

## Physical Chemistry II (CHEM 4120/6120) 2018 Spring



Physical Chemistry II is a 3 credit hours course focusing on quantum chemistry and statistical thermodynamics.

**Instructor:** Dr. Yao Xin (yxin3@gsu.edu; Phone: 404-413-5557)

Lecture Time and Location: MWF 12:00-12:50 Langdale Hall 305

Office Hours: Fridays, 1:30-2:30 or by appointment

Office: Langdale Hall 924

### Texts:

*Quantum Chemistry and Spectroscopy* (QCS) by Engels and Reid, 2nd Edition, Pearson, 2010.

*Thermodynamics, Statistical Thermodynamics and Kinetics* (TSK) by Engels and Reid, 2<sup>nd</sup> Ed., Pearson, 2010.

### Tentative Schedule

Chapters without an asterisk are from QCS; Chapters with asterisks are from TSK.

Dates	Chapter # and Contents
Jan. 8,10,12	1 Early Developments in Quantum Theory
Jan. 15	Holiday (no class)
Jan. 17,19	2 Wave Phenomena
Jan. 22,24,26	3, 4 Postulates of Quantum Mechanics,
Jan. 26	quiz #1
Jan. 29,31	5, 6 Particles-In-A-Box and Applications
Feb. 2,5,7	7 Vibration/Rotation of Diatomics
Feb. 9,12,14	8, 9 Spectroscopy of Diatomics
Feb. 16,19	9 Hydrogen Atom
Feb. 16	quiz #2

Feb. 21,23	10 Many Electron Atoms
Feb. 26,28	11 Atomic Spectroscopy
Mar. 2,5	12 Introduction to Chemical Bonding
<b>Mar. 5</b>	<b>quiz #3</b>
Mar. 7,9	13, 14 Chemical Bonding in Diatomics/Polyatomic
Mar. 12-18	Spring Break
Mar. 19,21	12*, 13* Probability, Boltzmann Distribution
Mar. 23	Catch up/review for ACS
<b><u>Mar. 26</u></b>	<b>ACS Exam</b>
Mar. 28,30	15* Statistical Thermodynamics
Apr.2	15* Statistical Thermodynamics
Apr. 4,6,9	14* Monatomic & Diatomic Gases
Apr.11,13, <b><u>16</u></b>	6*, 15* Chemical Equilibrium
<b>Apr. 16</b>	<b>quiz #4</b>
Apr. 18,20	16* Kinetic Theory of Gases
Apr. 23	Review
<b><u>Apr. 30</u></b>	<b>Final</b> (Comprehensive, starts at 12:00 a.m)

Mar. 23<sup>th</sup> is the last day to withdraw with a “W”

**Quizzes, Final, Grading:** There will be four quizzes and your lowest quiz score will be dropped. If you miss a quiz, your score will be zero (0) for that quiz.

**Chem 4120:**

Best 3 quizzes out of 4 40%

ACS exam 30% (required to obtain a grade, and cannot be dropped.)

Final 30% (required to obtain a grade, and cannot be dropped.)

**Chem 6120:**

Best 3 quizzes out of 4 33.3 %

ACS exam 33.3 % (required to obtain a grade, and cannot be dropped.)

Final 33.3 % (required to obtain a grade, and cannot be dropped.)

**Grading:** The plus/minus grading system will be used (A+: 100; A: 90- < 100; A-: 87- < 90; B+: 83- < 87; B: 80- < 83; B-: 77- < 80; C+: 73- < 77; C: 70- < 73; C-: 67- < 70; D: 60- < 67; F: < 60).

All quizzes and exams are closed book but one 8/12 x 11" sheet of notes can be used for the quizzes and two sheets of notes can be brought to the Final Exam.

**Help Sessions:** CHEM 4121; Friday from 10:00 – 11:50 p.m. in Classroom South 308 starting Jan. 8, 2018. TA will help with solving homework problems. All undergraduate students are encouraged to register. Graduate students should not register for this course but are free to go to the class to learn.

**Student Integrity Policy:** All assignments, exams and tests taken must represent your own efforts. Receiving unauthorized outside information or offering unauthorized information to another student during an examination is cheating. Any suspected offenses will be referred to the Department of Chemistry and the College of Arts and Sciences for appropriate action.

An electronic copy of this syllabus can be found at  
<http://chemistry.gsu.edu/undergraduate/resources/current-syllabi/>