

Physical Chemistry 321

Hamilton College, Fall 2014

Instructor:	Prof. Adam W. Van Wynsberghe avanwyns@hamilton.edu TSC 1063 (315-859-4309) Skype and Google Chat: avanwyns
Lectures:	MWF 11:00-11:50AM, TSC 1004
Laboratory:	M 1:00-4:00PM, TSC 1048 Instructed by Professor West
Office Hours:	MT 3-4pm; WR 4-5pm, TSC 1063 or by appointment
Textbook:	<i>Physical Chemistry, A Molecular Approach</i> by McQuarrie and Simon

In Physical Chemistry 321 (1cr) we will present the theory of Quantum Mechanics and its applications to chemical systems and techniques. While this course will be highly mathematical (Math is the language of science!), the main goal of the course is to help you learn a new set of fundamental chemistry principles. Most of the course will be spent building towards a physicochemical description of bonding—the central idea of chemistry. We will also focus on ways to experimentally interrogate molecular structure, i.e. spectroscopy, and will include other topics if time permits. 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 or 116, Physics 105, 195, or 205

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 4:00-5:00pm on Mondays, Wednesdays and Thursdays and 3:00-4:00pm on Tuesdays. 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. Solutions to homework problems that are *directly* copied 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 321, you must successfully pass the laboratory portion. The lab section is mandatory; failure to complete laboratory exercises will result in failure of Chem 321 no matter your other grades.**

Exams

There will be three take-home exams throughout the course of the semester. You may **NOT** use any external resources (e.g. books, notes, web, people, etc.) during these exams. Each exam will be handed out at the corresponding Wednesday lecture and returned by the following Friday's class period. 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 times, 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:

Wednesday, September 24th @ 12PM to Friday, September 26th @ 11AM

Wednesday, October 22nd @ 12PM to Friday, October 24th @ 11AM

Wednesday, November 19th @ 12PM to Friday, November 21st @ 11AM

Final Exam:

Thursday, December 18th @ 7:00 PM

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 321

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.