I. Course Overview
A. Basic Information

Department: Chemistry
Course Prefixes: CHM 300, Section 001 (CRN 41674)
Course Title: Chemistry and Society
Credit Hours: 4

Class meets Tuesdays and Thursdays, 3:00 PM – 4:47 PM in Room 168 Science and Engineering Building (SEB).

B. Instructor’s Information

Name: Professor Dagmar Cronn, Ph.D.
Office: Room 285, Science and Engineering Building (SEB)
Mailbox: 264 SEB under name of Cronn.
Phones: Office: (248) 370-4064 Home: (248) 693-7845
E-mail Address: cronn@oakland.edu
Office FAX number: (248) 370-2321 (requires proper addressing to recipient (Cronn) to assure delivery)
Mailing Address: Chemistry Department, 285 SEB, Oakland University, Rochester, MI 48309-4477
Office Hours: Before and after class or by appointment. Feel free to leave me a message at either phone number or on my e-mail. Please do not call me at home after 9:00 PM.

C. Catalog Course Description

Designed for non-science majors and elementary and STEP chemistry majors and minors. Applies chemistry to environmental topics including smog; ozone depletion; global climate change; water pollution; acid rain; and fossil fuel, nuclear and alternative energies. Several in-class laboratory experiences included. Satisfies the university general education requirement in the natural science and technology knowledge exploration area Satisfies the university general education requirement for a writing intensive course in general education or the major, not both.
Prerequisite for writing intensive: Completion of the university writing foundation requirement.

D. Required Text

Custom version (includes two laboratories) of
CHEMISTRY IN CONTEXT – Applying Chemistry to Society Fourth Edition
A Project of the American Chemistry Society
Stanitski, Eubanks, Middlecamp, and Pienta
McGraw-Hill
Web site to accompany the textbook: www.mhhe.com/cic
Supplemental reading material handed out and/or made available on the WebCT site.
II. Course Goals and Objectives

This course is one of a number of OU courses that satisfy the natural science and technology knowledge exploration area requirement in the general education curriculum. Courses in this category are expected to accomplish the following two learning objectives:

The student will demonstrate:
- knowledge of major concepts from natural science or technology, including developing and testing of hypotheses; drawing conclusions; and reporting of findings through some laboratory experience or an effective substitute (Laboratory experiences are met by either a limited number of interactive experiences, collecting and interpreting raw data, or other effective experiences such as a virtual laboratory) Requires at least 3 laboratory experiences during the course
- how to evaluate sources of information in science or technology

In addition to the two general-education learning outcomes, this course also includes:
1) the crosscutting capacity of Effective Communication, and
2) the Intensive Writing Requirement
   a) as a General Education Course, or
   b) as the Intensive Writing Requirement in the STEP Chemistry major

The additional course objectives can be found for each chapter in the Assignments section.

The course is one of the approved courses for the elementary integrated science major (DI endorsement). The course also meets the course requirement in the Secondary Teacher Education Program (STEP) for the science, technology and society category.

The uses of science and technology are important to our lives. Science plays roles in our lives that are likely to increase in the future. Thus this course’s major goal is to contribute to your own scientific literacy. It should add to your understanding of the science that affects you personally. One aspiration of this course is to create citizens who can make informed choices about issues that require some understanding of the scientific implications behind the decisions. Another aspiration is to develop a respect for science and those who do science. Still another is to help answer your own curiosity about things that require a scientific explanation for understanding. And finally, this course aspires to accomplishing the objectives above in a manner that you will find interesting and fun.

III. Course Policies and Procedures

A. Web Site

There is a web site for this course. You will be required to use the site. Assignments will be available through handouts but many other materials, including class notes, will often be available only on the web site. You may use the "Discussion" board to post questions and to receive answers.

Instructions for accessing the site are online at an orientation site: http://www2.oakland.edu/elis/WSO_login.cfm.
The web site address (URL) is: https://webct.oakland.edu.

When you click on "My Website," you will use your OU nine-digit SAIL User ID (also known as your student number, which starts with G00) for the User name and your six-digit SAIL Pin number as your password. (Your Pin number is most probably your birth date in the mmddyy format, unless you have previously changed your OU Pin number.) Warning: Your User Name and password are case sensitive. If you are unsure about your SAIL User ID and Pin, please contact the Registrar’s Office at registra@oakland.edu or (248) 370-3450.

The course syllabus is posted. The assignments are posted in the assignment area. You may check your grades in the “My Grades” section of the site.

When you submit any documents (e.g., via the Assignment section), be sure you first save them as a Word or html document. Then upload the file. The name of your file must not contain any spaces or unusual characters.

Use of the site is worth 20 points, five each for 1) using the Discussion Board, 2) submitting an assignment through the Assignments section of the site (not as an attachment to a discussion board item!), 3) submitting your term project for fair-use check to TurnItIn.com, and 4) documenting another significant use of the site (preferably through the Course Web Site Use in the Assignments section of the site).

Instructions for submitting an assignment can be found after opening the Assignments tool in the site and clicking on the Help feature at the top of the course screen.

B. Grading

There will be three exams, one comprehensive final, one term project, three in-class experiments, and a short writing assignment. The due dates for these activities are shown in the Timetable.

The graded work will be:
- Three exams: 100 points each
- Three experimental reports: 20 points each
- Short writing assignment: 20 points
- One term project: 110 points
- Media articles/Web use: 30 points
- Final: 100 points

You may earn up to 10 points by bringing two current articles or copies thereof to class (5 points per item). These items will be shared during the class period so everyone benefits from these efforts. Twenty points, five each, will be awarded for logging onto the web site and 1) participating in the discussion board, 2) submitting an assignment through the site, 3) submitting your term project to TurnItIn.com and 4) documenting some additional meaningful use.

The maximum number of points that any student can accumulate towards the final grade will be 620. I will grade using a curve. Worst case: scores that are 90% or higher will receive a grade of 4.0 (more than 558 points); point totals between 75% and 90% will receive grades between 3.0 and 3.9; between 60% and 74%, 2.0 and 2.9; between 45% and 59%, 1.0 and 1.9.
Written work will be graded on the basis of the science and environmental content of your work as well as on the quality of your writing and the quality of your arguments. This latter portion of your grade will reflect your spelling and grammar, as well as the quality of your writing. Chemical material will be graded both on the quality of (numerical) answers and on the methods used to arrive at them. This means that you must indicate clearly on examinations the methods you use to arrive at an answer. Grade penalties for late submissions are a minimum of 5%, ramping up the later an assignment is submitted.

C. Examinations

Each of the three exams should take you less than 90 minutes to complete. You should find these tests to be reasonably straightforward if you have understood the lecture material, read and have understood the textual treatment of the topics covered in class and have read and thought about the materials handed out in class.

The tests will usually consist of three different kinds of questions. The first part of the test will be a series of short essay questions in which you are asked to use your general knowledge and understanding of the ideas that have been presented and apply these to questions that you may not have considered previously. As an example, you might be asked to explain why a total switch to electric cars would probably not end air pollution. I will look at your ability to use your newly acquired knowledge of chemical and environmental principles, your ability to think creatively, while looking at questions that you probably have not considered before along with your ability to express yourself clearly on paper.

Second, you will be asked to define or explain important scientific terms that have been introduced during class. Learning science is much like learning a new language, and you must be able to show that you can use this language with precision. While grading definitions, I expect clear and exact full sentences and an explanation of the significance of the term, including an example where appropriate.

Lastly, you may be asked a series of specific questions that probe your understanding of the paradigms presented in this course (chemistry and environment). This will often involve your dealing with atoms, molecules, equations and theories. You will be asked to use these ideas, and you will need to interpret their meaning.

The final will be in two parts, given consecutively on the date and at the time listed in the Final Examination Schedule in the OU Schedule of Classes. The first part of the final will be an American Chemistry Society (ACS) nationally standardized comprehensive examination. The exam has been developed to accompany the Chemistry in Context textbook. The questions are multiple-choice questions with four possible answers. This is a timed and proctored exam, which will last for 80 minutes. You will answer only 50 questions (worth 2 points each) of the 78 questions. These 50 questions cover only material in Chapters 1 through 8 and three Sections (2, 3 and 6) in Chapter 10. The second part of the final (Exam III) will be given after the standardized exam is completed. The second part of the final exam will be the third exam, much like the first and second exams. It will cover the three sections in Chapter 10 (2, 3 and 6) and Chapters 5 and 6.

D. Field Trip

There is one required field trip. See the Time Schedule for the date. The site to be visited is the Nature House at the Leslie Science Center in Ann Arbor, Michigan. The tour takes at least one
hour (I, Dagmar, conduct the tour.) In addition, it takes at least one hour, depending on traffic, to drive to the site and about an hour or a little more to return to campus. I will conduct the tour twice, once at the usual time for class to begin and again about an hour later. You will need to schedule transit time to and from the site to attend one hour of touring.

E. Class Attendance and Missed Exams

Examinations are based mainly on material covered in lecture, along with the textual and written material that is related. Hence, it is imperative that you avoid missing classes. You are responsible for any assigned textual material as well as any readings that are handed out in class or made available on the course web site.

If you miss an examination, I do not ordinarily allow make-up assignments unless the reason for the absence is legitimate and can be documented. Should you miss an exam for non-legitimate reasons, you will receive a grade of zero on the missed examination. If you miss an examination for a legitimate reason, we can negotiate. If you turn in written assignments late, there will be a grade penalty.

F. Accommodations

Students who may require special considerations should work with the Office of Student Disabilities and arrange with the Instructor at the beginning of the term.

G. Academic Conduct

Classroom Courtesy: The instructor of this course has a strong commitment to the development and maintenance of an instructional climate that supports respect for everyone in the classroom. Your enrollment in this course requires that you will treat your fellow classmates and course instructor with respect. The instructor reserves the right to adjust course grades for disrespectful behavior.

Cheating: The University’s regulations that relate to academic misconduct will be fully enforced. I insist on seeing your own work, and you are expected to give full credit to all of your external sources. Any student suspected of cheating by copying on exams, changing answers on exams after they are scored, having another person take an exam, obtaining exam questions prior to the exam time, plagiarism, using previous student’s work or by other means will be referred to the Academic Conduct Committee. Students found guilty of academic misconduct face suspension or permanent dismissal. OU subscribes to a search service for identification of plagiarized material (TurnItIn.com). You will be required to submit your term project to this service for a check for missing attributions and citations.

IV. Chapter Assignments

Note that the Suggested Problems will not be collected or graded. They identify important items from the textual material that you should know and understand.

Chapter 1. The Air We Breathe

Suggested Problems: Your turn: 1.4, 1.11, 1.12, 1.13 and 1.14. Questions: 4, 9, 10, 11, 13, 14, 19, 21, 23, 24, 36 and 43.

You should be able to:
Recognize the composition of air and reasons for local and regional variations
Understand the factors behind air quality and the chief components of air pollution
Identify the general regions of the atmosphere with respect to altitude and the relationship of air pressure to altitude
Interpret air quality data in terms of concentration units (ppm, ppb) and pollution levels, including unreasonableness of “pollution-free” levels
Differentiate among mixtures, elements, and compounds
Understand the difference between atoms and molecules, between symbols for elements and formulas for chemical compounds
Name selected chemical elements and compounds
Write and interpret chemical formulas
Balance chemical equations
Describe air quality policies in terms of their effectiveness in controlling air pollution
Interpret the nature of air at the molecular level
Use scientific notation and significant figures in performing basic calculations

Chapter 2. Protecting the Ozone Layer
Suggested Problems: Your turn: 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.10, 2.11, 2.12, 2.13 and 2.14.
Questions: 3, 4, 6, 8, 12, 14, 15, 16, 20, 31, 36, 37, 38 and 44b.

You should be able to:
- Describe the chemical nature of ozone, the ozone layer, and factors affecting its existence
- Apply basics of atomic structure, i.e., protons, neutrons and electrons to particular elements
- Translate an element’s atomic number to its position in the periodic table
- Write electron distributions, by levels, for elements in A groups or the periodic table
- Differentiate atomic number from mass number; apply the latter to isotopes
- Write Lewis dot structures using the octet rule; interpret such structures in terms of the nature of their bonds
- Describe the electromagnetic spectrum in terms of frequency, wavelength, and energy, and use appropriate calculations to determine these quantities
- Interpret graphs related to wavelength and energy, radiation and biological damage, and ozone depletion
- Understand how the ozone layer protects against harmful ultraviolet radiation
- Discuss the interaction of radiation with matter and changes caused by such interactions, including biological sensitivity
- Differentiate among the energies and biological effects of UV-A, UV-B, and UV-C radiation
- Appreciate the complexities of collecting accurate data for stratospheric ozone depletion and interpreting them correctly and unambiguously
- Understand the Chapman cycle and the role of nature and the role of CFCs in stratospheric ozone depletion, including Antarctic ozone hole formation

Chapter 3. The Chemistry of Global Warming
Suggested Problems: Your Turn: 3.17, 3.18, 3.19 and 3.22. Questions: 3, 4, 6, 8, 12, 14, 27, 36, 38, 48 and 50.

You should be able to:
• Realize the difference between the Earth’s natural greenhouse effect and the enhanced greenhouse effect
• Explain the methods used to gather evidence for global warming
• Understand the mechanism by which global warming occurs (enhanced greenhouse effect), the chief role played by carbon dioxide in it, and the nature of the carbon cycle
• Relate Lewis structures and molecular geometry to absorption of particular radiation, e.g., infrared
• Know which molecular species are greenhouse gases because of their molecular structures; write Lewis structures
• Summarize the contributions human activities make to the carbon cycle and through it, to global warming
• Apply atomic weight and Avogadro’s number data to molar mass and mole calculations
• Consider the national and global implications of specific quantitative increases or decreases in the Earth’s average temperature
• Describe ways in which carbon dioxide emissions can be reduced
• Assess factors involved in global warming
• Explain world and U.S. policy concerning the Kyoto Protocol
• Read and hear news articles on global warming with confidence in your ability to interpret the accuracy and conclusions of such reports
• Take an informed position with respect to issues surrounding global warming

Chapter 4. Energy, Chemistry and Society
Suggested Problems: Questions: 4, 5, 10a, 12a, 13, 14, 22, 25, 28, 37, 38, 39 and 42.

Note: You will not be responsible for calculating bond energies.

You should be able to:
• Distinguish between energy and heat
• Describe the factors related to the United States’ dependency on fossil fuels for energy
• Apply the terms exothermic, endothermic, and activation energy to chemical systems
• Evaluate the risks and benefits associated with petroleum, coal, and natural gas as fossil fuel energy sources
• Relate energy use to atmospheric pollution and global warming
• Understand the physical and chemical principles associated with petroleum refining
• Describe “octane rating” and how refining, leaded gasoline, ethanol and MTBE relate to it
• Discuss approaches to alternative (supplemental) automobile fuels
• Describe why reformulated and oxygenated gasolines are used
• Relate the energy potentially available from a process with the efficiency of that process
• Use entropy as a concept to explain the second law of thermodynamics
• Take an informed stand on what energy conservation measures are likely to produce the greatest energy savings
• Examine news articles on energy crises and energy conservation measures to interpret the accuracy of such reports

Chapter 7. The Fires of Nuclear Fission
Suggested Problems: Your Turn: 7.5, 7.6, 7.7, 7.10 and 7.23. Questions: 1, 2, 3, 4, 9, 10, 11, 18, 20, 21, 22, 24, 26, 31 and 37.

You should be able to:
• Tell how nuclear fission occurs
• Write balanced nuclear equations for alpha and beta decay, and for nuclear fission
• Use mathematical relationships to calculate the amount of energy produced by a fission reaction
• Compare and contrast how electricity is produced by a conventional power plant with how it is produced by a nuclear power plant
• Summarize the reasons why a nuclear power reactor cannot undergo a nuclear explosion
• Understand and apply the concept of half-life to the use of radioisotopes, radio-carbon dating techniques, and nuclear waste storage
• Relate the issues surrounding the use of nuclear power in this country and abroad
• Describe the issues associated with the production and storage of high-level nuclear waste, including spent fuel
• Take an informed stand on the storage of high-level nuclear wastes
• Read and hear news articles on nuclear power and nuclear waste issues with confidence in your ability to interpret the accuracy and efficacy of such reports
• Summarize the nature of low-level nuclear waste and its storage
• Report on the use of nuclear power for electricity generation globally and the reasons why several countries have very high percentages of electrical power production from nuclear reactors compared to the United States
• Describe the relative risks and benefits of the use of nuclear power compared to other fossil-fuel-fired power generation
• Take an informed stand on the use of nuclear power for electricity production
• Outline the factors that will allow or oppose the growth of nuclear energy in the next decade

Chapter 8. New Energy Sources for the New Century
Suggested Problems: Questions:  1, 9, 14, 15, 20, 24, 28 and 29

You should be able to:
• Discuss the principles governing the transfer of electrons in galvanic cells, including the processes of oxidation and reduction
• Describe the design, operation, applications, and advantages of fuel cells
• Describe the advantages and disadvantages of hydrogen as a fuel
• Compare and contrast the principles, advantages, and challenges of producing and using fuel-cell powered, battery-powered, and hybrid vehicles
• Explain the energetics of producing hydrogen and using it as a fuel
• Discuss issues related to developing a hydrogen economy
• Describe the principles governing the operation of photovoltaic (solar) cells and their current and potential uses
• Express informed opinions about the future development of all types of electron transfer technology for producing electrical energy on personal, regional, national, and global scales

Chapter 10. Manipulating Molecules and Designing Drugs
Sections 10.2, 10.3 and 10.6 ONLY. Note that we will NOT cover sections 10.1, 10.4 through 10.5 or 10.7 through 10.14.

You should be able to:
- Understand bonding in carbon-containing (organic) compounds
- Apply the concept of isomerism to organic compounds
- Recognize functional groups and the classes of organic compounds that contain them
- Understand differences in molecular structure between chiral (optical) isomers

Chapter 5. Take a Drink: The Wonder of Safe Drinking Water
Suggested Problems: Your Turn: 5.6, 5.9, 5.14, 5.15, 5.16, 5.17 and 5.33. Questions: 2, 4, 8a, 9, 10, 14, 17, 26 and 42.

You should be able to:
- Describe the desirable properties of drinking water
- Recognize the sources and distribution of water
- Discuss why water is such an excellent solvent for ionic and some covalent compounds
- Describe the factors involved in providing safe drinking water
- Use concentration units: percent, ppm, ppb, and molarity
- Relate the molecular structure of water to its properties
- Discuss the relationship between the properties of water and its structure
- Describe the specific heat of water and compare it to that of other substances
- Understand how electronegativity and bond polarity are related to the structure of water
- Describe hydrogen bonding and its importance to the properties of water
- Describe how the density of water is related to its molecular structure
- Predict ion formation and the formulas for ionic compounds, including those with common polyatomic ions
- Discuss the Maximum Contaminant Level Goals (MCLG) And Maximum Contaminant Levels (MCL) established by the EPS to ensure water quality
- Discuss how drinking water is made safe to drink and sewage water is treated
- Relate chlorination to water purification
- Know the causes and effects of water hardness
- Know how to measure the hardness of water
- Cite water softening methods

Chapter 6. Neutralizing the Threat of Acid Rain
Suggested Problems: Your Turn: 6.2, 6.4, 6.6 and 6.7. Questions: 1, 4, 7, 8, 9, 16, 21, 30, 32 and 35.

You should be able to:
- Define and apply the definitions of acid, base, and neutralization
- Use chemical equations to represent the dissociation of acids and bases
- Describe solutions as acidic, basic, or neutral based on their pH or concentrations of $H^+$ and $OH^-$
- Interpret pH values as being acidic, basic, or neutral
- Describe acid rain (acid deposition) and factors causing it
- Express the roles played by sulfur oxides and nitrogen oxides in causing acid rain, and describe regional variations
• Discuss the contributions of man-made emissions of pollutants to the atmosphere linked to acid rain and compare these with natural emissions
• Summarize the uncertainties associated with implicating acid rain as the cause for certain environmental degradation; that is, destruction of forests, and death of lakes
• Express the effects and economic impact of acid rain on materials and the environment in general
• Discuss the nature of the 1990 Clean Air Act amendments, and the impact they have had on SO\textsubscript{2} emissions
• Outline the various alternatives proposed to control acid rain, noting the cost-benefit considerations to be made for each
• Explain why coal switching was the method of choice used by U.S. electrical power companies
• Explain why acid rain control is such a politically sensitive issue

V. Term Project

Depending on your major, you will be assigned a term paper, a lesson plan or an inquiry as your term project. For those taking the class for the natural science and technology requirement in the general education curriculum, you will write a term paper. For those majoring in elementary education, you will develop a lesson plan. For those in secondary education, you will conduct an inquiry. The term project is worth a total of 110 points.

There will be three stages to your term project. Due-dates for the various stages are listed in the Timetable at the end of the syllabus. Stage 1 requires a description of your project detailed enough for a judgment to be made that your topic is appropriate and that the specifics of your project have already been thought through. This Stage may be written as a draft of your project, an extended abstract, an outline or another form of your choosing. **A complete list of references must be included.** This stage will be graded as a maximum of 10 points. If Stage 1 is not turned in on time and is not judged to be sufficiently complete, the maximum points that can be earned of the 110 total points for the semester will be 90 points.

Stage 2 is the completed term project. The Stage 1 materials must be attached to this final project. Stage 2 will be graded up to a maximum of 100 points. If Stage 2 is not turned in on time, has not been adequately proofread, and/or is not judged to be a final, completed project, the maximum points that can be earned of the 100 points for the term project will be 75 points. No grade will be assigned if the project is not complete, or references within the text and in the reference list are not completed. I expect spelling, grammar, etc. in your term project to be correct. You may not earn the maximum points if there is more than an average of two writing errors per page (e.g., typographical errors, spelling errors, grammatical errors, errors of syntax, etc.)

You may use Stage 3 as a chance to improve your term project grade. To receive additional points, you must rewrite and revise the final project as submitted for Stage 2. The instructor, while grading the term projects at Stage 2, will have made extensive comments. Your revisions must respond to those comments although you are expected to improve your project beyond merely responding to the comments. Stage 1 and Stage 2 versions must accompany the Stage 3 version to be considered for regrading.

**Fair Use.** You may choose any approved format for crediting your sources such as APA or MLA. I expect to see an accurate **list of references** at the end of your term project. You do not
have to use footnotes unless you choose to do so but credit should be given when appropriate in parentheses within the text if you do not use footnotes. The in-text credit should tie to the full reference in the list of references and give the appropriate page number(s). Web sites must be clearly cited. Web citations should include authors’ names, date created, title of page, title of complete web site (if different from the page), URL (full web address), and date accessed according to the format for references that you have chosen.

You will be required to submit your Stage 2 document to TurnItIn.com to check for proper attributions and referencing. If you do not understand fair use of sources and how to avoid plagiarism, check any college’s site developed for such purpose.

For term papers, you may choose any topic covered in the textbook. Separate handouts list some sample suggestions. The most likely pitfall is choosing a topic that is too broad. I will comment on the appropriateness of your topic at Stage 1 to help guide you before you embark on the actual writing. Your paper should be at least five typewritten, single-spaced pages. You must use a computer since your paper is submitted in electronic form to TurnItIn.com.

For elementary education majors, the project should be a lesson plan at the level of one of the grades K-8 for the topic. Emphasis should be on a constructivist approach with specific hands-on material incorporated. Material should meet the Michigan Department of Education benchmarks. More particularly, the lesson plan must address the standards and benchmarks for both an environmental issue as well as another science concept.

If you are a secondary teacher education program (STEP) major, you will do an independent term project to learn to engage students in science inquiry and understand the role inquiry plays in the development of scientific knowledge. This project will help you better understand the importance of using inquiry-based teaching in your classroom. Studies have shown that students must be active learners and take part in hands-on activities to learn concepts and create a concrete understanding of science. If you are unaware of the idea of inquiry-based teaching, this project will help you understand what it entails and how it can be integrated into teaching. You will conduct an investigation as if you were a student and perform your own inquiry to answer a question of your choice. You will perform research and collect data to find information on your own open-ended topic. You will do your research by conducting your own experiment(s), working on a mini-research project with a faculty member, or finding previous experiments to try. This means that you cannot rely on other peoples’ answers to your question. You must conduct your own open-ended research and draw conclusions on your own. At the end of the semester your final project will consist of a written summary of your research and conclusions and a class presentation. The presentation is open for creativity; the only specification is to present your research findings that answer your research question.
## VI. Class Schedule and Topical Outline

| Class 1. | August 31 Thursday | Introduction  
The Periodic Table video  
Term project discussion  
Volume-of-Air Experiment 1 assignment handed out.  
Chapter 1, The Air We Breathe |
|---------|-----------------|---------------------------------|
|         | September 4 Monday | Labor Day Holiday  
Classes suspended |
| Class 2. | September 5 Tuesday | Volume-of-Air Experiment 1 conducted in classroom.  
Review of significant figures, scientific notation, precision versus accuracy, dimensional analysis |
| Class 3. | September 7 Thursday | Chapter 1, The Air We Breathe  
Volume-of-Air Experiment 1 lab report due in class. |
| Class 4. | September 12 Tuesday | Volume-of-Air-Experiment 1 lab report grades returned.  
Chapter 2, Protecting the Ozone Layer  
Last day 100% tuition refund is 9/13 |
| Class 5. | September 14 Thursday | Signals from Within video (on light)  
Substitute teacher while Dr. Cronn is at a conference |
| Class 6. | September 19 Tuesday | **Phase 1 of term project due**  
Chapter 2, Protecting the Ozone Layer |
| Class 7. | September 21 Thursday | The Mole video  
Chapter 3, The Chemistry of Global Warming |
| Class 8. | September 26 Tuesday | Chapter 3, The Chemistry of Global Warming |
| Class 9. | September 28 Thursday | Phase 1 of term project grade returned.  
Review of Atmospheric Chemistry topics. |
| Class 10. | October 3 Tuesday | **EXAM I.** |
| Class 11. | October 5 Thursday | Energy in Fuels Experiment 2 – on web site  
Chapter 4 Energy, Chemistry and Society  
Last day “First-Half” drops |
| Class 12. | October 10 Tuesday | Energy in Fuels Experiment 2 conducted in lab, Room 284 SEB |
| Class 13. | October 12 Thursday | Chapter 4, Energy, Chemistry and Society  
Exam I grades returned |
| Class 14. | October 17 Tuesday | Energy in fuels Experiment 2 Report due  
Brochure assignment on web site  
Chapter 7, The Fires of Nuclear Fission |
| Class 15. | October 19 Thursday | Chapter 7, The Fires of Nuclear Fission |
| Class 16. | **October 20 Friday** | **Field trip** |
| Class 17. | October 24 Tuesday | Energy in fuels Experiment 2 Report grades returned  
Chapter 8, Energy from Electron Transfer |
| Class 18. | October 26 Thursday | **Last date to turn in Phase 2 of term project.**  
Chapter 8, Energy from Electron Transfer |
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<th>Class</th>
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<td>20</td>
<td>November 2</td>
<td>Tuesday</td>
<td>Turn in brochure assignment.</td>
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|       |            | Thursday     | **EXAM II.**  
Last day official withdrawal is 11/1                                                                                                          |
| 21    | November 7 | Tuesday      | Phase 2 term project grades returned.  
Brochure assignment grades returned.  
Carbon video  
Functional Groups, Isomers of Organic Molecules.  
Chapter 10, Sections 10.2, 10.3 & 10.6.  |
|       |            | Thursday     |                                                                                                                                                |
| 22    | November 9 | Thursday     | Chapter 10, Sections 10.3 & 10.4, continued.                                                                                                       |
| 23    | November 14| Tuesday      | Water Experiment 3 Lab assignment handed out.  
Water video.  
Chapter 5, The Water We Drink                                                                                                                     |
|       |            | Thursday     |                                                                                                                                                |
| 24    | November 16| Thursday     | Water Experiment 3 Lab conducted in laboratory room 290 SEB.  
Exam II grades returned.                                                                                                                               |
| 25    | November 21| Tuesday      | Chapter 5, The Water We Drink  
**Phase 3 of term projects due in class.**                                                                                                           |
|       |            | Thursday     | Thanksgiving Holiday  
No class                                                                                                                                         |
| 26    | November 28| Tuesday      | Water Experiment 3 Lab report due in class.  
Chapter 6, Neutralizing the Threat of Acid Rain                                                                                                     |
| 27    | November 30| Thursday     | Water Experiment 3 Lab report grades returned.  
Chapter 6, Neutralizing the Threat of Acid Rain                                                                                                     |
| 28    | December 5 | Tuesday      | Presentation of inquiry project(s)  
Review of water topics.                                                                                                                              |
| 29    | December 7 | Thursday     | **Final Exam** in regular classroom from **3:30 PM – 6:30 PM**  
Phase 3 term project grades returned.                                                                                                              |