# Syllabus

**Chemistry 112, Section 2**
**Spring Semester, 2002-2003**
**Instructor: Robert G. Mortimer**
**Office - 211 Kennedy Hall**
**Phone: 843-3955 (o), 382-3825 (h)**
**E-mail: mortimer@rhodes.edu (o), RGMortimer@aol.com (h)**

**DESCRIPTION:** This course is the second semester of a two-semester sequence of courses covering the composition, structure, properties, and reactivity of substances. It will emphasize the chemical principles that enable us to understand chemical reactions.

**GOALS:** You should work toward the following goals:

**1. Mastery of Factual Chemical Knowledge.** Chemistry includes a large quantity of factual information, and much of the factual knowledge is summarized and generalized by scientific laws. One goal for this course is to enlarge your knowledge of the properties of substances and the laws of chemistry.

**2. Understanding of Chemical Theories.** Factual chemical information is explained and correlated by chemical and physical theories. The second goal for this course is to enlarge your understanding of these theories and your ability to apply these theories to specific chemical systems.

**3. Demonstration of an Ability to Apply your Knowledge and Understanding.** The third goal is to be able to demonstrate that you can use your knowledge and understanding both appropriately and creatively.

**4. Development of Problem-solving Skills.** Much of what is done in chemistry requires the use of logical reasoning to determine how to solve a problem, and then applying mathematics and other tools to solve the problem. The final goal for this course is to practice and enlarge these two skills.

**TEXTBOOK:** William R. Robinson, Jerome D. Odom, and Henry R. Holtzclaw, Jr., *Essentials of General Chemistry,* 10th edition, Houghton Mifflin Co., New York, 1997.

**Conduct of the Course:**

**1. Class meetings:** The class will meet Tuesdays and Thursdays from 9:40 a.m. to 11:10 a.m. The course will be conducted as lectures and discussions with class participation. You are expected to attend every meeting of the class and to participate. Excessive absences can result in a penalty in the final grade.

**2. Reading Assignments:** You should plan to read each chapter of the textbook at least twice. You should read each part of the chapter quickly before the lecture covering that part, and more carefully afterwards.

**3. Quizzes:** There will be unannounced quizzes, which can cover material you should have read as well as material already discussed in class.

**4. Homework:** There will be a set of homework problems assigned for each chapter. You must write out a complete solution for every problem. The following rules apply: (1) You may not consult other solutions that have already been worked out. (2) Group efforts in which students work problems collectively without first having attempted them individually are not permitted. (3) You may work together with other students on a specific homework problem only after you have attempted it individually. Violation of these rules is a violation of the Honor System.

The instructor will place his solutions to the homework problems in the Chemistry Library before the due date for the homework set. After you have completed the problems, you will grade your own homework, using the instructor's solutions as a guide. A correct or nearly correct solution for any problem is worth two points, a solution that is approximately half correct is worth one point, and a solution that is less than one-fourth correct is worth no points. You may not consult the instructor's solutions until you are ready to grade your homework. After you have graded your homework, write your score on your paper and turn it in to the instructor so that the score can be recorded.

**5. Examinations:** There will be three 90-minute examinations and a final examination. The final examination will cover the entire two-semester course. We will probably use the American Chemical Society standardized examination (multiple-choice) for the final examination.

**Grading:**

Examination 1 will count 100 points. Examinations 2 and 3 will each count 150 points, and the final examination will count 100 points. The homework will count 100 points. Each unannounced quiz will count 4 to 10 points, as specified on the quiz. The final grade will be determined as follows:

| Letter grade | Percentage of total points |
|---|---|
| A-/A | 90-100 |
| B-/B/B+ | 80-89 |
| C-/C/C+ | 70-79 |
| D-/D/D+ | 55-69 |

**Getting Help:**

The instructor will be available for individual consultations in Room 211K during most hours between 8:30 a.m. and 5:00 p.m., except during M and B periods, and except during Tuesday and Wednesday afternoons. You are encouraged to come for help with material that is not clear from the lectures and for help with homework problems.

**Tentative Lecture Schedule:**

| Period | Date | Chapter | Topic |
|---|---|---|---|
| 1 | Jan. 16 | Ch. 11. | Intermolecular forces, liquids and solids |
| 2 | Jan. 21 | Ch. 11. | |
| 3 | Jan. 23 | Ch. 11. | |
| 4 | Jan. 28 | Ch. 12. | Solutions and colloids |
| 5 | Jan. 30 | Ch. 12. | |
| 6 | Feb. 4 | Ch. 12. | |
| 7 | Feb. 6 | | Examination 1. Chapters 11 and 12 |
| 8 | Feb. 11 | Ch. 13. | Chemical Kinetics |
| 9 | Feb. 13 | Ch. 13. | |
| 10 | Feb. 18 | Ch. 14. | Chemical equilibrium |
| 11 | Feb. 20 | Ch. 14. | |
| 12 | Feb. 25 | Ch. 15. | Acids and bases |
| 13 | Feb. 27 | Ch. 15. | |
| 14 | Mar. 4 | Ch. 15. | |
| 15 | Mar. 6 | | Examination 2. Chapters 13, 14 and 15 |
| | Mar. 11 | Spring recess | |
| | Mar. 13 | Spring recess | |
| 16 | Mar. 18 | Ch. 16. | Weak electrolytes |
| 17 | Mar. 20 | Ch. 16. | |
| 18 | Mar. 25 | Ch. 17. | Precipitates (part of Chapter) |
| 19 | Mar. 27 | Ch. 19. | Electrochemistry; oxidation and reduction |
| 20 | Apr. 1 | Ch. 19. | |
| 21 | Apr. 3 | Ch. 19. | |
| 22 | Apr. 8 | Ch. 19. | |
| 23 | Apr. 10 | Ch. 19. | |
| 24 | Apr. 15 | | Examination 3. Chapters 16, 17, and 19 |
| | Apr. 17 | | Easter Recess |
| 25 | Apr. 22 | Ch. 18. | |
| 26 | Apr. 24 | Ch. 18. | Chemical thermodynamics<br>Awards Convocation |
| 27 | May 1 | Ch. 18 | |
| | May 7 | Final Examination (5:30 p.m.). One alternate time can be arranged. | |

**LABORATORY:** Chemistry 112L, General Chemistry Laboratory II, is taken with this lecture course. It is a separate course with a separate grade, carrying one credit hour.