Chemistry 455 ***Physical Chemistry (Introduction to Quantum Chemistry)*** Spring 2014
MWF 8:30-9:20 in Bag 261
Tutorial Th 8:30-9:20 in Bag 261

Instructor:	Professor David S. Ginger Office: Bagley Hall 202 Phone: 5-2331 Address ALL subject related questions to the discussion forum below so your peers may contribute to, and benefit from, the discussion (put CHEM455 in the subject of any email directed to me)
Office Hours:	Prof.: David Ginger Fri. 3:00-4:00pm, Bag 202A/B TA: Soumya Samai, Mon. 12:00-1:00pm (Chem Study Center)
Text:	*Quantum Chemistry and Spectroscopy*, 2nd Edition by Thomas Engel (455 only) **-OR-** *Physical Chemistry*, Engel, Reid and Drobny (some sections of 455, 456, 457) [the chapter numbers will be different and not all instructors use Engel]
Additional References:	*Physical Chemistry* by Peter Atkins *Elementary Modern Physics* by Paul A. Tipler *Quantum Chemistry* by Donald A. McQuarrie *Introduction to Quantum Mechanics* by David J. Griffiths (these should all be on reserve for CHEM455 at Odegaard – please notify me if they are not!)
Discussion Forum:	https://catalyst.uw.edu/gopost/board/dginger/36203/
Course Website:	http://faculty.washington.edu/dginger/CHEM455_S2014/index.html
Course Video: (office hours, practice problems)	http://uw.tegrity.com (log in with your UW Net ID, select CHEM 455A) if you can't see it you'll need to contact tech support for your Net ID. Check back for more.

TENTATIVE CLASS SCHEDULE

At times, lectures may deviate significantly from the text – you should still keep reading it!

Day	Week	Reading	Day	Week	Reading
M	Mar 31	Chapters 1-2: From Classical to	**M**	May 12	Chapter 12: Chemical Bonding in
W	Apr 2	Quantum Mechanics, Math Review,	**W**	May 14	Diatomic Molecules I
F	Apr 4	The Schrödinger Equation	**F**	May 16	
M	Apr 7	Chapters 2-3, 4.2: The Schrödinger	**M**	May 19	Chapter 13: Chemical Bonding in
W	Apr 9	Equation, Postulates, 1D Box	**W**	May 21	Diatomic Molecules II
F	Apr 11		**F**	May 23	Chapters 14-15 (parts) Mol Struct
M	Apr 14	Chapters 4-6: Particle in the Box and	**M**	May 26	**MEMORIAL DAY NO CLASS**
W	Apr 16	the Real World, Commuting and	**W**	May 28	**EXAM II**
F	Apr 18	Noncommuting Operators	**F**	May 30	Chapters 14-15 (parts) Mol Struct
M	Apr 21	Chapters 7-8: Quantum Mechanical	**M**	June 2	and spectroscopy
W	Apr 23	Vibrations and Rotations	**W**	June 4	
F	Apr 25	**EXAM I Fri Apr 25**	**F**	June 6	**LAST DAY OF CLASS**
M	Apr 28	Chapter 9: The Hydrogen Atom			
W	Apr 30				
F	May 2		**Final Exam:** **Tues June 10, 8:30-10:20am Bag 261** **(check MyUW for confirmation)**		
M	May 5	Chapter 10: Multielectron atoms			
W	May 7				
F	May 9				

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TRANSITION TO DIFFERENT METHODS OF LEARNING

In your future careers you will need to learn a variety of things. There will not be a textbook written for most of these things. My job is not only to teach you material about quantum mechanics, but to teach you how to learn in general. I'm here to help you mature from learning only through assigned textbooks to learning through a variety of sources, not necessarily to answer every question directly. In your professional life you will never find a real problem to solve in which exactly all of the right information is given to you, in the right units. You will always be faced with either too much information or too little information and have to decide which parts are necessary. Being able to tackle problems under these circumstances is an important skill—perhaps the most important skill you will learn in college, and a skill I hope you will continue to develop in this class.

HOMEWORK

Homework will be assigned and due weekly, with a schedule to be modified as on the website and announced in class. Assignments will usually take at *least* 6 hours to complete, many more if you have to catch up with the reading. Physical chemistry is a cumulative subject, *understanding the material in one week requires mastery of the material from each previous week.* You will never master the material if you wait till the day before a homework set is due to attempt the problems. Each homework will be graded out of 10 points as follows: 5 points for content (often only select problems will be graded at random) 4 points for attempting to complete the *entire* assignment in a thorough and thoughtful fashion, 1 point for NEATNESS (answers circled, legible handwriting/printouts, black/blue ink). *Note that these points are the discretion of the grader and are non-negotiable*.

CLASS SESSIONS

Class sessions will be more useful if you 1) read the text prior to lecture and 2) attempt the homework throughout the week (even prior to the relevant lecture!). Tutorials are INTERACTIVE and variable. Sometimes short lectures on special topics will be presented, but they are meant to be a time in which the students and instructors can discuss the material and work example problems.

TEAMWORK

Collaboration on the problem sets is not only permitted, but is encouraged. However, each student **MUST** turn in their **OWN** completed problem set. Copying, or allowing another to copy, problems to which they have not contributed is plagiarism. Take home exams may be given. In the event a take-home exam is given students will NOT be permitted to communicate with anyone except the instructor in any form or manner regarding any test problems or material until after all exams have been returned. Plagiarism and giving or receiving inappropriate assistance of any kind shall be regarded as academic misconduct. Cases of academic misconduct may be submitted to the registrar with an X as a final grade with a recommendation for the maximum UW sanction.

GRADING

There will be two hourly midterm exams and one two-hour final exam, as indicated on the schedule. Grading will be based on the total number of points obtained on the exams and the homework. Unannounced 'pop quizes' may be given during lectures, and will each count as one homework grade.

Total Points:	500	
Problem Sets & Quizzes:	100 total	(20%)
Exam 1:	100	(20%)
Exam 2:	100	(20%)
Final:	200	(40%)

Extra Credit—Bonus points up to 5% of the total hw score will be added to the homework score for correct, thoughtful replies to other students questions on the discussion board, for finding a major error in a problem answer or derivation (not just 3.14159 instead of 3.14 for pi, or a dropped – sign on one side of an equation). The awarding of any / all extra credit will rest with the judgement of the professor and TA.