Physical Chemistry 322

Hamilton College, Spring 2014

Instructor:	Prof. Adam W. Van Wynsberghe avanwyns@hamilton.edu TSC 1063 (315-859-4309) Skype or gchat IM: avanwyns
Lectures:	MWF 10:00-10:50AM, TSC 2048
Laboratory:	M or W 1:00-4:00PM, TSC 1048 (Prof. Nellutla)
Office Hours:	MWR 3:30-4:30PM, TSC 1063 or by appointment
Textboook:	*Physical Chemistry, A Molecular Approach* by McQuarrie and Simon

In Physical Chemistry 322 we will discuss the physical basis that underlies chemical reactivity. This includes both the extent to which reactions go to completion (Thermodynamics) and the speed at which they do so (Kinetics). The third main topic of the course, Statistical Mechanics, will demonstrate that macroscopic, thermodynamic properties result from the underlying microscopic properties of the atomic nature of matter. While this material will be highly mathematical, the main goal of the course is to extend your knowledge of these fundamental chemistry principles. If time permits, additional topics such as phase equilibria, solution or surface chemistry will also be discussed. In addition to these curricular goals, I hope that this course will help you build your laboratory experience and skill, strengthen your problem-solving and analytical reasoning abilities, and give you a new appreciation for the wonder and complexity of the natural world.

Prerequisites: Chem 125 or Chem 190, Math 114, Physics 105, 195, or 205
Highly recommended: Chem 321

Blackboard and Class Email

A large amount of the information relevant to this course will be posted on the course's BlackBoard website. Important course content, problem sets, and exam keys will be available in this one location. Course information will also be distributed through email; each of you has a university supplied @hamilton.edu account that I will use as your primary contact.

Office Hours

My official office hours are from 3:30-4:30 on Monday, Wednesday, and Thursday. I promise to be available to you at those times. However, don't feel those are the only times you can come by. You may schedule time with me if you like, or just drop by anytime I'm in my office. If you do come without any notice I can't promise I will always be available, but I will be happy to schedule a better time.

Homework

Homework sets will be assigned each week on Friday and must be handed in by the beginning of class the following Friday. You are strongly encouraged to begin working on the homework problems as soon as you can to find out what you may need help with. Many of the homework sets will be problems out of McQuarrie and Simon. Although there is a solutions guide available, I am asking you **NOT** to use it. Having solutions so easily available can be a shortcut to real learning. If a certain problem has stumped you, I would much rather you come and discuss it with me instead of using the expedient but shallow method of looking it up in the solution manual. *Directly copying* solutions to homework problems from any source (e.g. a solution manual, the internet, another student, etc.) is considered academic dishonesty and is a violation of the Honor Code.

Laboratory

Appropriate clothing including goggles, close-toed shoes, and long pants must be worn at all times. Contact lenses are not permitted.

*****To receive a passing grade in Chem 322, you must successfully pass the laboratory portion. The lab section is mandatory; failure to complete laboratory exercises will result in failure of Chem 322 no matter your other grades.**

Challenge Problems

Periodically, optional problems will be posted on the blackboard website. These "challenge" problems are related to the class material but are out of the normal scope of an undergraduate physical chemistry course. They will not be covered in the lecture and you will not be tested on this material on exams. However, strong work on challenge problems allows me to round your grade up one level if you are close to a cutoff. Also, completion of several of these problems is required to receive an A+ in this course. All challenge problems must be completed by the last day of classes, May 12th, 2014.

Exams

There will be three evening exams throughout the course of the semester. Exam questions can and will be taken from course material covered in the textbook, lectures, homework problems, laboratories, or any special assignments. Each exam during the semester will cover only the material covered since the previous exam. The final will be cumulative with an emphasis on the material covered since the third exam.

If you have a conflict with the exam time, inform Prof. Van Wynsberghe as soon as you can. You must inform Prof. Van Wynsberghe *in writing* (email is fine) at least one week prior to the exam.

Midterm Exams:		
	Tuesday, February 18th	6-9 PM; TSC G041
	Thursday, March 13th	6-9 PM; TSC G041
	Tuesday, April 22nd	6-9 PM; TSC G041
Final Exam:	Friday, May 16th	7-10 PM; TSC 2048

Grading Scheme

3 hour exams; 10% each	30%
Final Exam	20%
Laboratory exercises	25%
Homework	25%

Academic Integrity

All Hamilton College policies regarding ethics and honorable behavior apply to this course. Academic dishonesty, including any form of cheating, is regarded as a very serious offense and may result in a failing grade in the course. Please review the Honor Code if necessary: http://www.hamilton.edu/student-handbook/studentconduct/honor-code

Health or Disability Concerns

All students are entitled to an accessible, accommodating, and supportive teaching and learning environment. The provision of reasonable accommodation for students with disabilities is a shared faculty and student responsibility. Students are expected to inform their professor of their need for accommodation; the professor is expected to make the reasonable arrangements. If you have special needs, please make an appointment to contact Prof. Van Wynsberghe at your earliest convenience. Your request must also be submitted to Allen Harrison, Associate Dean of Students for Diversity and Accessibility (Elihu Root House, x4021). If you have a condition that might result in a seizure, loss of consciousness, or other situation that might endanger your safety or the safety of others in the laboratory, please inform Prof. Van Wynsberghe.

How to be Successful in Physical Chemistry 322

If you've read through this rather dry syllabus, this is your reward! Achieving success in this course **is** possible, but it may require some work–things worth doing usually do. Here are my suggestions for how to best learn the material:

1. *Study* the sections that will be covered in lecture *before* class. If you have a basic understanding of the material before we cover it as a group, you will *think* more effectively during lecture.
2. Actually *think* during lecture. This is harder than it sounds. Focusing and actively and critically thinking for an entire class period is a skill that must be developed. Become engaged with the material and ask questions when you don't understand something. Just writing down everything on the board is not very useful. Stenographers are not particularly in demand these days; don't train yourself to be one.
3. Make a conscientious effort to understand the homework problems, not just get them right. After finding a solution, ask yourself if it makes sense and what ramifications the result might have. Remember, this is a chemistry course not a math course–it's what the answer means that is important.
4. Work the problems with other students and teach each other. Teaching can be one of the best *learning* experiences you can find.
5. When you don't understand a topic, come talk to me. I want to help you learn, but I can't help if you don't come see me.