

Chemistry 1501, Introduction to Chemistry

Winter 2008 - Course Code #0471 (70 Students Maximum)

Syllabus - Last Updated on February 22nd, 2008

Department of Chemistry, Youngstown State University, Professor Allen D. Hunter

Credit: Three (3) Semester Hours of Credit**Lecturer:** Dr. Allen Hunter (Office WB 5015 (moving to WB 5001 later in Spring))

Phone: 330-941-7176 (Office (includes voice mail))

E-mail: adhunter@ysu.eduDr. Hunter's Home Page: <http://www.as.yosu.edu/~adhunter/index.html>Course Page: <http://www.as.yosu.edu/~adhunter/Teaching/Chem1501/index.html>**Required Texts:** Basic Chemistry, Zumdahl, Steven, Houghton Mifflin Co., 2004 Fifth Edition. (other editions are also OK but they have somewhat different organizations and contents). A scientific calculator with the ability to use exponents is also required**Lecture/Discussion:** Tuesday & Thursday 17:10 till 18:25 in WB 2000.**Office Hours:** Monday from 14:00 till 15:00 and Tuesday through Thursday 16:00 till 17:00 in my office. Please feel free to drop in and see me during my office hours or any time 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 confirmed email.**Syllabus:** Regular revisions are done on this syllabus and announced in class. The most recent syllabus is to be considered the official syllabus for the class. Typical revisions include changed dates for exams, topics to be covered, etc.
Note: No changes will be made to the grading scheme or to the Academic Honesty terms.**Goals and Objectives of Chemistry 1501:** Chemistry 1501 is intended to prepare students with the background necessary for advancement into CHEM 1505 or CHEM 1515. In addition, the main goal of this course is to develop the student's ability to solve problems and to gain understandings into the concepts and principles of chemistry.**Preliminary Schedule of Thematic Topics:**

Topic Number, Exams, & Grades ¹	Topic Title & Contents ²
1	❖ Chemistry: An Introduction: ➤ Course Introduction & Overview
2	❖ Measurements & Calculations: ➤ Scientific Notation Scientific Notation Problem Set #1 ➤ Uncertainty & Significant Figures Significant Figures Problem Set #1 ➤ Materials' Properties ▪ Temperature ▪ Density Density Problem Set #1
3	❖ Matter and Energy ➤ Phases of Matter ▪ Macroscopic Description ▪ Atomic Description ➤ Composition ▪ Elements & Compounds ▪ Mixtures & Pure Substances ➤ Energy, Temperature, & Heat ▪ Specific Heat Capacities Heat Capacity Problem Set #1 ▪ Determination of Energies Required to Heat a Sample

¹ The order, content, and relative weighting of these topics may change with these changes being announced in class.² These Topic Numbers *approximately* correspond to the Chapter Numbers in our Text. However, for each Topic some items discussed in the text will not be covered in class (at least to the same depth) while other items not covered in the Text (at least to the same depth) will be covered in class.

Chemistry 1501 –Syllabus – Spring 2008

4	<ul style="list-style-type: none"> ❖ Chemical Foundations: Elements, Atoms, & Ions <ul style="list-style-type: none"> ➤ Elements & the Periodic Table ➤ Atomic Structure Atomic Structure Problem Set #1 <ul style="list-style-type: none"> ▪ Dalton's Atomic Theory ▪ Modern Models ➤ Isotopes <ul style="list-style-type: none"> ▪ Atomic Number & Mass Numbers ▪ Electrons, Protons, & Neutrons ▪ Empirical Unit Weights ➤ Ions <ul style="list-style-type: none"> ▪ Charged Species
1 st Exam	<ul style="list-style-type: none"> ❖ Content Focus: Topics 2, 3, & 4 ❖ Date: Thursday February 7th, 8th Class ❖ Value: 50 Points in Total (25% of Course Grade)³ <ul style="list-style-type: none"> ➤ 30 Points for Individual Exam (15% of Course Grade) ➤ 20 Points for Group Exam (10% of Course Grade)
6	<ul style="list-style-type: none"> ❖ Chemical Reactions: An Introduction Balance the Equations Problem Set #1 <ul style="list-style-type: none"> ➤ Balancing Chemical Equations Balance the Equations Problem Set #2
8	<ul style="list-style-type: none"> ❖ Chemical Composition <ul style="list-style-type: none"> ➤ Atomic Scale Mass Molecular Weight Problem Set #1 <ul style="list-style-type: none"> ▪ Weighing Atoms & Molecules: Molecular Weight ▪ Counting Atoms & Molecules: Moles ➤ Macroscopic Scale Mass Percent Composition Problem Set #1 <ul style="list-style-type: none"> ▪ Percent Elemental Composition
9	<ul style="list-style-type: none"> ❖ Chemical Quantities Mass <-> Mole Conversions Problem Set #1 <ul style="list-style-type: none"> ➤ Mass-Mole Conversions ➤ Predicting Moles for Reactions Molar Yields Problem Set #1 ➤ Predicting Masses for Reactions Mass Yields Problem Set #1 ➤ Determining Limiting Reagents Limiting Reagent & Molar Yield Problem Set #1 <ul style="list-style-type: none"> ➤ <i>Determining Percent Yields</i>
	<ul style="list-style-type: none"> ❖ Content Focus: Topics 6, 8, & 9 ❖ Expected Date: Thursday March 6th, 16th Class ❖ Value: 50 Points in Total (25% of Course Grade) <ul style="list-style-type: none"> ➤ 20 Points for Individual Exam (15% of Course Grade) ➤ 30 Points for Group Exam (10% of Course Grade)
Last Day to Withdraw with a "W"	❖ Expected Date: Thursday March 27th
10	<ul style="list-style-type: none"> ❖ Modern Atomic Theory <ul style="list-style-type: none"> ➤ Molecular Structures Structure Prediction Problem Set #1 <ul style="list-style-type: none"> ▪ Structural Methods ▪ Interatomic Geometries ▪ Bond Lengths & Angles ➤ Structural Isomers Structural Isomers Problem Set #1 <ul style="list-style-type: none"> ▪ <i>Unsaturation Number</i> ➤ Modern Atomic Theory ➤ Orbitals (<i>Shapes of s, p, d, sp, sp², & sp³ orbitals</i>)
11	<ul style="list-style-type: none"> ❖ Chemical Bonding <ul style="list-style-type: none"> ➤ Lewis Structures Lewis Structures Problem Sets #1, #2, & #3 ➤ VSEPR & <i>Molecular Shapes</i> ➤ <i>Electronegativity, Bond Polarity, & Molecular Dipoles</i>
13	<ul style="list-style-type: none"> ❖ Liquids & Solids <ul style="list-style-type: none"> ➤ Intermolecular Forces (<i>Ionic, Covalent, & Metallic Bonds</i>)

³ Note: These grade distributions between the Individual and Group components of the exams are tentative and very approximate. The final distributions used will be announced the class before the exam.

3rd Exam	<ul style="list-style-type: none"> ❖ Expected Content Focus: Topics 10, 11, & 13 ❖ Expected Date: Thursday April 3rd, 24th Class ❖ Expected Value: 50 Points in Total (25% of Course Grade) <ul style="list-style-type: none"> ➤ 50 Points for Individual Exam (25% of Course Grade)
7	<ul style="list-style-type: none"> ❖ Reactions in Aqueous Solution <ul style="list-style-type: none"> ➤ Concentrations of Solutions Concentrations Problem Set #1 ➤ Precipitation Reactions Concentrations Problem Set #2 ➤ Acid & Base Reactions Concentrations Problem Set #3 ➤ Oxidation-Reduction Reactions
14	<ul style="list-style-type: none"> ❖ Solutions <ul style="list-style-type: none"> ➤ Solubility Solubility Problem Set #1 ➤ Composition Solubility Problem Set #2
15	<ul style="list-style-type: none"> ➤ Acids & Bases Acid-Base Problem Set #1 ➤ pH of Solutions Acid-Base Problem Set #2
5	❖ <i>Nomenclature - Covered to the Detail Time Permits</i>
12	❖ <i>Gasses - Covered to the Detail Time Permits</i>
4th Exam	<ul style="list-style-type: none"> ❖ Content Focus: Topics 7, 14, & 15 ❖ Final Exam Date: Thursday May 8th at 17:30-19:30⁴ ❖ Value: 50 Points in Total (25% of Course Grade) <ul style="list-style-type: none"> ➤ 30 Points for Individual Exam (15% of Course Grade) ➤ 20 Points for Group Exam (10% of Course Grade)
Total Course Grade	<ul style="list-style-type: none"> ❖ Value: 200 Points in Total <ul style="list-style-type: none"> ➤ 130 Points for Individual Exams (65% of Course Grade) ➤ 70 Points for Group Exams (35% of Course Grade)
Grade Ranges	<ul style="list-style-type: none"> ❖ Expected Grade Ranges:⁵ <ul style="list-style-type: none"> ➤ F < 50% ➤ 50% ≤ D < 65% ➤ 65% ≤ C < 80% ➤ 80% ≤ B < 93% ➤ 93% ≤ A

Exams: The 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). Each of the midterms will *emphasize* the previous section’s work (about five weeks worth) while the final exam will be comprehensive. The general topics to be covered on each exam will be announced in the previous class. Most questions will be done on an individual basis but some will be answered on a group basis. You will be told in writing on each exam which questions are to be done in groups. The exams are best studied for by working through problem sets and old exams which are available on my WEB site. **You must bring photo ID with you when you write exams and place it on the desk top.**

Bonus Point Activities: No “bonus/extra point” activities are available for this course so start working early!

Make-Up Exams: Make-up exams will not be given. Absences that have not been approved as described below will result in a grade of **ZERO** for that exam. Foreseeable absences for sporting events, holidays, weddings etc., will be given **only** if I am informed in advance by phone/voicemail or written note in class and only if I agree in advance. Unforeseeable absences for health reasons, car breakdowns, family emergencies, etc., must be discussed with me in person or by phone/voicemail *within 24 hours* of the missed exam time for approval to be granted (at my discretion). The points for a missed exams will, upon approval, be applied to the final exam.

Exam Regrading: Regrading of exams may be requested if you think that I might have made an error in assigning the grade to the work you originally handed in for the exam. In particular, you **may not** change or add to the answer before you submit it for regrading. An exam must be submitted for regrading *within 48 hours* after it has been returned to the class. The whole exam may be re-graded since the grades assigned individual questions are sometimes linked. [Note: Representative exams are scanned/photocopied before they are returned. These copies are compared to the originals returned for regrading to ensure that answers have not been altered.]

⁴ The *official* final exam schedule can be found at: <http://cfweb.cc.ysu.edu/schedule/PDF/finals0708.pdf>

⁵ No grading curve is used and the official attendances record may be used to help assign borderline grades.

Attendance: Lecture attendance is **mandatory** and will be recorded through daily sign-in sheets *at the start of each class period*. Your timely arrival in class is expected. It is **your responsibility** to be sure you sign in and therefore if you fail to arrive on time or do not sign in at that time you will be deemed to be officially absent (i.e., with respect to the influence of attendance on borderline grades). **Students are responsible for all information, material, and announcements made in class, including changes to this syllabus.** Attendance in class, *as recorded on the sign in sheets*, is used in deciding borderline grades. Those students who are recorded as **officially absent** (i.e., based on the sign in sheets) for *more than 3 classes for which I have attendance records* will have their grades adversely effected. **Be on time!!!**

Assigned Readings, Problems, and Studying: You are required to read the assigned chapters from the lecture text and/or other materials **before** we discuss them in class. Some question based on these readings will appear on exams. I will suggest problems from the text, problem sets, and old exams regularly. These will not be graded but are very important since these are the questions on which most of the exams will be based! **It is recommended by YSU that for all courses students study at least 2 to 3 hours outside of class for every scheduled class hour. For Chemistry 1501, this corresponds to approximately 6-9 hours a week.** Students with less complete or less recent science backgrounds 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).

Academic Honesty: In accordance with university policy and professional standards, the highest levels of academic integrity are expected in this class. The code of student conduct will be *strictly* enforced. Academic dishonesty will result in severe reductions in grades (to an "F") and/or expulsion from the university. Because of the reported widespread abuse of online "term paper mills" and other types of plagiarism, sections of text from each submitted term paper will be compared to the WEB's content and other sources. Using any content from any source without attribution is plagiarism and is a severe form of academic misconduct and will be treated as such. If you are unsure of how to reference your sources and/or what constitutes plagiarism, please see me.

Disability Services: In accordance with University procedures, if you have a documented disability and require accommodations to obtain equal access in this course, please contact me privately to discuss your specific needs. You must be registered with CSP Disability Services, which is located at Wick House, and provide a letter of accommodation to verify your eligibility. You can reach CSP Disability Services at 330-941-1372.

First 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, time allowing. During the first week, you must: Check that you appear on the OFFICIAL CLASS ROSTER and learn how to print out the Problem Sets, etc., from the WEB.

Daily Activities Expected of ALL STUDENTS: Each day you should: read the assigned pages in the chapter, the Outline Notes, and any other assigned readings 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 & old exams. Don't let this work slide until just before the exam!!! The exact dates of each exam will be announced the previous day in class.

If you are worried about your grade or don't understand something we discussed in class: I suggest that all students visit me at my office at least several times during the term. If you have problems understanding the materials, big or small, come and see me, email me with a question, 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.

Computer Lab: The Chemistry Department computer lab is located in room WB 5043 and contains 25 computers equipped with a range of software. It is available for students to work on their chemistry assignments during the posted hours.

Incomplete Grades: If no formal grade change occurs within one year, an "I" automatically converts to an "F." If graduation occurs within the one-year time period, the Incomplete Grade will be converted to an "F" before graduation.