

Chem 4120/6120
Summer Semester 2015
Physical Chemistry II
3 Semester Credits (4120/6120)

Instructor: Stuart Allison

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Office Hours: TuTh from 3:00-4:30 PM (382 PSC) or by appointment

Lecture Time and Location: TuTh from 4:45-7:15 PM in Room 218 Natural Science Center (NSC).

Lecture Notes: Lecture Notes (Lecture Note Handouts) and sample quizzes (in Study Questions/Notes file) are available online as pdf files and they can be downloaded from the Department of Chemistry website. Access the GSU Department of Chemistry website, under the "Undergraduate" header, select "Course Syllabi". Near the end, you will see the above pdf files available to download. It should be noted that there may be some deviation in the actual lectures from those of the notes and that you are responsible for the material covered in the lectures. Recommended homework problems will be provided in class.

Course Prerequisites: Chem 3410; Math 2212; Phys 2211K; and Phys 2212K

Texts: *Quantum Chemistry and Spectroscopy* (QCS) and *Thermodynamics, Statistical Thermodynamics and Kinetics* (TSK) by Engel and Reid, 3rd Edition, Pearson, 2013.

Course Description: Physical Chemistry II is a 3 credit hour semester course that covers the subjects of atomic and molecular structure (quantum chemistry), statistical thermodynamics and transport.

Quizzes, Final, Grading: Homework problems will be assigned but not graded. There will be a 30-minute quiz at the end of the Tuesday lectures on: 6/16, 6/23, 6/30, 7/7, and 7/21 (5 total) and your lowest quiz score shall be dropped. A comprehensive "Makeup" quiz will be given on Thursday, 7/23/15, for anyone who misses one of the regularly scheduled quizzes. If a student misses a quiz, their score will be zero (0) for that quiz. The quizzes will count for 40% (Chem 4120) of your grade. A standardized ACS exam covering quantum mechanics shall be given on Tuesday, July 14, and count for 30% of your grade (Chem 4120). You will have 90 minutes for this exam. A comprehensive final (2 hours) shall be given on Thursday, July 30, starting at 4:15 PM and will account for 30% of your grade (Chem 4120). All quizzes and exams are closed book; but 1 sheet (8.5 by 11 inch) of *handwritten* notes can be used for each quiz and two sheets of notes can be brought to the Final Exam. The ACS exam is closed book. Also, calculators can and should be brought to all quizzes and exams. Be sure that your calculator is working since they will not be provided. For students enrolled in Chem 6120, the grade breakdown is 33.3 % quizzes, 33.3 % ACS exam, 33.3 % Final.

Tentative Course Schedule:

Dates	Chapter	Subject
6/9	1	Early Developments in Quantum Theory
6/11	2	Wave Phenomena, Mathematical Preliminaries
6/16	3,4	Postulates of QM with applications, Quiz #1
6/18	4,5,6	Particle-in-a-box
6/23	7	Harmonic Oscillator, Quiz #2
6/25	7,8	Rigid Rotor, IR Spectroscopy of Diatomics
6/30	9,10	Hydrogen, Many Electron Atoms, Quiz # 3
7/2	11	Atomic Spectroscopy
7/7	12	Intro. Chemical Bonding, Quiz # 4
7/9	13,14	Chemical Bonding and Review
7/14	(1-14)	ACS Exam
7/16	12*,13*,15*	Probability, Intro. Statistical Mechanics
7/21	14*,15*	Monatomic and Diatomic Gases, Quiz # 5
7/23	15*	Chemical Equilibrium, Heat Capacity of Solids, Makeup Quiz
7/30		FINAL(comprehensive, starts at 4:15 PM)

Chapters without an asterisk are from QCS; chapters with an asterisk (*) are from TSK.

Quiz (Exam) Schedule

6/16 (1)
6/23 (2)
6/30 (3)
7/7 (4)
7/14 (ACS Exam)
7/21 (5)
7/23 (Makeup)
7/30 (Final Exam (begins at 4:15 PM))