

**Department of Chemistry, Youngstown State University**

**Professor Allen D. Hunter**

**Chemistry 500 , Chemistry in Modern Living**

**Spring 2000** (Updated on April 6<sup>th</sup>, 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", 2<sup>nd</sup> Edition, © 1997 or 3<sup>rd</sup> 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 2<sup>nd</sup> 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) 2 <sup>nd</sup> (3 <sup>rd</sup> ) 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 4 <sup>th</sup> and 8 <sup>th</sup> weeks, each is 25% of quarter's grade)
100	Final Exam (Tuesday June 6 <sup>th</sup> at 8:00 PM) or Term Paper (due Friday June 2 <sup>nd</sup> 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 4<sup>th</sup> week of class. If the chosen topic is not approved, generally because it is too broad, students will have until the end of the 5<sup>th</sup> 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 7<sup>th</sup> week of class. The term paper itself will be due in my office by noon on the Friday of the 10<sup>th</sup> week of class (i.e. June 2<sup>nd</sup>). 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 than 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