

CHEMISTRY 100: Chemistry and Man

Course Syllabus and Schedule

Fall 2012 (CRN 31561)

Instructor. Dr. Harry Davis, office in Kokio 116, phone is 734-9186 and messages may be left on the answering machine. Email is harryd@hawaii.edu. I can be reached on T, Th, & F afternoon at 956-7178 as I will be in the lab at UH Manoa, Biomed T-606.

Kapi'olani Community College is an Equal Opportunity/Affirmative Action Institution. If you have a disability and have not voluntarily disclosed the nature of your disability and the support you need, you are invited to contact the Disability Support Services Office, Iliahi 113, 734-9552, or email kapss@hawaii.edu, for assistance.

Class. M&W from 5-6:15 PM in Kokio 107

Office Hours. M&W 10 AM-1:30 PM, 4:30-5 PM, 6:15-7 PM

F 10-11 AM

I will sometimes have Faculty Senate and other meetings that usually occur between noon and 1:30 PM and will not be in office hours. Please feel free to ask for help at any time I am available.

The Purpose of Chemistry 100. Chemistry 100 is a one-semester survey of general chemistry. There is no lab, and no previous chemistry course is required. Chemistry 100 fulfills the Natural Science requirement for the AS degree (Diversification Physical Sciences) and the AA degree (Group 2 Physical Sciences). Chemistry 100 is accepted for students in the Associate Degree in Nursing Program, but not for the Bachelors Program at UH Manoa. This course also serves as a starting point for many students who intend to major in any science, engineering, or health-related field since it prepares the student for Chemistry 151, Chemistry 161, and Biochemistry 241.

Course competencies. These are listed in the KCC general catalog.

Prerequisites. Math 25 (Elementary algebra II) is a prerequisite for this course. Since chemistry is a quantitative science, the ability to solve mathematical problems is very important in order to learn chemistry. In the first unit there will be time available outside of class to review important aspects of math as they are covered in chapter 1 and in the appendices of the text. The math required to understand a chemical concept will be covered along with the concept. You may ask the instructor for extra help during office hours, or you can borrow materials that may help you.

Enforcement of Prerequisites. Here are some observations made after teaching general chemistry for more than two decades. Chemistry depends upon the direct proportion and a system using unit analysis can be learned to greatly simplify direct proportion problems. Students that learn this system do well. Students that don't bother, and thus prefer to fake it, may make it through the first exam but usually end up failing in exams three and four. Therefore, it makes sense to enforce these prerequisites in the beginning of the semester. The mathematical skills in question are covered in the prerequisite math course and are very basic. These skills are conversion between units (eg cm into μm or inches), and the graphical representation of the direct proportion (a straight line passing through the origin, $y = mx + b$).

Students must complete at least one quiz containing the above prerequisites with 90% proficiency BEFORE they can take exam 1. There are approximately four weeks to accomplish this and several attempts will be allowed. Prerequisite Quizzes will be available in the Testing Center in Lama Library. Failure to pass a Prerequisite Quiz indicates that the student is NOT ready for the course, and has NOT put in the effort to do so, and should withdraw. Enforcement of the prerequisites is meant to make both learning and teaching chemistry more enjoyable and less stressful.

Course Materials.

1) required text: "Basic Chemistry" by K. C. Timberlake, custom edition for KCC. Older versions may also be used.

The study guide is optional

All Lecture Notes will be available on the course Lulima web site. The Lecture Notes are developed enough that you do not need the most current edition of the text

We will NOT be using the MasteringChemistry web site

2) a basic scientific calculator (less than \$20)

3) a periodic table from Sargent-Welch (\$0.30)

Electronic Communication and Lulima. Official UH electronic communication is via your hawaii.edu address. Check this often for materials and communications distributed via Lulima. Lulima will be used to store course materials (Resources) and to conduct focused online class discussions in topic areas (Forums). You should log in to Lulima and learn how to use it.

Course Structure.

A. Exams. The course is composed of five units each with its own exam. The final exam will cover the entire course with major emphasis on the last unit, it is not meant to be a cumulative exam. Exams represent 90% of your grade. Exams will be administered in the Testing Center in Lama Library on a walk-in basis, no reservation required. You must start the exam at least 60 minutes before closing. You will need a photo ID and your calculator. You will be provided a periodic table, no additional materials are allowed. You will have two weekdays to take each exam. Hours of operation are:

M-Th 8:30-5:30 / F 8:30-3:30 / Sat & Sun closed.

Please see <http://www2.hawaii.edu/~kcctest/testproctoring-online.html>

B. Homework. There will be at least 4 assigned homework problems for each unit. Homework represents 10% of your grade. Homework means the difference in one grade, a B can be turned into an A with good homework grades. You should do homework problems with the intent of learning how to do similar problems on the exam. There is direct correlation between grades and homework. Students who don't turn homework in on time for a grade often end up failing or dropping. Students with the highest grades in the class have almost always turned in all of the homework. This has more to do with student responsibility than ability.

How to Turn In Homework.

1. A staple is a form of respect for your homework, education, and teacher. You will lose points for turning in unstapled homework.
2. All answers should have correct units
3. Write legibly and neatly, write and use mathematical symbols correctly. Use pencil so that you can make corrections without a mess.
4. I need to be able to follow your work so use standard math, not just something that is convenient for you. Math is universal so use it correctly.

5. You will be given the answer on most problems in the effort to reduce your anxiety. You still need to show your work with units and significant figures. The process is more important than the answer.
6. If you are not turning in homework you are really hurting your chances for a good grade. This is disrespecting yourself and your own goals. It shows a lack of commitment, it's like refusing to improve oneself.

Policy On Late Homework.

1. Late homework may be accepted for reduced points, but only if it is turned in before the answer keys are posted on Lulima.
 2. Homework can be scanned and emailed to harryd@hawaii.edu to avoid being late. Please reduce the file size as much as possible.
 3. Homework can be placed in my mailbox in Kalia 101 up until 4 PM.
- C. Lecture Notes. We will make extensive use of Lecture Notes, which you should bring to class. Lecture Notes are not meant to replace class attendance, this is not an on-line course.
- D. STEM Center. The text and Study Guide will be placed on reserve in the STEM Center, Kokio 202. Tutors may also be available in the STEM Center and the hours of availability will be posted when made available. Not all tutors are trained in my methodology so you should show them the Lecture Notes and train them.

Grading. How well one does on an exam is relative and a poor performance on one exam does not necessarily reflect what you have learned. Therefore, your lowest exam on the first four units will be counted only half as much as the other exams. The final exam will not be affected. This is a weighted average. The grading scale will be based on the following:

90-100% A / 80-89% B / 70-79% C / 50-69% D / 0-50% F

October 29 is the last day for withdrawal from the course. After this date a W can only be assigned by the Dean of Instruction. An incomplete grade can be requested only by students who are close to completing the course with a passing grade. Disappearing without officially withdrawing from the course will result in assignment of an F by the Administration. Other department and college policies are listed at the end of the syllabus.

Missing an exam can have serious consequences. Do not wait until after the exam is given to try to make up an exam. If you know that you have a scheduling conflict you must make arrangements with the Instructor prior to the exam. In the case of an unexpected illness or problem you must still notify the Instructor before the exam is given and be prepared to present a doctor's note or similar evidence to provide a valid excuse. For the sake of fairness, you might not receive full credit for a make up exam. We will use Gradebook in Lulima to post exam and homework grades.

Student Responsibility. The job of the Instructor is to provide the best possible presentation of the material that he can, and to provide the best learning environment that is possible. It is not the Instructor's job to make a student study nor to accommodate the student by lowering the standards so that a student can pass. It is the student's responsibility to put forth the effort required to learn the material and to become competent with it. This means doing lots of problems and using good study habits. I will be happy to help you obtain these goals. Do not waste time trying to lower the standards of the course because these are in congruence with the UH system as well as with the American Chemical Society and the International Union of Pure and Applied Chemistry. The student should not burden the Instructor with scheduling problems and special requirements. This distracts from the experience of all other students as well as the Instructor. The student should:

1. preview the lecture material before coming to class – so you are not seeing it for the first time
2. attend every class and take notes for later review – the same person making up problems in the

- lecture will be making up problems for the exams
- bring the text/Lecture Notes to class to follow the lecture – this helps you organize the material
 - do problems from the text until you are competent - the first step to learning is to find out what you don't know, make sure you can do the problems in the lecture
 - the Lecture Notes are extensive but are not meant to take the place of reading the text or doing problems in the text
 - do the graded homework problems on time and remember how to do them for the exam
 - make a list of what you don't understand and bring it to class and /or office hours
 - realize that this is a skills building course and so will require a lot of study outside of class
 - get help as soon as you need it, don't procrastinate
 - check your hawaii.edu email address often for any homework or Lecture Notes
 - take responsibility for your own success – you will get good at what you practice
 - participation in a study group is the best way to learn chemistry – to learn by helping each other – please get to know each other and help each other learn the material – you are not in competition with them for a grade.

What is Chemistry ? Chemistry is the study of how matter and energy behave. It is also a scientific method for observing the world and all of life. Knowledge of chemistry is used to make new discoveries about the world (research) and to change some aspects of the world by the invention of new materials and methods (technology). Chemistry is used by most other scientific disciplines making it a basic or universal science. There are hundreds of different fields and sub fields of chemistry with very specific journals dedicated to each. Finally, chemistry is a practical science that can be applied in every day life. For example, you use chemistry when you clean your house and when you read the food labels in the grocery store.

What is Organic Chemistry ? Organic chemistry is the study of the chemical and physical properties of organic compounds. Organic compounds are those that contain carbon and represent over 95% of known compounds. Some organic chemists isolate new compounds from natural sources and determine the structural formulas. These new compounds may have important pharmacological functions such as anti-cancer drugs. Others try to synthesize compounds that have known structures and which are difficult or expensive to obtain from natural sources. Other organic chemists try to determine how organic compounds react so that we can gain a greater ability to synthesize compounds that we may want in the future. Most of the materials that you are touching are man-made organic compounds.

What is Biochemistry ? Biochemistry is the application of chemical principles to biology. Science has progressed to the point that almost every type of biological research requires some aspect of chemistry and you will find that biochemistry covers a very wide range of subjects. Biochemists are usually involved in what is called basic research, for example in the search for the exact cause of cancer. Fewer biochemists are involved in applied research, for example the testing of a particular drug in cancer patients for the remission of cancer. Biochemists would be involved in the development of the drug rather than its clinical trials.

Biochemistry starts with the study of the chemical and biological properties of the molecules that make up living organisms. It then progresses to how these properties function in the organism. Diseases and malfunctions are then studied on the molecular level, that is, how the diseased molecules are different, why they become different, and what can be done to prevent them from becoming different.

Very Tentative Lecture Schedule

I have restructured this course significantly by increasing the number of units and exams from 4 to 5. I also have taken advantage of the Testing Center to administer exams which gives us 3 more lectures. These changes will greatly enhance the learning experience for all of us. However, the timing of lectures, homework due dates, and exams are subject to change.

<u>week 1</u>	<u>chapter</u>	<u>topics</u>	<u>exam availability</u>
M Aug 20	1	Introduction, Math Skills	
W Aug 22	1	Chemistry in Our Lives	
<u>week 2</u>			
M Aug 27	2	Measurements	
W Aug 29	2	Measurements	
<u>week 3</u>			
M Sept 3	2	Measurements	
W Sept 5	3	Matter and Energy	
<u>week 4</u>			
M Sept 10	3	Matter and Energy	
W Sept 12	3	Matter and Energy	
F Sept 14	-		Exam 1 (Chapt 1, 2, 3)
<u>week 5</u>			
M Sept 17	4	Atoms and Elements	Exam 1
W Sept 19	16	Nuclear Radiation	
<u>week 6</u>			
M Sept 24	16	Nuclear Radiation	
W Sept 26	5	Electronic Structure and Periodic Trends	
<u>week 7</u>			
M Oct 1	5	Electronic Structure and Periodic Trends	
W Oct 3	6	Names and Formulas	
F Oct 5	-		Exam 2 (Chapt 16, 4, 5)
<u>week 8</u>			
M Oct 8	6	Names and Formulas	Exam 2
W Oct 10	10	Structures of Solids and Liquids	
<u>week 9</u>			
M Oct 15	10	Structures of Solids and Liquids	
W Oct 17	10	Structures of Solids and Liquids	
<u>week 10</u>			
M Oct 22	10	Structures of Solids and Liquids	
W Oct 24	7	Chemical Quantities	
F Oct 26	-		Exam 3 (Chapt 6.1-6.5, 7, 10.1-10.3)

- October 29 is the last day to withdraw -

week 11

M	Oct 29	7	Chemical Quantities	Exam 3
W	Oct 31	8	Chemical Reactions	

week 12

M	Nov 5	9	Chemical Quantities in Reactions	
W	Nov 7	11	Gases	

week 13

M	Nov 12	12	Solutions	
W	Nov 14	12	Solutions	
F	Nov 16	-		Exam 4 (Chapt 8, 9, 11, 12)

week 14

M	Nov 19	12	Solutions	Exam 4
W	Nov 21	13	Chemical Equilibrium	

week 15

M	Nov 26	14	Acids and Bases	
W	Nov 28	14	Acids and Bases	

week 16

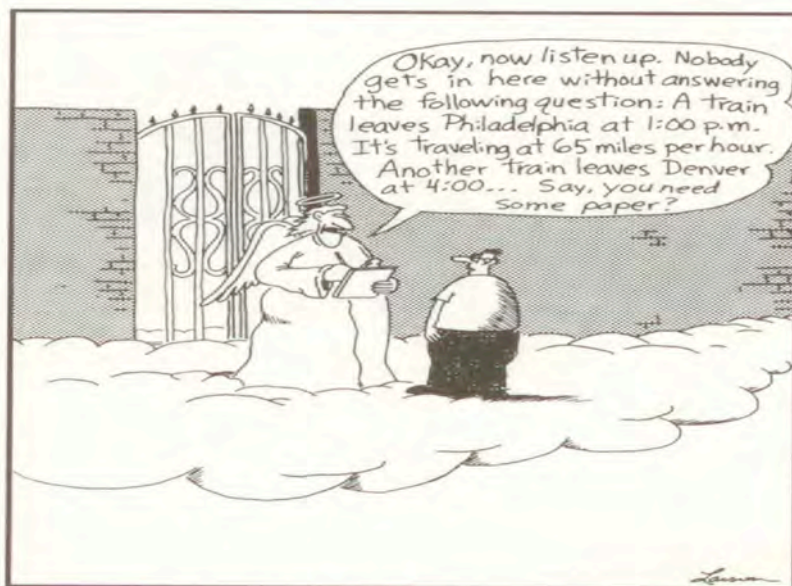
M	Dec 3	14	Acids and Bases	
W	Dec 5	10	Organic Chemistry	

week 17

W	Dec 12	-	Exam 5 (Chapt 13, 14, and some 10)	
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5:30 - 7:30 PM in the classroom, others times will be made available

Merry Christmas !



Math phobic's nightmare

MATH/SCIENCE DEPARTMENT POLICY ON WITHDRAWALS AND INCOMPLETES:

1. WITHDRAWALS (W GRADES) – After the “last day of withdrawals”, October 29, 2012, the instructor will sign withdrawals only in cases of extreme or unusual circumstances. Grade related excuses are unacceptable. Examples of extreme or unusual circumstances are:
 1. a certified medical reason
 2. a death in the immediate family
2. INCOMPLETE (I GRADE) – Students must present the “Request for Incomplete” form prior to the last day of instruction. “I” grades will be given only to students who are achieving passing grades and are very close to completing the course. In addition, the student must have a very good reason for not being able to complete all the work on time. Examples of good reasons are the same as those listed under the withdrawal policy above.
3. Students who no longer attend class and who DO NOT OFFICIALLY WITHDRAW from the course will receive “F” grades.

KAPI’OLANI COMMUNITY COLLEGE POLICY:

1. Kapi’olani Community Collage is an Equal Opportunity/Affirmative Action Institution.
2. Extended time in a distraction-free environment is an appropriate accommodation based on a student's disability. If you do have a disability and have not voluntarily disclosed the nature of your disability and the support you need, you are invited to contact the Special Student Services Office, 734-9552 (V/TTY), Ilima 105, for assistance.
3. Students are expected to attend all classes for which they are registered. If a student is unable to attend class, he or she should contact the instructor in advance to give notification of the absence and make necessary arrangements.
4. For those students who receive financial aid and fail to attend the first week of classes without making arrangements with the instructor, the instructor will submit the student’s name to the Financial Aid Office. The student will be denied financial aid for the class he/she is not attending. In addition, it is solely the student’s responsibility to withdraw from the class or attend the class and pay the tuition.

TWO-WAY COMMUNICATION DEVICES:

These devices are not allowed in the classroom. Please see to it that these devices are turned off while in class. Cell phones are NOT allowed during exams.

UH POLICY ON EMAIL COMMUNICATION:

The electronic communications policy adopted in December 2005 establishes the University of Hawai’i Internet service as an official medium for communication among students, faculty, and staff. Every member of the system has a hawaii.edu address, and the associated username and password provide access to essential Web announcements and email. You are hereby informed of the need to regularly log in to UH email and Web services for announcements and personal mail. Failing to do so will mean missing critical information from academic and program advisors, instructors, registration and business office staff, classmates, student organizations, and others.

ACADEMIC GRIEVANCE STATEMENT:

In instructional activities, the students are responsible for meeting all of the instructor's attendance and assignment requirements. Failure to do so may affect their final grade. In all college-related activities, including instruction, they must abide by the college's conduct codes and regulations, refraining from behavior that interferes with the rights and safety of others in the learning environment. Finally, if they decide to file a grievance, they are fully responsible for providing proof that they have been wronged.

CLASS CANCELLATION:

Lecture is cancelled if, without prior notice, the instructor is more than 15 minutes late for 75 minute classes or 10 minutes for 50 minute classes.