10 th Edition
1	Ch 1A: E4a, E6a, P9 Ch 1B: E3a Ch 1C: D1, E1a, E7a (part i), P13	Ch 1A: E3a, E8a, P7 Ch 1B: E3a Ch 1C: D1, E1a, E7a (part i), P11
2	Ch 2A: D1, E2a, E2b, E4a, E5a Ch 2B: E1a, E3a, E4a, P5 Ch 2C: D3, E1a, E3a, E4a Ch 2D: E2a, E4a, P1 Ch 2E: D2, E3a	Ch 2A: D1, E2a, E2b, E4a, E5a Ch 2B: E1a, E3a, P3 Ch 2C: D2, E1a, E3b, E4a Ch 2D: E2a, E4a, P1 Ch 2E: D2, E3a
3	Ch 3A: D1, E3a, E4a Ch 3B: E2a, E4a, E7a, P3	Ch 3A: D1, E5a, E7a, E10a, E11a, E12a, P7 Ch 3B: E2a

	Ch 3C: E2a Ch 3D: E3b Ch 3E: E1a, E4a, E6a, P1, P5	Ch 3C: E3a Ch 3D: E1a, E3a, E4a, P1, P5 Ch 3E (no section 3E in 10th ed.)
4	Ch 4A: E1a, E3a Ch 4B: D1, E3a, E5a, E6a, E13a, P10	Ch 4A: E1a, E3a Ch 4B: D1, E3a, E5a, E6a, E12a, P9
5	Ch 5A: E3a, E4a, E5a, E8a Ch 5B: E7a, E9a, P7 Ch 5D: (none for 11th ed.) Ch 5E: (none for 11th ed.) Ch 5F: D1, D4, E2a, E5a, E7a	Ch 5A: E3a, E4a, E6a, E9a Ch 5B: E6a, E8a, E9a, Ch 5D: (none for 10th ed.) Ch 5E: D1, E1a Ch 5F: D1, E1a, E3a
6	Ch 6A: D2, E1a, E9a, E13a Ch 6B: E3a	Ch 6A: D2, E1a, E4a, E10a Ch 6B: E1a
20/17	Ch 17A: E3a, E5a, P1 Ch 17B: E5a, P3 Ch 17D: E2a, P2 Ch 17E: D1, E1a, P5	Ch 20A: E2a, E4a, P2 Ch 20B: E4a, P3 Ch 20D: E1a, P2 Ch 20E: D1, E1b, P4

Homework will not be collected. The 10th edition solutions manual can be viewed online (<https://keelee.rl.talis.com/items/24257760-123A-E086-2E43-B7206B810D36.html>).

The numerical answers (not complete worked solutions) to 11th ed. problems are available online (https://oup-arc.com/access/pchem11e-student-resources#tag_student-solutions-manual). The RN Bookstore has the textbook and the solutions manual for the 11th ed.

Grading

Class Participation	10%
Exam 1 (Ch 1-3)	25%
Exam 2 (Ch 4-6)	25%
Comprehensive Final Exam	40%

Approximate Grading Boundaries:

A = 85.0-100%; B+ = 80.0-84.99%; B = 70.0-79.99%; C+ = 65.0-69.99%; C = 55.0-64.99%; D = 50.0-54.99%; F = 0-49.99%.

- All Exams are proctored in-person exams. The details will be released in classes.
- No make-up exam. The score on the final exam can be used to replace the lowest score of Exam 1 or 2 (or Exam 1 or 2 missed for any reason).

Academic Integrity

As an academic community dedicated to the creation, dissemination, and application of knowledge, Rutgers University is committed to fostering an intellectual and ethical environment based on the principles of academic integrity. Academic integrity is essential to the success of the University's educational and research missions, and violations of academic integrity constitute serious offenses against the entire academic community. The entire Academic Integrity Policy can be found here:

<http://academicintegrity.rutgers.edu/academic-integrity-policy/>

Accommodation and Support

Rutgers University Newark (RU-N) is committed to the creation of an inclusive and safe learning environment for all students. RU-N has identified the following resources to further the mission of access and support:

- **Students with Disabilities:** Rutgers University welcomes students with disabilities into all

of the University's educational programs. The Office of Disability Services (ODS) is responsible for the determination of appropriate accommodations for students who encounter barriers due to disability. In order to receive consideration for reasonable accommodations, a student with a disability must contact ODS, register, have an initial appointment, and provide documentation. Once a student has completed the ODS process (registration, initial appointment, and documentation submitted) and reasonable accommodations are determined to be necessary and appropriate, a Letter of Accommodation (LOA) will be provided to the student. The student must give the LOA to each course instructor, followed by a discussion with the instructor. This should be completed as early in the semester as possible as accommodations are not retroactive. More information can be found at ods.rutgers.edu. Contact ODS: (973) 353-5375 or ods@newark.rutgers.edu.

- **Religious Holiday Policy and Accommodations:** Students are advised to provide timely notification to instructors about necessary absences for religious observances and are responsible for making up the work or exams according to an agreed-upon schedule. The Division of Student Affairs is available to verify absences for religious observance, as needed: (973) 353-5063 or DeanofStudents@newark.rutgers.edu.

- **Counseling Services:** Counseling Center Room 101, Blumenthal Hall, (973) 353-5805 or <http://counseling.newark.rutgers.edu/>.

- **Students with Temporary Conditions/Injuries:** Students experiencing a temporary condition or injury that is adversely affecting their ability to fully participate in their courses should submit a request for assistance at: <https://temporaryconditions.rutgers.edu>.

- **Students Who are Pregnant:** The Office of Title IX and ADA Compliance is available to assist students with any concerns or potential accommodations related to pregnancy: (973) 353-1906 or TitleIX@newark.rutgers.edu.

- **Gender or Sex-Based Discrimination or Harassment:** Students experiencing any form of gender or sex-based discrimination or harassment, including sexual assault, sexual harassment, relationship violence, or stalking, should know that help and support are available. To report an incident, contact the Office of Title IX and ADA Compliance: (973) 353-1906 or TitleIX@newark.rutgers.edu. To submit an incident report: tinyurl.com/RUNReportingForm. To speak with a staff member who is confidential and does NOT have a reporting responsibility, contact the Office for Violence Prevention and Victim Assistance: (973) 353-1918 or run.vpva@rutgers.edu.

Learning Resources:

- **Rutgers Learning Center** (tutoring services)

Room 140, Bradley Hall

(973) 353-5608

<https://sasn.rutgers.edu/student-support/tutoring-academic-support/learning-center>

- **Writing Center** (tutoring and writing workshops)

Room 126, Conklin Hall

(973) 353-5847

nwc@rutgers.edu