CHEM 31 - General Chemistry I - Fall 2012
Prof. Willem R. Leenstra

Section D
Lectures on MWF 3:00-3:50 PM, in Angell B-106
Exams on Thursdays 7:00-9:00 PM, in Marsh Life Science 235

Contact Information
Instructor: Prof. Willem Leenstra
Office: Cook Physical Science Building A-119
Phone: (802) 656-0273
E-mail: willem.leenstra@uvm.edu

General

Professor's Office Hours: Monday, Wednesday, and Friday, 10:30-11:30. But if these times are not suitable for you, we can also set up an appointment at another, mutually convenient time. Occasionally I will have a conflict that prevents me from being in my office at the posted time; if so, just contact me with a request to see me individually, and we'll make it happen as soon as possible. Since your schedule and my schedule are busy ones, we can zero in on a mutually convenient time most efficiently with a phone call (leave me your cell to call back if I'm not picking up), rather than emailing back and forth.

TA's Office Hours: Each Teaching Assistant who is part of Chem 31 will have one office hour per lab that he/she teaches. During this office hour, the TA will answer questions not only about the lab, but also about the lecture material. Since there are more than 40 lab sections in the daytime lecture offerings of Chem 31, there will be more than 40 (non-overlapping) hours throughout the week at which you can receive help. The General Chemistry TA table is in room Cook A-302. The schedule of these hours will be publicized on Blackboard, our course communication platform, in the near future. ***You may utilize ANY of the TA's for help with lab or lecture questions - don't rely on just your lab TA.***

Supplemental Instruction: There is additional course help available through the Supplemental Instruction program. There will be several SI Leaders assigned to the entire Chem 31 course. These persons will hold a number of review sessions during the week, at which they will go over lecture material. When details become available, they will be posted on the web.

Recitation Sessions: As you probably know, the 7:00-9:00 PM time slot on Thursdays is reserved for our three exams during the semester. I plan to use the rest of those Thursday evening times to hold recitation sessions, mostly focused on doing problems (to complement the lectures, which are designed to discuss the concepts). Starting September 6, with the exception of an occasional Thursday when I may have a conflict, I will be in MLS 235 at 7:00 PM.

Communication: I will use postings on Blackboard (bb.uvm.edu) and class-email throughout the semester to publicize important information. Blackboard is a course management system where you will find class announcements, this syllabus with updates, lecture notes, sample exams, homework assignments, and a record of your grades as they are earned. You are responsible for checking these communication channels at least once per day so that you won't miss critical messages. In general, I prefer a phone call to me directly instead of umpteen iterative emails so please try that route first [for office phone, see above]. Leave a contact phone number if I happen to not be in my office.

Lecture Component

Lectures and Schedule: The lectures will be used principally to introduce and explain new material. This sometimes includes working out numerical problems, but going over the assigned homework problems is not the purpose of the lectures (see HW, below, and Recitation Session, above). I will post copies of my actual class notes on Blackboard after each lecture. These are very detailed, and written out – not just skeleton outlines. You can thus choose to take notes, or just listen and absorb. But please, do not interpret my extra effort of posting these notes as an excuse for not attending lecture. There is no substitute for hearing someone explain the many, diverse, and difficult concepts you'll encounter in this course. The tentative outline of material covered in each lecture is as follows. This schedule may be off a day or so in either direction.

#	*Date*	*Chapter*		*#*	*Date*	*Chapter*		*#*	*Date*	*Chapter*
1	8/27	syllabus		15	10/1	4		28	11/31	8
2	8/29	MC, 1		16	10/3	5		29	11/2	8
3	8/31	1		17	10/5	5		30	11/5	9
4	9/5	1		18	10/8	5		31	11/7	9
5	9/7	2		19	10/10	5		32	11/9	9
6	9/10	2		20	10/12	6		33	11/12	9
7	9/12	2		21	10/15	6		34	11/14	10
8	9/14	3		22	10/197	6		35	11/16	10
9	9/17	3		23	10/19	6		36	11/26	10
10	9/19	3		24	10/22	7		37	11/28	10
11	9/21	3		25	10/24	7		38	11/30	11
12	9/24	4		26	10/26	7		39	12/3	11
13	9/26	4		27	10/29	8		40	12/5	11
14	9/28	4								

Textbook/Software: We will again be using the textbook, "Chemistry - A Molecular Approach", by Nivaldo Tro, 2nd edition. This year we were able to negotiate a special arrangement with the publisher, Pearson. Instead of your having to buy a huge book for the entire year of General Chemistry (31 and 32), the UVM Bookstore now sells the Chem 31 portion in the fall, and the Chem 32 portion in the spring. For those who won't be going on to Chem 32 it means that you will save a lot, and for those who will take Chem 32 it means that you can spread your costs out over the two semesters. The Chem 31 package, which costs $146, contains:

(1) Volume 1 of "Chemistry – A Molecular Approach" (first 11 chapters).
(2) The Solutions Manual that shows the worked-out solutions for every single end-of-chapter problem in detail (whereas the book itself gives only the answers of odd-numbered problems).
(3) An individualized access code that allows you to use MasteringChemistry, which is an online program tied to our textbook. MasteringChemistry has a lot of resources, including tutorials, an e-book version of our text, and a mechanism through which you will do assessed homework that is part of your course grade.
(4) A small laboratory safety book ("Working Safely with Chemicals in the Laboratory") which all students are required to have read before you do any lab experiments.

Caution -- if, for some reason, you already have a used version of Tro's large textbook, be aware that you still need to purchase a MasteringChemistry access code, which is available from the purveyor (masteringchemistry.com) for $60.50. And don't buy it from a private party because once it's been used by someone, that code can only work for that person. You can also purchase the e-book version of our main text, plus an access code for $110. But be aware that going the e-book-only route will not save you much money because the lab safety book, bought separately at the UVM Bookstore, costs $17.50, and then you still don't have the Solutions Manual.
To access MC, type "masteringchemistry.com" into your browser's address line (the publisher says that Firefox works best). The course code you will need is LEENSTRAFALL2012 (case-sensitive).

Homework: First of all, on Blackboard, under the "Suggested EOC HW" tab, you will find 20-30 end-of-chapter problems which I have chosen as being representative of the chapter's content. Clearly you can add to that list if you feel like you need more practice. Since you should have the Solutions Manual, doing this is a painless way of deepening your familiarity with the material. For obvious reasons, homework will not be graded. I will also post the list on MasteringChemistry under "Assignments" so that you can't miss the point that, while not graded, I consider working the EOC problems to be a real homework assignment. So via MC, click on "Chapter x EOC Problems".

Getting answers for the EOC is certainly one way to assess your mastery of the content of each chapter. But you really should think of "homework" as a more encompassing task than just doing problems. It includes following parts: (1) read the textbook ahead of the material covered in class; (2) review the material within a day of having had it presented in lecture but before the next class; (3) use MC tutorials to practice and refine your problem-working skills; (4) do the end-of-chapter HW, and use the Solutions Manual to understand each step.

Quizzes: At the end of the last lecture during which a particular chapter is discussed, I will open up a Quiz, administered via MasteringChemistry, which comprises 10 problems, each worth 1 point. These will consist of some combination of tutorials and EOC exercises. For many of these, the actual input values you get will be randomly generated so that everyone gets different answers. The MasteringChemistry software grades each question based on a protocol that assigns value on how much help you need in the form of hints, etc. These quizzes are open-book, and I don't mind if you work with others on understanding the relevant concepts, and how to attack problems. There are 11 chapters, therefore 11 quizzes. I will drop the lowest of these scores, for a total of 100 possible points that you can earn towards your course grade.

Not all these valuable tutorials will appear on the graded Quiz. So, in order that you can benefit from them, for each chapter I will set up an Assignment called "Chapter x Tutorials". Do them!

Semester Exams: Three exams, worth 100 points each, will be given on Thursday evenings, from 7:00 PM till 9:00 PM. They are designed to be one-hour exams, but you can take the full two hours if you like. Your lowest exam score will be dropped; this way you will not be penalized if you had a bad day or didn't feel 100%. Our assigned examinations room is the Marsh Life Science 235. Note: I will not answer any material questions on examination days.

We will be crowded, but the half-dozen proctors will keep everyone honest. If you wear a baseball cap, turn the brim of your cap backwards. Put away all cell phones, iPods, etc. No papers are to be in your vicinity. The only calculator that is allowed to be used is the Sharp Model EL-501 that is for sale in the UVM Bookstore for about $7. We have had unpleasant cheating incidents with graphing calculators in the past, so there will be no exceptions granted. In general, offenses against the Code of Academic Integrity are not tolerated. Any suspected violations of the Code are taken very seriously and will be forwarded to the Center for Student Ethics and Standards (more details can be found at their website www.uvm.edu/cses).

The Thursday exams will cover material that includes the previous Monday's lecture. They will occur at approximately equal intervals on the following days:
Exam 1 — September 27 (first 12 lectures)
Exam 2 — October 25 (next 12 lectures)
Exam 3 — November 29 (next 12 lectures)

I will not give make-up exams. If you miss an exam for illness or any other reason, your zero will be thrown out as your lowest score. If your illness is of an extremely serious nature, you may get individual dispensation, but we must have a private, face-to-face conversation before the exam in order for you to receive any consideration. If you have a bona fide conflict with the time of the exam, you must contact me one week prior to the exam to get my permission to take it at another time that day. [You must furnish me with contact information such as, for example, your coach, lawyer, parole officer, etc. so I can verify your request. If you work in the evenings, please try to reschedule with your supervisor right away.] The exams will be returned to you in your laboratory the following week (but you may retrieve it from your TA outside of the lab as soon as they are graded). The last day to withdraw from the course with a W is Monday, October 29. You will have had 2 exams by then, giving you a good idea of where you stand.

Final Exam: The Final Exam is comprehensive, counts for 200 points, and will be a multiple-choice format. Since the three semester exams do not test the content of Chapter 11, this material will be emphasized somewhat on the Final. The entire Final Exam is designed to be a two-hour test. Our Final will be given on Tuesday, December 11 at 8:00 AM in your lecture room, Angell B-106. ***Please make your travel arrangements now, with this obligation in mind.***

Attendance: During the lecture, the concepts are being presented in a different way from how you probably were reading/studying them in the textbook. Thus, coming to lecture and absorbing the material is enormously important. Logistically, I cannot take attendance, however, I can also tell you that in the past when I did administer attendance quizzes, I found, as one would expect, that there is a very strong correlation between attendance and grade earned.

Laboratory Component

Dates: You have selected a section when you registered for the course. If you want to change your laboratory day/time selection, you should do so by September 10, the add/drop deadline, if available. The last day to withdraw from a course is Monday, October 29.

Attendance: Attending the lab section you were assigned is mandatory. Chemistry is an experimental science. We consider the laboratory experience of paramount importance to the discipline of chemistry. Thus, if you miss more than two labs (even for legitimate reasons), you will get a failing grade for the entire course!

If there is a serious issue such as, for example, a debilitating sickness, a family crisis, a scheduled sports competition, or a similarly unavoidable situation, you may ask for a switch to another lab for that week. Permission to attend another lab will only be given by our Laboratory Coordinator, Christine Cardillo. If this should be necessary, you need to contact her at Christine.Cardillo@uvm.edu and she will then contact you with your options for a switch. Such switches can only happen within the week that a particular lab is running because experimental set-ups are prepared by the stockroom only on a week-to-week basis.

Lab Manual/Notebook: The manual "Chemistry 31 Experiments" is sold at the first-floor stockroom, Cook A-143, for $15 (what a deal!). "Working Safely with Chemicals" is a small, required booklet, which is part of your course packet and also available at the UVM Bookstore for $17.50. Finally, you will have to buy a spiral-bound, duplicating-page lab notebook from the UVM Bookstore (~$15.95). Consistent with requisite practice in all science research, your experimental data must be recorded in ink.

Breakage Card: Prior to the first lab, you must purchase a breakage card from the first-floor stockroom, Cook A-143, for $40.00. This amount will be refunded to your CAT$cratch account if you do not damage any equipment. Do not leave your card at home on lab days because you can not start the experiment without it. In order to avoid long lines, stop by the stockroom in the weeks before your first lab.

Safety: OSHA-approved safety glasses or goggles (available for sale in the UVM Bookstore and the Chemistry Stockroom) must be worn by everyone once an experiment has started in any portion of laboratory room. Students not observing this rule will be given a zero for that experiment. Warnings will not be given. It is felt that contact lenses may be a serious health hazard, and should not be worn in the lab. Prescription glasses may be worn under the safety goggles. Food is absolutely not allowed to be consumed in the lab. If you need to snack on something you brought, you must eat/drink it outside the room. Also, open-toed shoes (sandals, flip-flops, etc.) are not permitted to be worn in the laboratory.

Lab Videos: Before coming to laboratory you must view the video that goes over each step you will be doing during that lab. It is an excellent way to prepare you for the pre-lab writing in your notebook, as well as for any questions on the day's activities that may come up in the quiz. The link for the videos can be found by going onto the Chemistry Department's web page (uvm.edu/~chem) and then clicking on "Courses" in the left-side panel, after which you'll find the CHEM 31 Laboratory Instructional Videos.

Laboratory Schedule: Labs will not be conducted in the first two weeks of classes. They will start the week of September 10.

Week of	Experiment	Description
Sep 10	1	Check-In, Lab Safety I, and Density of Metals
Sep 17	2	Lab Safety II, and Investigation of a Hydrated Salt
Sep 24	3	Mole Ratio
Oct 1	4	Determination of Acid Content in Food Product
Oct 8	5	Synthesis and Identification of Coordination Compounds
Oct 15	6	Gas Law Determination of Molecular Weights
Oct 22	7	Determination of Heat Capacity
Oct 29	8	Heat of Formation of Magnesium Oxide
Nov 5	9	Flame Emission Spectra of Metals
Nov 12	10	Qualitative Analysis - Part I
Nov 19		Turkey Eating
Nov 26	10	Qualitative Analysis - Part II, and Check-Out

Laboratory Grading Categories: For each laboratory experiment you can earn 20 points (for a total of 200 points). At the start of each laboratory, you will take a quiz administered by the Teaching Assistant, for which you can earn points. Your TA will check whether you wrote the pre-lab outline before the experiment is started, and will also check whether you are entering data into your notebook; these accomplishments are worth points. One week after the experiment you must turn in the calculations and associated questions on the lab report form; this is worth points. Finally, your technique (care in collecting data, safe handling of chemicals, etc.) will be assessed by the TA, and can earn you additional points.

The exact number of points for each category will be determined by each TA, but follows a set of guidelines given to them. The approximate weight percent assigned to each category has been set as follows, as contributions to the overall total of 200 points:

Start-of-Lab Quiz:	65 points, or 32.5% of the lab grade
Pre-Lab / Notebook:	30 points, or 15% of the lab grade
Laboratory Report:	80 points, or 40% of the lab grade
Laboratory Technique:	25 points, or 12.5% of the lab grade

Normalizing Sections: Even though each TA has the freedom to make up their own quizzes, and design their own grading scheme, at the conclusion of the semester we will standardize all of the points earned in each lab section to the same average of 80%. This will erase differences in grading standards among the large number of TA's that we have for the course.

Course Grade

Categories: The entire course will be graded on 1000 points that you are able to garner from lecture (800 points) and from lab (200 points). You can earn the 1000 points as follows:

1) Three exams at 100 points, dropping the lowest score, for a total of	200 points
2) One final exam valued at 200 points, for a total of	200 points
3) Ten best homework assignments at 10 points each, for a total of	100 points

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These 500 points from exams will be multiplied by 1.6, to generate a possible	800 points
4) The lab score (details above) can generate a possible	200 points
Thus, the total points possible for the entire course is	1000 points

Grading Scale: Assuming a large sample and a Gaussian distribution of scores, I am assigning the average grade to be between a C and a C+. Grade cutoffs will come at approximately equal intervals from the average. Using last year's Chem 31 results as an example, out of 1000 points, the average score was a bit above 700. This number was used as the border between a C and a C+. With 40 points as the incremental step, we had the following grading scheme:

above the average		*below the average*	
range	grade	range	grade
700-740	C+	660-700	C
740-780	B-	620-660	C-
780-820	B	580-620	D+
820-860	B+	540-580	D
860-900	A-	500-540	D-
>900	A	<500	F

If the average is higher, the whole class benefits with more high grades. If the average is lower, I will scale all point totals up by adding the difference between 700 and the average. To be clear, the above is only a guideline based on last year's class performance. The ultimate grading scheme that will be used will be constructed after the Final has been graded, and all lab grades are in. Your scores will be posted on Blackboard.