

Chemistry 4600, Physical Chemistry, Spring 2016

Mondays & Wednesdays 3:40-4:55PM 329NE

Required texts: Physical Chemistry, 6th Ed., Levine. Solutions manual for Levine, 6th Ed.

Lecture covers: *Thermodynamics (Chapter 1-7 and 9.1),*

Chemical Kinetics (Chapters 16)

Introductory Quantum Mechanics (Chapter 17)

Expect additional important material distributed in the lectures.

Instructor: Prof. Andrzej Jarzecki

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Office hours: Tuesdays 12:00-1:30 PM or by appointment.

Physical chemistry requires a LOT OF WORK, so make sure you do not have too heavy school schedule and/or job time commitment.

Exams and Quizzes:

We will have two midterm exams (each 100 points) and 3 short quizzes (150 cumulative points), and a final **CUMULATIVE** exam(150 points).

Exam absences: If you are absent from a long exam without a doctor's note, the missing grade will be calculated as $(2/3)X + (1/3)Y$, where X and Y are the percentage grades on the final and on the other long exam and where X is less than Y. **If you miss two exams without a doctor's note, both exams will be counted as 0.**

First QUIZ: Monday Feb 29

Second QUIZ: Monday March 21

FIRST MIDTERM: Wednesday April 13

Third QUIZ: Wednesday April 20

SECOND MIDTERM: Monday May 9

FINAL EXAM: Monday, May 25, 3:30 pm to 5:30 pm

Minimum exams average to pass the course (D-) is 50.5%

Drop Dates: Thursday February 18 is the last day to DROP a course without a grade.

Monday April 18 is the last day to apply for non penalty withdrawal (*i.e.*, W grade).

- (1) Calculus Review: Read Sections 1.6, 1.8 (omit example 1.5)

Problems 1.35, 1.37, 1.38, 1.40, 1.41, 1.42, 1.43, 1.58a,b, 1.60, 1.61, 1.62, 1.65, 1.67.

- (2) Read Sections 1.1, 1.2 (do not worry about details of adiabatic walls); skim Section 1.3; Read Sections 1.4, 1.5, 1.7, also Section 1.9 and 1.10

Problems 1.1, 1.2, 1.3, 1.5a, 1.6, 1.7, 1.8, 1.9, 1.11, 1.12a, 1.16a, 1.18, 1.19, 1.47, 1.71

- (3) Skim Section 2.1, Read Sections 2.2, 2.3, 2.4
Problems 2.1, 2.2, 2.3, 2.7, 2.9, 2.12, 2.13, 2.14, 2.16, 2.20
- (4) Read Sections 2.5, 2.6 (omit material after Equation (2.56) about the relation between C_p and C_v), Omit Section 2.7 (except read a paragraph on p. 55), Read Section 2.8, 2.9, Omit 2.10, Skim 2.11, Read 2.12, 2.13.
Problems 2.24, 2.25, 2.29, 2.30, 2.37, 2.38, 2.41, 2.42, 2.43 (omit f), 2.45 (omit f), 2.46, 2.48, 2.49, 2.50, 2.51, 2.52, 2.61, 2.66, 2.71
- (5) Read Section 3.1, Skim Section 3.2 and page 85. Read page 86 and Section 3.4
Problems 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.16, 3.17
- (6) SKIM Section 3.5, Omit Section 3.6, Read (but do not study) Section 3.7 and 3.8. Read Sections 3.9
Problems 3.20, 3.21 (omit f), 3.30, 3.31, 3.32, 3.34, 3.39, 3.41
- (7) Read Section 4.1, Skim Section 4.2, Read Section 4.3 (Omit Eqs 4.22, 4.23, 4.24 and associated discussion. Read Section 4.4 up to and including "The Maxwell Relations"; omit the rest of this section - "Dependence of State Functions on T, P and V" and following discussion. Omit Section 4.5. Read Section 4.6
Problems 4.1, 4.2, 4.3, 4.35
- (8) Read Section 4.7, 4.8, 4.9 and 4.10
Problems 4.25, 4.26, 4.27, 4.28a, 4.35, 4.38, 4.39, 4.40, 4.42, 4.43, 4.44, 4.45, 4.51, 4.58d,h,i
- (9) Read Sections 5.1, 5.2, 5.3, 5.4 (Omit material after example 5.4), Read Section 5.5, Omit 5.6, Read Sections 5.7, 5.8 and 5.9, Omit Section 5.10, Read Sections 5.11 and 5.12
Problems 5.1, 5.2, 5.3 5.4a, 5.5, 5.6 5.8, 5.10a, 5.11 5.13, 5.19, 5.25, 5.31, 5.41, 5.56, 5.59
- (10) Read Sections 6.1, 6.2 and 6.3
Read Sections 6.4, 6.7 (Omit Sections 6.5 and 6.6)
Problems 6.3, 6.4, 6.6, 6.10, 6.12, 6.13 (make a graph), 6.14, 6.23, 6.24, 6.25, 6.26, 6.28, 6.31, 6.41, 6.67
- (11) Read Section 7.1, 7.2, 7.3 (omit Example 7.6), Omit Sections 7.4, 7.5, 7.6, 7.7, 7.8, 7.9 Read Section 7.10
Problems 7.1, 7.2, 7.4a, 7.5, 7.10, 7.11, 7.12, 7.13, 7.14, 7.16, 7.21, 7.22, 7.23, 7.24a, 7.27, 7.28, 7.71, 7.73
- (12) Read Section 9.1. Problems 9.1, 9.3, 9.4, 9.5, 9.7
Read 16.1, 16.2, 16.3, Read Section 16.4 (Omit Powell plot method), 16.5, 16.6, 16.8, 16.9, 16.11, Read Sections 16.17, 16.20
Problems 16.1, 16.2, 16.3, 16.4, 16.5, 16.9, 16.10, 16.11, 16.13, 16.14, 16.15, 16.16, 16.18, 16.26, 16.29, 16.31, 16.32, 16.33, 16.38, 16.39, 16.41, 16.43, 16.44, 16.45, 16.47, 16.48, 16.49, 16.53, 16.54, 16.60, 16.61, 16.62, 16.63, 16.71, 16.80, 16.94, 16.95
- (13) Read Sections 17.1, 17.2, 17.3, 17.4, 17.5, 17.6, 17.7, 17.8, Skim Section 17.9, Read 17.10, 17.11, 17.12
Problems 17.3, 17.4, 17.5, 17.10, 17.11, 17.13, 17.16, 17.17, 17.18, 17.20, 17.22, 17.23, 17.24, 17.25, 17.27, 17.28, 17.32, 17.33, 17.34, 17.35, 18.37, 17.38, 17.46, 17.47, 17.53