

Syllabus
ISC 209
Chemistry in the Home
Spring 2006

Instructor: Dr. Ken O'Connor

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Office hours: M 9-10; T 1-2; W 11-1; Th 1-2 and Friday in room S-479; any time I am in my office

Issues:

We will examine the nature of materials commonly found in the home and try to learn how to evaluate whether or not they are hazardous. We will examine several factors such as possible acute toxicity, long term exposure hazards, synergism with other materials, flammability and explosion hazards, and environmental impact from improper use and/or disposal. In all cases we will endeavor to learn how to distinguish levels of hazard associated with these materials.

Objectives:

The primary objective of this course is to provide the student with an introduction to the basic concepts of chemical science as it applies to materials commonly found in the household. Within this framework, it is expected that the student will learn how to examine and process information, ask critical thinking questions and build problem-solving skills. It is hoped that at the end of this course a student would be able to read a newspaper or magazine article relating to chemistry and intelligently evaluate it. This is a four credit hour course with 5 contact hours per week. It has 3 hours per week of "lecture" time and 2 hours per week of "lab" time.

Effort Required:

This course fulfills the Integrated Science requirement for many degree programs. A considerable effort is required of the students. The student should expect to spend at least 6 hours of effort outside the class each week for studying and preparing lab reports. Depending on background and preparedness, some students may have to spend more time on this course.

Prerequisites:

MTH 121 or MTH 123 or MTH 127 or MTH 130 or MTH 130E or MTH 229

Materials Recommended:

The Dose Makes the Poison, 2nd Edition, by M. Alice Ottoboni. Wiley and Sons, 1997.

Withdrawal Policy:

The University withdrawal policy is followed in this course. The "W" withdrawal period for an individual course begins January 17 and ends March 17, 2006. Complete withdrawal from all classes for the semester begins March 20 and ends on April 28, 2006.

Mandatory Laboratory Safety Training:

All students are required to successfully complete the online laboratory safety training module before they can work in the laboratory. Failure to complete this training during the first week of the semester may result in the student being administratively withdrawn from the course.

Class Attendance

Attendance is a REQUIREMENT. Attendance will be taken every class period. You are allowed two absences from class. These absences include absences due to sickness and excused absences. If you are absent from three lecture classes, your final average will be reduced by two points. Each additional absence will result in an additional two point deduction from your FINAL grade. Therefore, a total of seven absences will reduce your average by fourteen points. If you are absent more than seven times, you will receive an F in this class. If you think that regularly attending class will be a problem, you should consider taking another class!

Since you do not know when you will be sick, it is important to come to class so that you use your two permitted absences for days when you are truly ill. If you are a person who is typically sick three or more times during a semester, you should take another class that does not require such a strict attendance policy!

Grading:

Papers: Students will be required to submit three formal papers, each of which will count for 20% of the course grade or a total of 60%. Each of these papers will be a minimum of four pages in length and will each require a certain level of library and/or internet based research. More specific information on the papers will be found below.

Oral Presentation: Each student will be required to make a brief (approx. 5 minute) oral presentation using PowerPoint. This will count for 5% of the course grade.

Final Exam: This exam will be multiple choice and will account for 10% of the course grade.

Labs: There will be twelve laboratory reports. You need to be present for a minimum of ten labs or you will be given an "I" (incomplete) as a course grade. There are no make-ups of labs. Lab reports are due at the beginning of lab, one week after the experiment. NOTE WELL: If you are not in the laboratory to perform the experiment you cannot turn in a report for that lab. A Microsoft Word document of the lab that we will be doing in class will be emailed to you. It is your responsibility to print a hard copy of the lab and bring it to lab so that data can be entered into it.

Quizzes: Every student is required to take on-line quizzes on each chapter using Vista. These quizzes are multiple choice. A minimum score of 75% is required before you can take the next quiz. The purpose of the quizzes is to ensure that you have understood the material that you have learned in class. A set of on-line lecture notes is also on-line. If you obtain a quiz score of less than 75%, you must retake the quiz until you achieve a minimum score of 75%. Your quiz grades are not used in calculating your final grade; however, to complete this course, all of the quizzes must be taken and a minimum score of 75% must be obtained.

The course material should be mastered during the semester and not at the end of the semester. For this reason, each quiz needs to be taken by a certain date. The dates that each quiz needs to be taken by are listed at the end of the syllabus. For every quiz that is either not taken or is not taken with a passing grade of 75%, two points will be deducted from your final average. The notes are on-line for each chapter and at the end of the on-line chapter notes is the quiz.

Overall Calculation of Final Grade: Letter grades will be assigned on the basis of: 100-90%=A, 89-80%=B, 79-70%=C, 69-60%=D and less than 60% is a F.

University Holidays:

Martin Luther King's Day, Monday, January 16 and Spring Break, March 18-26.

Communication:

You can call my office during the day until 4pm or my home (until 10pm) and I will try to return your message. I will email you frequently so please check your email daily (yes daily). I will often send your reminders concerning quiz deadline dates and assignment deadline dates, as well as other information. E-mail is the preferred method for contacting the instructor outside of class.

Papers:

Each student will be required to submit three formal papers. Each paper will require a certain amount of library and/or internet research. Papers will be a minimum of four pages, double spaced, with 1 inch margins, in a readable 12 point font. The papers must be submitted through WebCT Vista. **They must be submitted as Microsoft Word document files.** Adequate references must be cited in the paper. Papers are due at 11:00 am, Eastern Time, on the date shown below. Any paper turned in after 11 am will be considered late! Plagiarism will not be tolerated. Your web references will be checked to ensure that you are the author of the paper! Do not use spaces in the name when saving the file on your computer. For example, an appropriate file name would be: iscpaper1.

Paper #1: Comparative critique of two or more papers, one chosen as an exemplar of science and one as an example of pseudoscience. This research paper will be a minimum of four pages, double spaced, and submitted as a Word document. Obtain approval of your topic and references before you write the paper. Due date is February 15.

Paper #2: Provide a synthesis based on three or more reference sources emphasizing scientific findings and the strength of those findings. This research paper will be a minimum of four pages, double-spaced and submitted as a Word document. Obtain approval of the topic before writing the paper. Due date is March 16. Two students can work together as a team, however, in this case, the paper needs to be a minimum of eight pages and the PowerPoint presentation will be given by both students, with each student presenting his/her part of the paper.

Paper #3: Interpretation of MSDS sheets. Any chemical manufacturer is required to provide Material Safety Data Sheets (MSDS sheets) for every product it makes. Just because a product has a MSDS sheet does not necessarily make it hazardous. Each student will be given an MSDS sheet but the actual name of the compound will be replaced with a compound number. You will be required to read and interpret the MSDS sheet. You will then rate the hazards of the material on a scale from 1 (innocuous) to 10 (extremely hazardous even in minute amounts) and write a paper explaining the basis for this conclusion. Due date is April 27.

Presentation: An oral presentation summarizing an area of scientific research based on a minimum of three references. In most cases, the topic used for the synthesis paper can also be used for the oral presentation. The presentation must be a minimum of five to ten minutes and will be submitted as a PowerPoint presentation and given at the end of the semester.

Important Dates for Papers/Presentations:

Paper	Date specific topic will be chosen	Paper is due on
1	January 17	February 9
2	February 16	March 16
3	March 17-28	April 27

For every day a paper is late, five points will be deducted from your final average.

Lab Date	Lab	Lecture Date	Lecture Date
January 9	Scientific Method I	10: Syllabus Review	12: Why am I here?/ Pseudoscience
16	Holiday No Lab	17: Pseudoscience DVD**/ Choose Topic/submit references	19: Perceptions of Chemistry/ The Chemistry Basics
23	Scientific Method II	24: Physical Properties	26: Chemical Properties
30	Physical Properties	31: Toxicity (changed lab topic)	Feb 2: DVD Unplanned Experiments**
February 6	Enzyme Catalysis	7: Toxicity/MSDS	9: Value MSDS/ Pseudoscience Paper Due
14	Relative Toxicity	15: Fats & Oils	16: Student Summaries of Paper #1/ Choose Paper #2 Topic
20	LC50	21: Fats&Oils +Lab/demo	23: Dining Room
27	Chromatography	28: Supersize Me DVD**	March 2: Supersize Me DVD**
March 6	Dose is the poison	7: Students present explanation of food labels	9: What you eat can kill you. Student food diaries.
13	% Vitamin C in Juices	14: Medicine Cabinet: Drugs/Alcohol	16: Drugs/Alcohol/ Scientific Paper Due
27	Smoking Simulation	28: Feeling Good/Looking Great/MSDS Paper Assigned	30: Cont'd/ Lab exploring odors and structure
April 3	Calorimetry	4: Laundry Room	6: Water Hardness Lab
10	UV Beads	11: DVD Chernobyl**	13: Radiology
17	MSDS at Home Lab	18:Powerpoint Presentations Given by Students	20:Powerpoint Presentations Given by Students
24	TBA	25:Powerpoint Presentations Given by Students	27:Powerpoint Presentations/ MSDS Paper Due

** We will meet in the Drinko Library on January 17, February 2, 28, March 2 and April 11.

Computer Problems and Meeting Deadlines

There are several students who have computer problems just before the due date of a paper. As a result, the students cannot access their papers and they ask me for an extension. The way to avoid this type of problem is to email your paper in an attachment to yourself (at various points along the process of writing the paper). By doing so, you will be able to retrieve your paper from any computer. I advise you to follow this suggestion. In the end, **you are fully responsible**

for handing in the paper on time or five points will be deducted from your final grade for each day the paper is late, regardless of the type of excuse you may have. Printing out a hard copy of your paper as you write it is another option!

Quiz Date Deadlines
(Begin Taking Quiz on Dates in Parentheses)

Quiz Number	Title	Deadline Date at Midnight*
0	Laboratory Safety (1/9)	January 15
1	Introduction (Why Study Chemistry) (1/12)	January 19
2	Pseudoscience (1/12)	January 24
3	Perceptions (1/17)	January 26
4	Physical Properties (1/24)	January 31
5	Chemical Properties (1/26)	February 3
6	Toxicity (1/31)	February 7
7	Unplanned Experiments (2/2)	February 9
8	MSDS (2/7)	February 16
9	Fats and Oils (2/21)	February 28
10	Dining Room (2/23)	March 9
11	Medicine Cabinet (3/14)	March 21
12	Looking Good (3/28)	April 6
13	Laundry Room (4/4)	April 13
14	Nuclear Chemistry (4/13)	April 20
Final	Final Exam (cumulative) (4/13)	April 30

*Deadline Date: The quiz dates are FINAL quiz dates. This schedule is planned such that you have ample time to take a quiz after I have finished lecturing on the material in class. If you choose to wait until the evening of the deadline and you are unable to take the quiz due to a variety of possible problems, then you will obtain 0% for the quiz. I understand that you may have problems logging onto Vista or your computer may not be operating properly or you may get sick. It is for this reason that I suggest that you do not wait until the deadline date to take the quiz. The dates in parenthesis under the quiz title are the dates that you should initially begin taking the quiz for each chapter. If you do not pass it, reread the on-line notes and take the quiz again before the deadline.

Remember: There is no reason to wait until the deadline day to take a quiz. If you do not pass a quiz before the deadline, two points are subtracted from your final average and this could easily drop you a letter grade! Put the quiz dates near your computer so you refer to them daily!!! No one will be allowed to take a quiz after the deadline.