

# Chemistry 1410, Physical Chemistry 1, Fall 2014

Instructor: K. Jordan, 330 Eberly Hall; jordan@pitt.edu

Text: *Quantum Chemistry and Spectroscopy*, 3<sup>rd</sup> edition, by Thomas Engel

Supplemental reference: *Applied Mathematics for Physical Chemistry* by James Barrante

Lectures: Mon and Wed, 6:00 PM – 7:10 PM, Room 150 CSC

Recitation: Wed, 7:20 PM – 8:10 pm, Room 150 CSC

Office Hours: Monday 1:00 – 2:00 PM; Wednesday 2:00 – 3:00 PM

Web page: [www.pitt.edu/~jordan/chem1420-f14](http://www.pitt.edu/~jordan/chem1420-f14)

Grading: Two one-hour exams (25% each); homeworks (10%), final exam (40%). All exams are open book, i.e., you can use your text and notes, but no other sources. Makeup exams are permitted only in the case of medical emergencies.

We will be covering many important concepts that build on one another. As a result, you are strongly encouraged to attend all lectures and recitations.

Week 1 (Aug 25, 27)	Chapter 1, the need for quantum mechanics; Chapter 2 the Schrödinger Equation
Week 2 (Sept 3)	Chapter 2, the Schrödinger Equation
Week 3 (Sept 8, 10)	Chapter 3, postulates of QM
Week 4 (Sept 15, 17)	Chapter 4, QM of simple systems; Chapter 5, particle in the box
Week 5 (Sept 22, 24)	Chapter 6, commuting operators
Week 6 (Sept 29, Oct 1)	Chapter 7, QM of vibration and rotation; Exam 1 (Wed)
Week 7 (Oct 6, 8)	Chapter 7, QM of vibration and rotation; Chapter 8, vibration and rotation spectroscopy
Week 8 (Oct 15)	Chapter 9, the H atom
Week 9 (Oct 20, 22)	Chapter 10, many el. atoms; Chapter 11, atomic spectroscopy
Week 10 (Oct 27, 29)	Chapter 12, H <sub>2</sub> <sup>+</sup> and H <sub>2</sub>
Week 11 (Nov 3, 5)	Chapter 12, bonding in diatomics; Exam 2 (Wed)
Week 12 (Nov 10, 12)	Chapter 13, bonding in polyatomics
Week 13 (Nov 17, 19)	Chapter 14, electronic spectroscopy
Week 14 (Nov 24)	Chapter 15, computational chemistry
Week 15 (Dec 1, 3)	Chapter 16, symmetry
Week 16 (Dec 8)	Final exam (2 hours)