Chemistry 100
Chemistry in the Natural World

Welcome to Chemistry 100! Chemistry is often referred to as *the central science*. Chemistry touches many other scientific fields such as biology, physics, medicine, agricultural science, environmental science, materials science and nanotechnology among others. Chemists ask questions like: What are the properties of this substance? Why do these substances differ in their properties? How can we control these properties? How can we use what we know about substances and their properties to make new medicines, new building materials, innovative electronics, efficient power plants and automobiles that do not rely on gasoline?

In this course we will be asking some of these questions and exploring some of the most fundamental concepts in chemistry. Chemistry is an experimental science, so we will be exploring chemical concepts in the laboratory as well as in lecture. This course satisfies The Natural World General Education Requirement.

Catalog Description: *CHM 100 Designed to give non-science majors an understanding of the basic chemical principles of life processes, food additives, plastics, drugs, energy, materials production and pollution. Related laboratory experiments and field trips. Does not satisfy the requirements for a chemistry major. Term I, Term II.*

Headlines from major news media are interspersed throughout this syllabus to illustrate the links between the course content and the rest of the world.

General Information

Instructor: Dr. Kimberly Lawler-Sagarin **Phone:** (630) 617-3202 (x 3202 on campus)
Office: Schaible Science Center 218 **e-mail:** ksagarin@elmhurst.edu

Office hours: M 2-3pm, W 1:30-3:30pm, Th 2-3 (but may change) other times by appointment
These are subject to change. Regular office hours will begin week 2.
Finals week office hours will be announced.

Class Meetings: MWF 11:45 a.m.-12:50 p.m.; SC 236

Laboratory: F 1:00-3:30 p.m.; meet in SC 224

Required Materials: Text: Waldron, *The Chemistry of Everything, ISBN 0-13-008522-7*
Approved eye protection for the laboratory
Scientific calculator
This course will use the Blackboard course management system. Please make sure your Elmhurst Blackboard i.d. points to an e-mail address you check frequently.

Web Site: The course web site is available at **http://www.elmhurst.edu/˜ ksagarin/chem100** .

"Will Smog Choke Games?; Beijing weighs urgent actions to clear air before Olympics begin" (*Chicago Tribune*, 7/29/2008).

"Texas Is Fed Up With Corn Ethanol" (*Wall Street Journal*, 8/12/2008).

"EPA: Chicago Air Fails to Meet New Standards; 14 Illinois counties are on agency's list" (*Chicago Tribune*, 8/20/2008).

"F.D.A. Says a Hardening Chemical Used in Plastic Bottles Is Safe" (*The Associated Press*, 08/16/2008).

"Mars landers finds soil with Earth minerals" (*The Christian Science Monitor*, 6/27/2008).

"Six paints that won't raise a stink; Finishes that protect more than walls" (*Chicago Tribune*, 7/11/2008).

"U.S. News: California County Weighs Push for Offshore Drilling" (*Wall Street Journal*, 8/22/2008).

"In Lake, Photosynthesis Relies on Arsenic" (*The New York Times,* 8/19/08).

Course Structure and Grading in Chemistry 100

Overall Grading Philosophy

As your instructor, my goal is to help and encourage you to learn. All students learn differently, thus I try to utilize a broad range of methods and assignments. This means that there will be a lot of different opportunities for you to apply the concepts we will be investigating this semester. Correspondingly, there are many different ways to earn points and demonstrate your understanding of the material in this course.

At first glance, this entire section on grading may seem a little long. Being graded, especially in science courses, can create a certain degree of anxiety. What I have tried to do here is to write out all of my grading policies so that both you and I know what to expect. *Please* read this and subsequent sections carefully. If you find you have a grading situation or question that is not addressed here, please do not hesitate to ask.

Points and Assignments

Grades on all assignments will be given in points. The maximum number of points possible is 1000. Grading criteria within each of these categories varies and is discussed in the individual sections of the syllabus. Grading for the laboratory portion of the course is described later in this syllabus.

	Points Each	Total Points	Percentage of final grade
Exams (4)	100	400	40%
Final Exam	100	100	10%
Laboratory	230	230	23%
Homework Problem Sets (12)	15	180	18%
Additional Assignments (9)	10	90	9%
Total		1000	100%

Grading Scale

Students must complete the minimum course requirements to successfully complete the course objectives and receive a passing grade in this course. The grading scale will depend in part on my assessment of the difficulty of exams and the final. However, the grading scale, for those students meeting all course requirements, will not be raised above the following:

900-1000	A
800-899	B
700-799	C
600-699	D
599 and below	F

This means if you receive 900 points and complete all course requirements, you will get an A. If you have 899 points (and you have completed all course requirements) you will be guaranteed *at least* a B. Students not fulfilling all course requirements will be subject to specific grading policies defined in the next section.

Students within 15 points of the next highest grade *may* be given the higher grade at the discretion of the instructor based on consideration of a high homework percentage, regular attendance, instructor evaluation, and overall performance pattern. To be considered for "bumping up" a grade, you must be within 15 points of the next highest grade and have a score of at least 80% on your assignments in the lecture portion of the course.

"Beverage Wars Take On New Flavor; Pepsi, Coke Race to Be First to Sell Drinks With Natural Sweetener" (*Wall Street Journal*, 7/31/2008).

"Gassing Up With Garbage" (*The New York Times,* 7/24/08).

Course Requirements

This course is designed with many different types of activities and assignments. Students are asked to participate actively in all portions of the class. A baseline set of course requirements is established below. These baseline requirements are considered essential for success in the course.

To be graded on the grading scale defined in the previous section, you must complete or meet all the following course requirements. These are listed below:

1. Pass the lecture portion of the course (462 points in lecture).
2. Pass the laboratory portion of the course (138 points in lab).
3. Have no more than 1 unexcused absence from the laboratory.
4. Adhere to all safety precautions in the laboratory.
5. Achieve an exam average of at least 50% and pass the final exam
6. Accumulate a score of at least 189 points (70% of 270) on your assignments.
7. Prepare and present three chemical demonstrations to the class in the laboratory.
8. Present acceptable final versions of two chemical demonstrations.

Please Note: Not meeting the course requirements can have a *significant* effect on your grade in the course. Below, you will find the rationale for these policies, as well as the effect they may have on a course grade.

- Both portions of this course, the lecture and the laboratory, are essential to the course objectives. Thus, all students are required to obtain a passing grade in both the lecture and the laboratory portions of the course.
- The laboratory is an experiential learning opportunity, thus attendance and active participation is required. More than one unexcused absence from lab is not allowed.
- An essential part of this course is problem-solving and critical engagement in the material discussed in this course. Thus, all students are required to achieve a minimum of 70% of the total assignment points.
- The final exam will be comprehensive and designed to test broad concepts and ideas discussed in the course. It is expected that all students will receive a passing grade on the final.
- Safety in the chemical laboratory is very important for your own well-being as well as the well-being of others. A recurring disregard for safety precautions may adversely affect your overall grade in the course by as much as an entire letter grade.
- Achieving a combined average of 50% on the exams is considered essential for demonstrating that you have met General Education Objective 1 for catagory The Natural World. (Investigation of the basic concepts and principles of a particular discipline in the natural sciences.)
- The laboratory portion of the class includes a chemical demonstration show component. This is designed to allow you to have an independent, fun and rewarding learning opportunity by providing you with an authentic task that reaches beyond our classroom. The lab periods will be dedicated to preparing you and your classmates to present three demonstrations to your classmates. You will choose two of these to be videotaped for closed or open distribution on YouTube. Completing these final taped version of your demos is required, as it is the culminating experience for that portion of the laboratory.

In the very unlikely case that a student does not meet the course requirements, that student may not receive a passing grade in this course, depending on the nature and extent of the unmet requirements. At minimum, the student will receive a one-letter grade penalty.

"Progress against toxins in toys takes small steps" (*Chicago Tribune*, 8/17/2008).

"Consumer Group Urges Ban On Artificial Food Colorings" (*Wall Street Journal*, 6/04/2008).

"Global Warming Sign? Huge Petermann Glacier in Arctic is Cracking" (*The Los Angeles Times*, 8/23/08).

College Policies

College policies on incompletes/drops/unauthorized withdrawals will be followed. Also, **read carefully** the Code of Academic Integrity and the Student Rights and Responsibilities section of the current Student Handbook (E Book) to understand College policies regarding plagiarism, cheating, non-discrimination, and policies regarding privacy with regard to student records. All such policies will be strictly enforced.

If you have a diagnosed disability or believe that you have a disability that might require reasonable accommodations for academic instruction please contact the Disability Services Provider (630) 617-3753. It is your responsibility to initiate a request for services from DSP and to provide appropriate verification of disability. Upon disclosure of a disability verified by DSP, any reasonable accommodation will be made.

Goals and Objectives

Natural World General Education Category

This course fulfills the General Education requirement for the Natural World Category. Courses in The Natural World category develop students' knowledge of the natural world through a variety of scientific inquiry methods. They provide an understanding of the basic concepts, principles and methods of science. Objectives include:

- **Objective 1:** Investigation of the basic concepts and principles of a particular discipline in the natural sciences.
- **Objective 2:** Active exploration of the unifying paradigms of science; namely, the development of inductive inquiry skills as illustrated by the scientific method and of deductive skills via the use of the discovery method of scientific inquiry.
- **Objective 3:** Consideration of the scientific, historical, social, philosophical, and ethical contexts in which science is practiced.

We will be meeting these objectives through a combination of class lectures, class activities, course assignments and laboratory experiences.

Course Assignments

Course Assignments: Homework Problem Sets

Twelve (12) homework problem sets will be assigned and will generally be due on Wednesdays. To allow time for questions in class, the homework set will be accepted through 3:30 p.m. Wednesday afternoon (or 3:30 p.m. the evening of the assigned due date). These may be turned in in class or in the box outside my door (SC 218).

Guidelines for preparing homework assignments are as follows:

1. Homework must be completed on standard 8.5 by 11 inch paper, multiple pages should be stapled together.
2. Please put your name in the top right hand corner of your homework set.
3. In some cases, the homework assignment will be a handout. In this case, complete all your work directly on the handout, adding additional pages if necessary.
4. The full solution should be written out, showing all steps. Show all your work on mathematical problems. No credit will be given for such problems if your work is not shown. Final answers must **always** include correct units.

Keys to the homework will be available at the Chemistry 100 Blackboard site shortly after the class in which the assignment was due. This can be accessed by going to http://bb.elmhurst.edu and following the link for Chemistry 100 under courses you are taking.

Grading of problem sets is as follows.

1. Each problem set will be worth 15 points.
2. You will receive partial credit for attempting the problems. The remaining points will be assigned based on successful completion of the problems.
3. Late homework: accepted ONLY with a "Late Certificate" (See the section regarding skipped or late assignments.)

Course Assignments: Other Assignments Assignments

There will be nine (9) additional assignments in the lecture portion of the course. These assignments vary in format

- Assignments 1 & 2: Chemistry in the News - Due Dates Vary

  On most regular class days, one or more students will present a short "Chemistry in the News" presentation for the entire class. This will be a verbal synopsis of a current chemistry-related newspaper or magazine article. Topics can be from any area, but likely categories include the environment, drugs and pharmaceuticals, food additives, natural resources, new building and manufacturing materials, new products, and alternative energy. The article should be from the previous six weeks. Acceptable sources include print as well as on-line national newspapers and magazines. Examples of acceptable sources include: Chicago Tribune, Chicago Sun-Times, New York Times, Washington Post, Wall Street Journal, Christian Science Monitor, Salon.com, San Francisco Chronicle, Newsweek, Time, The New Yorker, The National Review, The Nation, Scientific American. However, it is unacceptable to use stories from services like Yahoo!, Netscape or MSN, as some of these articles often lack sufficient detail. If you want to use a story from one of these or from a similar source that you feel has the required detail, it must be approved a class period in advance.

  The presentation will be a few minutes in length and may include powerpoint slides, overheads, hand-outs or items to pass around. Example presentations will be given by the instructor the first week of class. Due dates will be assigned by lottery. Students missing their assigned day may give their summary the following class period with a 2 point penalty (and 2 points every class day thereafter). You may exchange days with another classmate, provided you both agree to the switch. Please turn in a copy of the article with your name on the top when you present your article.

- Assignments 3 - Evidence and Arguments - Due by Friday, December 5th.

  Each student is required to attend at least one campus intellectual events during the term. To receive credit for attendance and reflection on the event, turn in a brief report discussing the role and impact of "reliable evidence" in the event content. Place your name, the name of the speaker(s), the date and title of the event at the top of your report. The report should be 2-3 paragraphs in length. The event should be part of the college's lecture series, or otherwise approved in advance.

- Assignments 4-9 - Inclass Problems and Reflections

  To facilitate the formation of a learning community within Chemistry 100, you will often work in small groups on collaborative assignments. On a few occasions, the majority of the class period will be devoted to such activities or the assignment will be started in-class and completed outside of class. On these occasions, the in-class problems will be worth 10 points. You must be present to be eligible for the points.

  Additionally, there will be one or more short free-writing assignments asking you to reflect on some aspect of the class. This may be a response to the day's topic, a response to a question posed by the instructor, or a creative activity. These will be worth 10 points.

  There will be one extra in-class problem or reflection to accommodate those who might have had an unavoidable absence.

Always bring your calculator to class. Please bring other materials such as the textbook to class as specified.

"New CFC-free inhalers leave many asthmatics not breathing any easier" (*Chicago Tribune*, 5/27/2008).

"Runners Put Beijing Air to Test" (*Wall Street Journal*, 8/15/2008).

"Pacific Region May Show The Future of Coral Reefs In More Acidic Oceans" (*The New York Times,* 7/29/08).

Skipped or Late Assignments

Because everyone has a bad week, gets sick, or just runs behind, you will get a series of "Late Assignment Certificates". **Late assignments will NOT be accepted for regular grading unless accompanied by a certificate**, or the assignment is postponed for the entire class. One exception is the Chemistry in the News Assignments which have a late penalty of 2 points. Other exceptions to this policy will only be made in the case of serious (and documented) illness or tragedy. (See: "What if I run out of certificates?" below.)

Certificates are as follows:

- You will receive five certificates that will allow you to turn in a homework problem set or other assignment **1 class period late**. Several certificates can be combined to extend the due date further.

  As several late certificates may be used at once, occasionally students will have access to the key or the graded work of others. Thus, a student with three unused week-late certificates may turn in a corrected problem set to be graded again the last week of class.

"What if I run out of certificates?"

If you run out of certificates for routine mishaps and delays and have to miss any additional assignment(s), you may turn in the assignment(s) at the end of the semester. You will not receive homework points for the late assignment, but it will be counted toward fulfilling course requirements (such as the homework completion course requirement - completing 70% of assigned work.

Exams

There will be four lecture exams. Lecture exams will be given during regularly scheduled class periods. Topics may include: assigned material in the text, lecture material (whether or not it is covered in the text), homework and other assignments, in-class problems, and any video segments shown in the lecture or laboratory. You are responsible for assigned reading in the text regardless of whether that material has been discussed in lecture. It is your responsibility to be aware of rescheduled exams, and to attend regularly to participate in in-class activities. Rescheduled exams will be announced in lecture or laboratory. If you miss class, you should consult the syllabus or class website for assignment due dates and other information.

No exams will be dropped. Every student will be given the opportunity to make-up or re-take 1 exam at the end of the semester.

Exam guidelines are as follows: closed book, no talking, no sharing calculators, no brimmed hats, no cell phones. Bring pens/pencils, scientific calculator. Scratch paper will be provided. Only simple function, non-programmable calculators with small rectangular windows are allowed on exams. When you enter the room on exam days, please spread out, allowing plenty of room for each person to work.

Policy on Missed Exams

Attendance on exam days is **mandatory**. I will grant permission to make up a exam ONLY if your absence is due to any of the following: (1) serious illness; (2) an order from the US Military; (3) officially representing the College; (4) death in the immediate family. All such instances will require documentation. It will be your responsibility to set up a time to take a make-up exam. In the case of reason #3, please let me know you will be missing the exam well in advance of the event. In all other cases, let me know as soon as feasible (e-mail, phone, etc.).

A missed exam (for any other reason than the four listed above) will only be made up at the end of the semester. This policy is in place in order to apply the same standards and opportunities to all students in the course.

Retake an Exam Day!

The make-up/re-take period is Reading Day - Monday, December 8th, during what would be normal class time. Each student may choose to retake any one exam. Specific guidelines for makeup/retakes are below:

- The make-up day is scheduled for Monday, December 8th, 11:45 a.m.
- You may make-up one exam for any reason.
- If you did not take the exam the first time, you must get at least 30% on the make-up exam in order for your score to be counted. Anything under 30% will remain a zero. (Any student for whom this applies may request permission to have this requirement waived. This situation is extremely rare, but if you find yourself in this situation, I will notify you as soon as the make-up exams are graded. A written request should then be submitted to me with a description of why you missed the original exam. This written request may be submitted to me any time prior to the last day of finals week.)
- If you did take the exam the first time and you receive a higher score on the make-up it will replace your previous score. If you receive a *lower* grade, the scores will be averaged, with the higher score weighted 2:1 with the lower score. (example: if you received a 65 on the first exam, and then retook that exam and scored a 50, your score would become $(65 + 65 + 50)/3 = 60$.) If your score was lower, but within 10 points of your previous score, this will be waived and only the higher score will be counted. (example: if you received a 65 on the first exam, and then retook that exam and scored a 55, you would keep your first score of 65.) After attempting the retake, you may choose to "sign out" and not have your new exam graded.
- You must inform me by Friday, December 5th that you wish to take a make-up exam and you must choose which one you will be taking.

Laboratory

The laboratory portion of this course meets Friday from 1:00 to 3:30 p.m. in SC 224. The laboratory consists of various activities totally 230 points. These are broken down as follows:

Wk #	Date	Activity	Part. Points	Additional Assignment Description	Additional Points	Tot. for Week
1	Aug. 29	Safety/Check-in/Demos	10	-	-	10
2	Sept. 5	Chemical Reactions	10	Data & Calculations	5	15
3	Sept. 12	Electron Dot Structures	10	Worksheet	10	20
4	Sept. 19	Demo Prep 1	10	-	-	10
5	Sept. 26	Demo Prep 2	10	-	-	10
6	Oct. 3	Practice Demos A	10	Preparation Grade	10	20
7	Oct. 10	Esters and Odors	10	Data & Calculations	5	15
8	Oct. 17	Practice Demos B	10	(continued from 10/3)	-	10
9	Oct. 24	Final Practice Demos	10	Preparation/Chemistry	20	30
10	Oct. 31	Videotape Demos	10	Prep/Chem/Presentation	20	30
11	Nov. 7	Heat Content of Fuels	10	Data & Calculations	5	15
12	Nov. 14	Wastewater Treatment	10	Response Paper	5	15
13	Nov. 21	Day One (movie)	10	Response Paper	10	20
14	Nov. 28	Thanksgiving Break	-	-	-	-
15	Dec. 5	Fiber Reactive Dyes	10	-	-	10
				Total		230

As you can see above, all weeks include participation points. Many of the laboratory activities also have additional points associated with them. All laboratory points are described below.

- **Participation Points (140):** Points are awarded for attendance and full participation in the laboratory activities for that week. Students can expect to receive all ten (10) points for attending the entire lab session, completing all required activities, cleaning up their workspace and following all safety procedures. Deductions will only be made for non-attendance, leaving before activities are complete or disregarding safety and clean-up instructions. There are fourteen (14) laboratory meetings.
- **Data and Calculations and Worksheets (25 total):** Several labs have post lab questions and calculations. These will generally be completed before leaving the laboratory. Five (5) points will be awarded for successfully completing these questions. One lab consists of a worksheet that will be started in lab and completed at home (if necessary). This will be graded out of 10 points.
- **Response Papers (15 total):**
  - **Wastewater Plant Follow-up:** After attending the Wastewater Treatment Plant tour, write a one-page response and reflection addressing these questions: What are the challenges a community faces in regard to dealing with wastewater? Is there anything an individual can do to make a difference? Of all the things you learned on the tour, what surprised you the most? Due the next lab meeting after the tour.
  - **The Manhattan Project & Individual Choice:** After watching the movie *Day One* in lab, write a 350-500 word response mini-essay. In the mini-essay, choose one of the historical characters in the film and discuss how their individual choices lead to the outcome - the bombing of Hiroshima and Nagasaki and the deaths of over 200,000 people. If one of these people made a different choice, would things have come out different? Should they have made a different choice? Due Dec. 5th.
- **Chemical Demonstrations: Preparation/Chemistry/Presentation (50 points)**

  The laboratory module devoted to chemical demonstrations includes two preparation days. These days have only participation points associated with them. Two more lab periods will be dedicated to practicing the demonstrations in front of your classmates for the first time. You will receive participation points for attending and will receive up to 10 additional points for your preparation of your own demos. Being ready to present your demos with all required materials and knowing how to do the demos are all that are required to receive full credit. Another lab day is devoted to a final practice of two selected demos. This practice will be graded out of 20 points - a grade which will include preparation as well as a grade for the correct and detailed chemical explanation of the demo. For the final lab day in the module, the demos will be videotaped and this final presentation will be graded out of 20 points for a combination of the correct and detailed chemical explanation, preparation level and overall presentation.

Laboratory attendance is mandatory. Chemistry is an experimental science and the laboratory portion of this course is experiential in nature. Thus, no more than 1 unexcused absence will be allowed to receive a passing grade in the course. Absences will be excused only in the event of serious illness, military service, representing the college, or in the case of a family or personal emergency. Such events must be documented to have an absence excused. If you have an excused absence, you may be granted permission to make up the laboratory for full credit within one week of the scheduled laboratory. You must schedule this make-up lab with the instructor. Excused absences on demo practice or presentation days will be made up in a way determined by the instructor - this may consist of practicing/presenting the demos at another time before the final videotaping or doing an alternate activity.

Several course requirements relate to the laboratory and are reiterated here:

1. Pass the laboratory portion of the course (138 points in lab).
2. Have no more than 1 unexcused absence from the laboratory.
3. Adhere to all safety precautions in the laboratory.
4. Prepare and present three chemical demonstrations to the class in the laboratory.
5. Present acceptable final versions of two chemical demonstrations.

A missed course requirement generally results in a one letter grade penalty. This is determined on a case by case basis.

Safety

Safety in the chemical laboratory is very important both for your own well-being as well as the well-being of others. A recurring disregard for safety precautions may adversely affect your overall grade in the course by as much as a entire letter grade.

Eye protection in the laboratory is mandatory. There are no exceptions. If you do not have approved eye protection, you will be asked to leave and will receive an unexcused absence for that laboratory. Goggles, not safety glasses, are required for some labs.

Lab Cleanliness

Several different chemistry labs are held in SC 224. It is important to clean up all glassware and return all chemicals and equipment to the Chemistry 100 drawers or your assigned demo bin.

I reserve the right to institute a policy to insure cleanliness in the lab, and that policy may affect your lab grade. However, if everyone pitches in this will not be necessary.

Computer Software, E-mail and Web Access, etc.

The course web site will be the primary means of distributing homework and exam solution keys, suggested problems, exam help sheets, directions for the laboratory and many other handouts. Assignment will be handed out in class, but will be available on the web site if you misplace your copy. The web site will also have links to various on-line resources for specific assignments as well as for general use. We will also make use of the blackboard course management system to facilitate e-mail and for communication regarding points and grades. The class web site and the Blackboard site will be linked to one another so one can easily move between the two. Because of all these factors, I ask that you arrange to have or do the following:

- Web access, either through home/dorm or arrange your schedule to accommodate some time in one of the on-campus labs each week.
- If you will primarily be using your own computer, obtain Acrobat reader or another pdf display program. Acrobat Reader can be downloaded for free from Adobe (http://www.adobe.com/). Most on-campus computers should have this. (Many of the documents I will distribute will be in "pdf" format, hence the requirement.)
- An e-mail account which you check frequently. Accounts are available for free to all Elmhurst College students from Academic Computing Labs, but you are free to use any address you like. Point your Blackboard e-mail address to an e-mail address you check frequently.

The direct address for the course web site is: http://www.elmhurst.edu/˜ ksagarin/chem100/

Getting Help

There are many resources available to you to help you complete this course successfully. I have office hours each week - please take advantage of these! You may also feel free to stop by my office at times other than those posted. An open door usually indicates I am available for questions.

One of the best ways to contact me is by e-mail (ksagarin@elmhurst.edu). I will generally respond via e-mail fairly quickly.

The class web site will have many resources. Check it frequently for announcements, updates, and helpful links.

A good time to call me and find me in my office is in the afternoons, but you may leave a message anytime. To protect your privacy, I will not leave any information relating to your assignment, exam or course grade on an answering machine. Please leave me a time frame when you can be reached, or specific instructions that I can leave the requested information on an answering machine. Otherwise, I may wait

to answer your question in class, or send you e-mail later. I check my e-mail more frequently than my voice-mail, so you may want to try that if you are in a hurry.

The publishers of the textbook have created a web site for use with the text. You can reach it by going to **http://www.prenhall.com/hill/html/chem.html** and selecting our text.

The Elmhurst College Learning Center provides a variety of services to Elmhurst College students. Students can receive one-on-one tutoring in math, reading, writing, and study skills areas. A variety of other resources are also available including workshops, handouts, videotapes and on-line resources. The Learning Center is located in Frick Center 229. (x 3155)

The Writing Center, located inside the Learning Center in the Frick Center, offers one-on-one tutorials to help students at all levels to improve their writing. (x 5689)

Extra class handouts will generally be available on the website in pdf format. I will leave extra copies by my office door (Science 218, 2nd floor, south side) immediately following the class. If for some reason you have to miss class, please check the website for information and handouts. Please also be sure to consult the syllabus for relevant due dates.

A Few Details About Course Materials

1. The text is *The Chemistry of Everything* by Kimberley Waldron. The ISBN-10 is 0-13-008522-7. The text is required.

2. Some students may find the book's study guide to be helpful. The title is: *Study Guide & Selected Solutions Manual for The Chemistry of Everything*. The ISBN-10 is 0-13-187537-X. This is available from the publisher at http://www.pearsonhighered.com/ as well as on-line book retailers. Used copies are also available on-line. You may also order these through the bookstore, but they are not kept in stock.

3. Safety glasses and goggles: there is a limited selection of protective eye-ware available for use in the laboratory at no charge. Alternatively, you may purchase protective glasses from the chemistry department for $2, and goggles are available from the bookstore for around $5. Regular glasses and/or sunglasses do not qualify as acceptable protective eye-ware.

4. A scientific calculator is required. If you do not already have one, any calculator that specifically says "scientific calculator" will have all the required functions for this course. Such calculators can be purchased for $15 or less. Back to school sales may result in prices as low as $8.

"Vioxx study a masquerade, journal says; Report cites Merck memos on painkiller" (*Chicago Tribune*, 8/19/2008).

"Irradiation Of Spinach And Lettuce Is Approved" (*The New York Times,* 8/22/08).

"Athletes' Viagra use on rise" (*Chicago Tribune*, Jun 28/2008).

"In the Metal Recycling Business, It's Loud, Dirty and Suddenly Lucrative" (*The New York Times,* 6/27/08).

"21 Hospitalized, 45 Hurt after Montgomery Chemical Leak" (*The Daily Herald*, 6/26/2008).

"Iran, EU to Meet on Nuclear Issue" (*The Associated Press*, 7/11/2008).

Tentative Schedule

In Chemistry 100, we will study the fundamental chemical concepts discussed in *The Chemistry of Everything*. Specific sections in the text are noted next to each topic on the schedule. However, not everything discussed in class will be covered in the text. There is some flexibility in the schedule and the dates for the chapters/sections listed in the schedule are subject to change. Tentative due dates for course assignments are posted on the schedule. I reserve the right to change due dates for assignments if the need arises. Any delayed due dates will be announced as soon as possible. Any more serious modifications will be announced well in advance.

Fall 2008 topics schedule and assignment schedule on pages 12 & 13 ⟶

Chemistry...is one of the broadest branches of science, if for no other reason that, when we think about it, everything is chemistry. (Luciano Caglioti, "The Two Faces of Chemistry", The MIT Press, Cambridge, Massachusetts, 1985, p.xv)

Chemistry stands at the pivot of science. On the one hand it deals with biology and provides explanations for the processes of life. On the other hand it mingles with physics and finds explanations for chemical phenomena in the fundamental processes and particles of the universe. Chemistry links the familiar with the fundamental. (P. W. Atkins, "Molecules", W.H. Freeman and Company, New York, 1987. p. 2)

"Poison ivy: The Pest that Thrives on Carbon Dioxide" (*Chicago Tribune*, 7/27/2008).

"Lab Converts Prius to Run Pollution-free with Hydrogen" (*San Francisco Chronicle*, 6/5/2008).

"A Cloth to Cut The Mercury Risk From Light Bulbs" (*The New York Times,* 7/08/08).

Table 1: Tentative Topic Schedule - Chemistry 100 - Fall 2008

Week #	Day	Date	Text Chpt.	Topics (Text Sections)
1	M	Aug. 25	1	Introduction, a question about energy (1.1-1.3)
	W	Aug. 27	1	Atoms, compounds and chemical change - metallurgy, alchemy (1.2-1.3)
	F	Aug. 29	1	Mars Climate Orbiter, unit conversions, scientific method (1.4-1.6)
2	M	Sept. 1	-	No Class - Labor Day
	W	Sept. 3	2	Minerals and ionic compounds, the periodic table (2.1-2.2)
	F	Sept. 5	2	Atomic structure, nuclear isotopes (2.3)
3	M	Sept. 8	2	More on ionic compounds, redox, gemstones (2.5-2.6)
	W	Sept. 10	2	Scientific notation, moles (2.4)
	F	Sept. 12	3	Allotropes of carbon, nanotechnology, electron dot structures (3.1-3.5)
4	M	Sept. 15	3	Organic molecules, electron dot structures (3.6-3.8)
	W	Sept. 17	*	Exam 1
	F	Sept. 19	4	Salts, polyatomic ions, solutions 4.1-4.5
5	M	Sept. 22	4	The problem with homeopathy, the down low on concentrations (4.4-4.5)
	W	Sept. 24	4	Acids and bases - What is pH? pH of household items (4.6)
	F	Sept. 26	4	Air pollution - cars and coal (4.7)
6	M	Sept. 29	4	Acid rain - causes and effects (4.7)
	W	Oct. 1	5	Fireworks and more about electrons (5.1-5.2)
	F	Oct. 3	5	The electromagnetic spectrum & color (5.7-5.8)
7	M	Oct. 6	5	Say cheese! How does film work? (5.2)
	W	Oct. 8	5	Redox redux: how do batteries work? (5.4-4.5)
	F	Oct. 10	*	Exam 2
8	M	Oct. 13	-	No Class - Fall Break
	W	Oct. 15	6	What is nuclear radiation? (6.1-6.4)
	F	Oct. 17	6	Effects of radiation exposure, nuclear medicine (6.6)
9	M	Oct. 20	6	Nuclear power, nuclear weapons (6.5)
	W	Oct. 22	7	What holds stuff together? Intermolecular forces (7.1-7.3)
	F	Oct. 24	7	What dissolves in water? (7.1)
10	M	Oct. 27	7	Energy, phase changes, specific heat (7.4-7.6)
	W	Oct. 29	8	The ozone layer, CFC's, Antarctic ozone hole (8.7)
	F	Oct. 31	8	Global climate change (8.7)
11	M	Nov. 3	9	Coal, natural gas, petroleum (9.1-9.3)
	W	Nov. 5	9	Should you buy gas with an octane rating or 87 or 92? (9.2)
	F	Nov. 7	*	Exam 3
12	M	Nov. 10	10	Polymers and plastics (10.1-10.5)
	W	Nov. 12	10	Polymers and plastics, recycling (10.1-10.6)
	F	Nov. 14	H	Safe Drinking Water Act, wastewater treatment (handout)
13	M	Nov. 17	13	Use the force: pharmaceutical development (13.1-13.6)
	W	Nov. 19	14	The dark side: illegal drugs (14.1-14.6)
	F	Nov. 21	H	Chemistry to dye for - chemistry in color (handout)
14	M	Nov. 24	14	This is your elite athlete on drugs: steroids & doping (14.3-14.4)
	W	Nov. 26	13	Case studies in pharmaceutical ethics (handout)
	F	Nov. 28	-	No Class - Thanksgiving Break
15	M	Dec. 1	tba	Flex day
	W	Dec. 3	-	Exam 4
	F	Dec. 5	*	Exams handed back, sign up for Re-takes, review
16	M	Dec. 8	*	Exam Re-Take
	W	Dec. 10	-	Final Exam
				10:30 a.m. - 12:30 p.m.

Table 2: Tentative Assignment Schedule - Chemistry 100 - Fall 2008

Week #	Day	Date	Text Chpt.	Homework Due	Exams	Lab Exps. & Holidays This Week
1	M	Aug. 25	1			
	W	Aug. 27	1			
	F	Aug. 29	1			Intro/Checkin/Safety/Show
2	M	Sept. 1	-			No Class Monday
	W	Sept. 3	2	homework 1		
	F	Sept. 5	2			Chemical Reactions
3	M	Sept. 8	2			
	W	Sept. 10	2			
	F	Sept. 12	3	homework 2		Electron Dot Structures
4	M	Sept. 15	3			
	W	Sept. 17	*		Exam 1	
	F	Sept. 19	4			Demo Prep
5	M	Sept. 22	4			
	W	Sept. 24	4	homework 3		
	F	Sept. 26	4			Demo Prep
6	M	Sept. 29	4			
	W	Oct. 1	5	homework 4		
	F	Oct. 3	5			Demo Practice A
7	M	Oct. 6	5			
	W	Oct. 8	5	homework 5		
	F	Oct. 10	*		Exam 2	Esters and Odors
8	M	Oct. 13	-			No Class Monday
	W	Oct. 15	6	homework 6		
	F	Oct. 17	6			Demo Practice B
9	M	Oct. 20	6			
	W	Oct. 22	7	homework 7		
	F	Oct. 24	7			Final Demo Practice
10	M	Oct. 27	7			
	W	Oct. 29	8	homework 8		
	F	Oct. 31	8			Videotape Final Demos
11	M	Nov. 3	9			
	W	Nov. 5	9	Homework 9		
	F	Nov. 7	*		Exam 3	Energy Content of Fuels
12	M	Nov. 10	10			
	W	Nov. 12	10	homework 10		
	F	Nov. 14	11			Wastewater Field Trip
13	M	Nov. 17	13			
	W	Nov. 19	14	homework 11		
	F	Nov. 21	H			Day One (Movie)
14	M	Nov. 24	14			
	W	Nov. 26	13	homework 12		
	F	Nov. 28	-			No Class Friday - No Lab Friday
15	M	Dec. 1	tba			
	W	Dec. 3	*		Exam 4	
	F	Dec. 5**	*			Fiber Reactive Dyes/Checkout
		**Last day to turn in Day One essay, campus event, assignments with late certificates				
16	M	Dec. 8		Optional Exam Retake 11:45 a.m.		
	W	Dec. 10		Final Exam 10:30 a.m. - 12:30 p.m.		
	F	Dec. 12		Happy Holidays!		