CHEMISTRY 100
Fall 2002

Instructor: Monica Ali, Pierce Hall, Room 210, Telephone Number 4-8340

Required Instructional Materials: Bettelheim, F.A., Brown, W.H. & J. March, "General, Organic, & Biochemistry," 6th edition, Harcourt College Publishers, New York, NY 2001

Vining, W.J., "Interactive General, Organic & Biochemistry CD-ROM to accompany Bettelheim, Brown & March Introduction to General, Organic & Biochemistry" Harcourt College Publishers, New York, NY 2001 (The CD-ROM accompanies the text)

Scovell, W.M., "Study Guide to Accompany Bettelheim, Brown, & March, Introduction to General, Organic & Biochemistry, 6th ed.," Harcourt College Publishers, New York 2001

Goals of Course: The study of science, particularly chemistry in this case, can lead to an understanding and appreciation of science as a part of a liberal arts education. One goal of a liberal arts education is an awareness and appreciation of one's surroundings. In order to begin to understand the natural world around us, one needs to have a basic concept of the nature and workings of chemical materials, which comprise our bodies and all other materials around us.

The ability to think clearly and critically is a skill, which is a valuable asset in any part of life. In order to think clearly and critically, one must be able to solve problems. The ability to think, to consider different pieces of information and formulate a rational and reasonable plan of action, based upon that information, is a skill that may be learned, partially through the study of chemistry.

In a time when multiple, significant developments in science and technology, many of which may have profound ethical consequences, are taking place, all people need to have some understanding, at least in general terms, of both the nature and possible significance of these developments. The study of chemistry can develop a scientific literacy, which can provide part of the basis upon which to make decisions about the appropriate uses of the scientific and technological developments.

Specific Objectives: At the end of this course, it is expected that some of the skills students achieve will include the following:

1. Solve problems using the Scientific Method.
2. Work problems in both the English and metric systems. Be able to convert between the two systems.
3. Identify compounds and elements, molecules and atoms
4. Understand the information provided in the Periodic Table
5. Write the electron configuration for any element shown in the Periodic Table
6. Write chemical formulas for compounds and name compounds from chemical formulas
7. Understand the difference between a covalent and an ionic bond
8. Predict the shape and bond angles of molecules
9. Write simple chemical equations
10. Solve stoichiometric chemical problems
11. Explain, in simple terms, the nature of attractive forces between molecules
12. Understand the similarities and differences in the three states of matter, *i.e.* solid, liquid, and gas
13. Solve problems involving the gas laws
14. Identify the components of a solution
15. Explain the factors which promote the solubility of solutes in solvents
16. Work problems using various methods for expressing concentrations of solutions
17. Explain the conditions which cause changes in the rates of reactions
18. Understand the relationship between reversible reactions and equilibrium
19. Use LeChatelier's principle to predict the direction of shift when a stress is applied to a system at equilibrium
20. Identify acids and bases
21. Predict the strength of acids and bases
22. Write equations involving the neutralization of acids and bases
23. Solve problems involving pH, pOH, and pK_A
24. Explain how a buffer keeps the pH of a solution constant
25. Explain the concept of radioactivity and the differences among alpha and beta particles and gamma rays
26. Understand the difference between fission and fusion
27. Write nuclear equations

Course of Study: We will thoroughly study Part One: General Chemistry, Chapters 1 to 9. In addition, there may, from time to time, be brief assignments in Part Two: Organic Chemistry, Chapters 10 to 18 and in Part Three: Biochemistry, Chapters 19 to 31. Such assignments would be announced in class or be posted on the class learnlink site.

Honor Code: The Honor Code is endorsed on the Oxford College campus. The Honor Code promotes the virtues of honesty and academic integrity. Briefly, any work for which you receive a grade is to be completed with the Honor Code in mind. Your signature on your work indicates that you have abided by the Honor Code. You may not give help to anyone, nor may you accept help from anyone, for graded material.

Attendance: Attendance is required and will be taken every class. Should you be present for every class, a bonus point will be added onto your final average. Should you miss more than three classes, **one point, per class missed, will be subtracted** from your final average.

Being late to class is distracting to both the instructor and the other students. Therefore, three tardies will be considered equal to one absence. If you come in more that fifteen minutes late, you will be counted as absent. If you are late, it is your responsibility to see me immediately after class to ensure that you are marked as tardy and not as absent. No adjustments will be made at a later time. If you are continuously late for class, you may be excluded from further classroom attendance. When you are in class you must be attentive and not disturb others. Leaving a class early counts as an absence, as does sleeping through a class or being generally inattentive.

Cell phones and pagers are not allowed in class or lab.

Learnlink Conference: The class has a learnlink computer conference. Please check the conference on a regular basis for announcements regarding the class. Problem sets for each chapter, times for help sessions, readings outside of chapters one through nine in the text, web site addresses, and any other appropriate notices, will be posted regularly on the conference.

Brief sketch of Chapter: A brief sketch outline of each chapter will be provided on the learnlink computer conference. You may print the outline and use it to take notes in class. This outline will be an indication of important topics for each chapter.

Problem Sets: Problems from the end of each chapter will be assigned. The specific problems, for which you are responsible, are listed on the class learnlink conference. You are strongly encouraged to work all the problems assigned. At least one problem from each problem set will be seen on the test for that material.

CD-ROM The CD-ROM, which accompanies the text, provides supplementary material to help in your understanding of the material covered in the chemistry class. The CD-ROM is divided into three sections; general, organic, and biochemistry. You are responsible for the general chemistry section, which contains nine chapters. As we cover each of the nine text chapters in class, you should examine the corresponding chapter on the CD-ROM. Some corresponding material from the CD-ROM will appear on each of the tests.

Suggested Method of Study: After attending each class, look over your **class notes** from that day, read that section of the text, and **work any assigned problems**, which pertain to the material discussed that day. Try to completely work the problems yourself before looking up answers in the back of the text. You are encouraged to form **small study groups with a few other classmates**. Get together with one or two other students in the class on a **regular basis** to help each other with any questions you may have. Utilize the **Study Guide** for additional practice with chemistry problems. Problems from the Study Guide have appeared on the tests.

You will gain the most from each class if you familiarize yourself, with the material to be discussed that day, before you come to class. **Read ahead in the text** so that you are always slightly ahead of the class lecture.

Help Sessions: A general help session, available to all chemistry 100 students, will be held before each test. These help sessions will generally be held on the day before the test, when possible. Usually the meetings are in the afternoon after laboratories. Check the learnlink class conference for the times of the meetings.

Supplemental Instruction: A student, who took the course last year, will serve as a Supplemental Instructor, SI. The student will attend one of the classes each day of instruction and will conduct help sessions each week for students in the class. Attendance at the SI sessions is voluntary, but may prove to be very valuable.

Tests: Tests will be given for fifty-five minutes during the class period on the following days:

Friday, September 13
Wednesday, October 2
Wednesday, October 23
Wednesday, November 13
Friday, December 6

Test questions may include multiple choice, matching questions, short answer, word and mathematics problems, and short essays. Please bring a calculator to all tests.

If you are late for a test, no extra time will be given to take the test. **THERE ARE NO MAKEUP TESTS.** If you will miss a test, you **MUST** notify the instructor **BEFORE** the test with the reason for your absence. If your reason is acceptable to the instructor (*eg*. life and death situations), the test will not be calculated into your grade. If the reason is not acceptable to the instructor, the grade for the test will be **ZERO** if you do not take the test, and the zero will be averaged into your grade. The instructor makes the final decision about the reasonableness of any excuse. If more than one test is missed, the grade is automatically zero on the second and any subsequent missed tests and will be averaged into the final grade.

Final Exam: The final examination is comprehensive.

Calculation of Final Grade:

Tests	= 60%
Final Exam	= 20%
Laboratory	= 20%

In addition, preparedness and participation, as well as attitude, in class can have a strong influence upon the final grade.

The grade reported for an individual will be one of the following:
A, A-, B+, B, B-, C+, C, C-, D+, D, or
F

Religious Holidays: Please notify the instructor in writing one week in advance if you will be out of class for one of the religious holidays indicated on the campus list of religious holidays.

Office Hours: By appointment and Tuesday, Wednesday, and Friday, 1:30-2:30 PM. I encourage you to come to my office to discuss any questions and concerns you may have with chemistry. I will occasionally have meetings on the Atlanta campus when it will be necessary to cancel the office hours for that day.

Laboratory: Your laboratory instructor will give you a syllabus for the laboratory and explain the rules and procedures for laboratory. **IN ORDER TO PASS THE COURSE, IT IS NECESSARY TO PASS THE LABORATORY PORTION OF THE COURSE.** Laboratories are held Monday and Wednesday afternoons from 2:00-5:00 PM and Tuesday and Thursday afternoons from 2:30-5:30 PM. Laboratories will begin the week of September 9th. You will meet first in the classroom, before going into the laboratory.

August 29, 2002

Addendum to Syllabus for Chemistry 100, Fall 2002

Final Exam: The final exam is comprehensive and will be given on Monday, December 9th, the last day of chemistry class, at 2:00PM. Should you have a conflict at this time, please speak to me as soon as possible so that we can make the necessary arrangements, if possible.