**Department of Chemistry, Youngstown State University**
**Professor Allen D. Hunter**
**Chemistry 500 , Chemistry in Modern Living**
**Spring 2000** (Updated on April 6th, 2000)

**Credit:** 4 Quarter Hours of Credit (4 Hours per Week of Lecture)

**Q2S Notice:** Under Semesters this course will become Chemistry 1500: Chemistry in Modern Living. It will have 3 Semester Hours of Credit (3 Hours per Week of Lecture) with a total of 5 hours of increased contact time which will be used to cover more special topics.

**Lecturer:** **Dr. Allen Hunter** (Office 5015, NMR Lab 5031, X-Ray Lab 5024/5020, Advanced Synthesis Lab 5005)
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**Required Texts:** 1. Schwartz, A. T.; Bunce, D. M.; Silberman, R. G.; Stanitski, C. L.; Stratton, W. J.; Zipp, A. P. "Chemistry in Context: Applying Chemistry to Society", 2nd Edition, © 1997 or 3rd Edition © 2000, The American Chemical Society and Wm. C. Brown Publishers(required), the publisher's WEB site is: http://www.mhhe.com/cic. [Note: This quarter is expected to be the last quarter in which we will use the 2nd Edition.]
2. Problem Sets and Answers, Old Exams and Answers, and Outline Notes for Each Section of Material to be Covered: http://www.as.ysu.edu/~adhunter/Teaching/Chem500/index.html (required).

**Lecture**: Tuesday and Thursday 7:40 to 9:30 PM. WB 6030.

**Office Hours:** Monday 10:30 to 12:00, Wednesday 2:00 to 3:00, and Tuesday and Thursday 7:00 to 7:40 and 9:30 to 9:50. Please feel free to drop in and see me any time during my office hours or during the rest of the week. If you want to be sure to have me there at a specific time outside of my office hours, make an appointment during class, over the phone, or via email. I'll generally be in WB 5015 (my office), WB 6030 (the Chemistry Department Office or Conference Room), 5031 (the NMR lab), or 5024/5020 (the X-ray lab) at these other times.

**Goals and Objectives of Chemistry 500**. Chemistry 500 is a General Education Course that is designed to meet the needs of students who are not science or technology majors. The central goal of Chemistry 500 is to give you an appreciation of how Chemists approach questions relevant to your every day life. This will be done by studying particular issues/themes that are of national importance and/or that are prominent in the news. These topics will be studied from a "chemical" perspective and you will be introduced to the basic tools that chemists use (atoms, molecules, reactions, analysis, etc.) when attempting to answer questions about them. At the end

of this class, it is my hope that you will have developed a better appreciation of the role that Chemistry plays in our lives, of the scientific method as applied to many topical issues, and of how a Chemist attempts to answer questions.

**Preliminary Schedule of Thematic Topics**:

| **Theme of the Topic** | **Topic(s)** | **Relevant Chemical Topics** | **Chapter(s) 2nd(3rd) Edn.** |
|---|---|---|---|
| The Air We Breathe | 1 | States of Matter, Reactions, and Risk | 1(1) |
| Protecting the Ozone Layer | 2 | Atoms and Light | 2(2) |
| The Chemistry of Global Warming | 3 | Molecular Structures and Moles | 3(3) |
| Energy, Chemistry, and Society | 4 | Thermodynamics, Kinetics, and Fossil Fuels | 4(4) |
| The Fires of Nuclear Fission | 5 | Atomic Structure, Nuclear Fission and Fusion, and Nuclear Weapons | 8(7) |
| New Energy Sources for the New Century | 6 | Alternative "Green" Energy Sources | 9(8) |
| Manipulating Molecules and Designing Drugs | 7 | Organic Chemistry | 11(10) |
| Nutrition: Food for Thought (not in 2000) | 8 | Biochemistry | 12(11) |
| The World of Plastics and Polymers | 9 | Polymer/Materials Science | 10(9) |

* The order and relative weighting of these topics is likely to change. We will cover the first three topics in depth each year and then cover the remaining topics in varying depths (varying the emphasis in different quarters). This will give you an overview of chemistry as well as specific examples at greater depth of the application of Chemistry to a range of topical issues.

**Grading**:

100 Mid-terms (approximately the 4th and 8th weeks, each is 25% of quarter's grade)
100 Final Exam (**Tuesday June 6th at 8:00 PM**} or Term Paper {due Friday June 2nd at noon}
200 Total Points

Grade Ranges: 90-100% - A; 75-89% - B; 60-74% - C; 50-59% - D; <50% - F

[Note: No grading curve is used and the official attendance record is used to help assign borderline grades.]

**Attendance**: Lecture attendance is **mandatory** and will be recorded through daily sign-in sheets. It is **your responsibility** to be sure you sign up if you are present (i.e., if you do not sign in then you are officially absent). These official attendance records will be used in assigning **grades** and *missing more than 10% of the lectures for which I have attendance records* will

adversely effect your grade. In addition, if you miss more than 10% of the lectures, you will not be allowed to write the term paper and instead will be required to write the final exam. Coming late to class or leaving early are disruptive to the lectures and to the other students. **Be on time!!!**

**Exams**: The quizzes and final exams will cover the materials presented in the lectures, much of which is not in the textbook. Questions on exams in this course typically require paragraph or page length written explanations (which should typically include diagrams and/or equations) or "chemical" answers (e.g., equations, molecular formulae, or molecular structures). They are best studied by working through problem sets and old exams which are available on my WEB site.

***MAKE-UP EXAMS WILL NOT BE GIVEN***. Absences that have not been approved in advance will result in a grade of **ZERO** for that quiz/exam. Approved absences for sporting events, holidays, etc., will be given **only** if I am informed in advance and only if I agree. Unexpected absences for health reasons, family emergencies, etc., must be discussed with me ***within 24*** *hours* of the missed quizzes for approval to be granted. The points for exams/quizzes missed during approved absences will be applied to the final exam. In all cases, I must be given a written note explaining the reason for the approved absence and asking to have the points applied to the final exam within one week of the missed exam. If you believe that your exam/quiz has been miss-graded or miss-totaled, the **unaltered** exam must be submitted for re-grading *within 48* hours after it has been returned. The whole quiz/exam will be re-graded, not just single questions.

No "extra point" activities are available for this course so you will need to start working early!

**Term Paper Option:** Instead of writing a conventional final exam, students may elect (***with my written approval required in each case***) to submit a term paper instead. To be eligible for this option, students must submit their term paper preproposal **and have it approved** by the end of the 4th week of class. If the chosen topic is not approved, generally because it is too broad, students will have until the end of the 5th week to hand back a revised topic for approval. Students must submit **and have approved** a formal term paper outline by the end of the 7th week of class. The term paper itself will be due in my office by noon on the Friday of the 10th week of class (i.e. June 2nd). I will discuss the nature of the term paper in more detail with those who indicate their desire to use this option.

Those writing a term paper will be required to write a final quiz (on the last several weeks of lecture material) while the rest of the class writes its final exam. Thus, their term paper will be worth 80 points and this quiz 20 points.

The preproposal will be about 50 to 100 words in length, it must be typed, and its primary purpose is to specify the topic of the proposal. The term paper outline will be typed and several pages in length, it will summarize all of the primary topics of the paper in point form, and it will include a preliminary list of references. The final paper must be at least 2000 words in length and must be completely and correctly referenced.

Both the outline and the final report must include a title page with the paper title, your name, your student number, the course number, and the date. The preliminary and final reference lists must each include *at least* eight sources. Of these eight references, none may be introductory chemistry text books and no more then two may have been downloaded from WEB pages or other electronic sources. A copy of the title page or the first page of *all* of your

references must be attached to the end of your outline and of your final paper. The outline and the final paper must be typed, double spaced, in a twelve point font (preferably the Times/Times New Roman font), with margins of one inch, and have numbered pages. All pages in the final paper and in the outline must be *stapled* together. Do *not* use a separate report cover. You must hand in your approved preproposal with your outline and both the preproposal and the outline with the final paper.

The paper must not be a broad survey of some topic but instead it must be a detailed discussion of a specific issue related to chemistry. The paper must be written at the college level. Details on how to prepare a college level paper are covered in English 550 and 551. If you have not yet completed these courses and/or you have any technical or stylistic questions on writing a college paper, help is available from the English department's Writing Center (742-3055). If you have any question about the science in your paper, please come and see me.

**Chemistry 500 WEB Site:** I maintain and extensive WEB site for this course (i.e., at http://www.as.ysu.edu/~adhunter/Teaching/Chem500/index.html) as do the text publishers (i.e., at http://www.mhhe.com/cic). My site contains the most current version of the syllabus, outline notes for each topic to be covered in class, as well as copies of the problem sets, old exams, and the answers for these. These materials are provided as Microsoft Word (i.e., item.doc) or Adobe Portable Document (i.e., item.pdf) files. My WEB site contains links to the Microsoft and Adobe WEB sites where you can obtain free programs to allow you to read these file types (if you don't already have them on your computer). It is your responsibility to check my site regularly and to download all required notes, problem sets, old exams, etc. If you do not have WEB access at home, each of the computer labs on-campus can be used to reach my site including the PC lab in the Chemistry Department (i.e., on the 5$^{th}$ floor of Ward Beecher Science Hall). If you are inexperienced with using WEB resources, the on-campus labs typically have student assistants available to help or you can ask one of the other students present.

**Notes:** To assist you in organizing your notes, outline notes for each topic to be covered are available on my WEB site. For maximum benefit, these should be downloaded before class and brought with you to help you organize your notes. You should quickly look these and the appropriate sections of the text over before class and then look your notes and the text over in more detail after each class. I will distribute the Outline Notes for the first class but after that it will be your responsibility to print them yourselves. If you are not sure how to do this, talk to one of the assistants in any of the campus computer labs.

**Email List:** If you email me at adhunter@cc.ysu.edu (from your preferred email address and, ideally, with the words "add to email list for Chemistry 500" in the subject line) within the first few weeks of class, I will add your name to a email list for the course. I will use this list to let the class know about upcoming assignments, exams, handouts that should be printed, etc. If you do not have an email account, you can get one by asking at the campus computer center for a free YSU account or from a number of free WEB sites, including the Hotmail site at: http://www.hotmail.com Again, the student helpers at any campus computer lab can help you with this. [Note: You don't need to be on this email list, but it is convenient. In case you aren't on the list, all of this information is also announced in class and will be posted on my office door but this email list gives you a written backup if you miss a class or an announcement in a class

you attend.] You may also ask me questions by email for electronic response or discussion in the next class.

**Reading Assignments**: Mandatory reading assignments from the text and other sources will be given each week. These will always include the chapters cited above. Material from the reading assignments may be included on the exams.

**Studying:** University policy is that students should expect to typically do about 2-3 hours of studying outside of class for each hour in class (i.e., 8-12 hours per week). If you are relatively skilled at and/or prepared for science, this should to be sufficient for Chemistry 500. However, some other students may require additional study time. This time should be spent (in order of importance): working through old problem sets and exams (60-80% of your time), studying your notes (20 to 40% of your time), and reading the text (10-20% of your time). The problem sets, old exams, and answers are available on my WEB site.

**Note:** The potential of risk is present in some lecture demonstrations. Accidents are rare, but have happened. Faculty and staff members exercise great care to minimize and, where possible, eliminate all potential hazards.

**Academic Honesty:** In accordance with university policy and professional standards, the highest levels of academic integrity are expected in this lecture and lab. The code of student conduct will be **strictly enforced**. Academic dishonesty will result in reductions in grades and/or expulsion from this class and/or the university.

**First Two Week's Activities Expected of ALL STUDENTS:** During the first week, I will go over this syllabus and discuss what is expected of each student in this class. I will also start on the course content. During the first two weeks, you must: Check that you appear on the OFFICIAL CLASS ROSTER, get in the habit of signing in for each class, get an email account (if you want one and don't already have one) and email me from it, land earn how to print out the course Outline Notes, Problem Sets, etc., from the WEB.

**Daily Activities Expected of ALL STUDENTS:** Each day you should: read the assigned pages in the chapter before class and review them after the class. You must also: come to class on time, participate in the class activities, and remember to **sign in** for the class.

**Weekly Activities Expected of ALL STUDENTS:** Each week you should: review your notes for the past week, make study notes or flashcards, and work on the assigned problem sets. Don't let this work slide until just before the exam!!!

**If you are worried about your grade or don't understand something we discussed in class:** I suggest that all students visit me during my office hours at least several times during the quarter. If you have problems understanding the materials, big or small, come and see me, email me with a question, go to the Chemistry help center (on the 5$^{th}$ floor of Ward Beecher) for help, and/or go to the Student Tutorial Center for help. Remember: the earlier you look for help the more benefit you will get from it.