Principles of Chemistry 125

Hamilton College, Fall 2014

Instructor:	Prof. Adam W. Van Wynsberghe avanwyns@hamilton.edu TSC 1063 (315-859-4309) Skype and Google IM: avanwyns

Lectures:	MWF 9:00-9:50AM, TSC 3021
Office Hours:	MT 3-4PM; WR 4-5PM, TSC 1063 or by appointment
Required Texts:	*Chemistry: An Atoms-Focused Approach* Gilbert *et al.*, Norton 2014
	Slow Death by Rubber Duck Smith and Lourie, Knopf Canada 2009

In this course we will discuss the fundamental principles of chemistry, beginning with an atomic perspective and continuing on to molecular properties and reactions. The fundamentals of the course can be viewed through two main ideas. The first idea comprises the ways in which matter **interacts**, including pure and mixed substances as well as bonding and molecular structure. The second main idea concerns the ways in which matter **reacts**. We will study types of chemical reactions as well as the speed and extent at which they occur. For both of these ideas, we will examine the atomic and molecular features that give rise to these properties. While some of this material will be mathematical in nature, the main goal of the course is to extend your knowledge of fundamental chemistry principles. 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.

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 college 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 Monday, Wednesday and Thursday and from 3:00-4:00PM on Tuesday. I promise to be available to give you individual attention at these times. For my convenience, please try to come to my office at these scheduled times. However, don't feel that these 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 at other times, 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. Late homework will not be accepted. 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 your text. *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.

iClickers

During lecture you will periodically use iClickers to respond to in-class exercises. We are using this technology to enable you to be more engaged during lecture, to help you keep track of your understanding of the material, and to let me monitor the class's comprehension as a whole. iClicker questions may come from material covered in previous lectures, from the reading assigned for the day, or come within the flow of the lecture. A correct response with an iClicker will earn 2 points, an incorrect response will earn 1 point, and no response will earn 0 points. To handle issues with missed classes (for whatever reason) and forgotten or malfunctioning iClickers, I will automatically credit you with 10% of the total possible points, up to 100%.

Some questions will be collaborative and you may work with a classmate; for others you will be expected to answer on your own. The Honor Code applies to iClickers just as it does for homework or exams. Clicking in for a friend who is not present is a serious form of cheating and will be dealt with as such. If discovered, you will automatically be reported to the Honor Court. This is your only warning.

You may rent an iClicker from the chemistry department with a $40 deposit delivered to Mrs. Shawna O'Neil in TSC 1056. The entire deposit is returned if you return your iClicker in a functional form at the end of the semester. You will need to register the iClicker in your name at http://www.iclicker.com/support/registeryourclicker. When you register, your student ID is the seven digit number on the front of your campus ID card.

Seminar Writing Assignment

The Chemistry department regularly hosts outside speakers to present their research to students and faculty. These are normally held at 3PM in TSC G041 and you can find the current schedule here: http://academics.hamilton.edu/chemistry/seminars. Other science departments do this as well, and you can find their schedules on their web pages or in postings on their bulletin boards. For this assignment, you will attend one of these and write a summary of what was presented. Your paper should be about 3-4 pages long and discuss the problem the researcher was trying to solve, why it was important, what methods they used to address their problem, what data they collected, and what conclusions they formed. To help you with this, you should read at least one paper published by the researcher that is relevant to his/her presentation and include details from this work in your report.

Toxin Discussions

We will be reading the book "Slow Death by Rubber Duck" (SDRD) over the course of the semester, and we will structure this with student-led discussions of each of the chapters. Each chapter highlights a specific toxin that is present in consumer products. On Fridays throughout the semester, groups of three students will lead a discussion of the chemical nature of the toxin, how it is synthesized or produced, how it is detected, a history of its use, its molecular action and effects, what the authors of SDRD investigated, and how to reduce one's exposure. The student leaders should plan the discussions to be 20-30 minutes long and expect the other students in the class to have read the relevant chapter. Students not leading the discussion should come prepared to ask questions and be actively involved.

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 125, you must successfully pass the laboratory portion. The lab section is mandatory; failure to complete laboratory exercises will result in failure of Chem 125 no matter your other grades.**

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 directly cover only the material introduced since the previous exam. However, since material in this course strongly builds upon the information that preceded it, actually learning and retaining what we have previously covered will be a great advantage. The final will be cumulative with an emphasis on the material covered since the third exam.

If you have a conflict with an 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:		
	Thursday, September 25th	6-8 PM; TSC 3021
	Thursday, October 23rd	6-8 PM; TSC 3021
	Thursday, November 20th	6-8 PM; TSC 3021
Final Exam:	Tuesday, December 16th	2-5 PM; TSC 3021

Grading Scheme

3 hour exams; 10% each	30%
Final Exam	20%
Laboratory exercises	20%
Homework	20%
Seminar Writing Assignment	2.5%
Toxin Discussion	2.5%
Clicker Questions	5%

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 as soon as possible. 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 Chemistry 125

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.