



Spring 2007

Instructor: _____

Phone: _____ E-mail: _____

Office: _____ Office Hours: _____

Course Rationale

General Chemistry 1 is a four-credit course that is the first of a two-semester course in General Chemistry. General Chemistry is intended for students of chemistry, biology, physics, engineering, physical therapy, occupational therapy, and related disciplines. The pre-requisites for this course are successful completion of MAT 009 or the equivalent and successful completion of CHM 001 or the equivalent.

Required Materials

1. **Textbook:** Chemistry, 9th edition, Raymond Chang, 2007, ISBN 0-073-50153-0 from the bookstore. This purchase includes the textbook, Student Solutions Manual, and ARIS Access Card.
 2. **Laboratory Manual:** Available online at:
<http://www.kingsborough.edu/academicDepartments/PHYSCI/index.html>
 3. Safety glasses or goggles
 4. Scientific calculator
 5. USB flash drive or 3-1/2 inch diskette
-

Grading Procedure

Grades are calculated from a weighted average of exams, quizzes, lab scores, and the final exam.

Exams and Quizzes	40%
Laboratory performance	25%
Final exam	35%
TOTAL	100%

To calculate your course performance (in percentage) use the following equation:

$$\text{Overall \%} = 0.40(\text{exams and quizzes \%}) + 0.25(\text{lab \%}) + 0.35(\text{final exam \%})$$

Once you have calculated an overall percentage you can use the following table as a guide to determine your grade.

A = 90-100 %, B = 80-89 %, C = 70-79 %, D = 60-69 %, F = 0-59 %

Academic Integrity

Each student in this course is expected to abide by the City University of New York Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy.

Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive no credit for the assignment. Penalty for violation of this Code can also be extended to include failure of the course and University disciplinary action.

During examinations, you must do your own work. Talking or discussion is not permitted during the examinations. Comparing papers, copying from others, sharing calculators, or collaboration in any way is prohibited during examinations. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

Tentative Course Schedule

Chapter 1 Chemistry: The Study of Change (pages 2-38).

In-Chapter Example Problems: 4, 5, 6, 7, 8.

End of Chapter Questions and Problems: 5, 6, 8, 9, 13, 14, 16, 18, 21, 22, 25, 26, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 59, 62.

Chapter 2 Atoms, Molecules, and Ions (pages 40-70).

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8.

End of Chapter Questions and Problems: 10, 11, 12, 15, 16, 17, 18, 21, 27, 30, 31, 33, 35, 36, 37, 40, 43, 44, 45, 46, 47, 49, 56, 57, 58, 59, 60, 62, 64, 65, 70, 71, 81, 90.

Chapter 3 Mass Relationships in Chemical Reactions (pages 76-106).

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

End of Chapter Questions and Problems: 5, 7, 8, 9, 11, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 27, 29, 33, 39, 41, 43, 45, 47, 49, 51, 53, 59, 60, 63, 65, 66, 67, 68, 71, 73, 76, 78, 82, 84, 85, 86, 89, 91, 92, 93.

Chapter 4 Reactions in Aqueous Solutions (pages 118-156).

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

End of Chapter Questions and Problems: 9, 10, 12, 17, 19, 20, 21, 22, 23, 26, 27, 30, 33, 34, 43, 44, 46, 47, 49, 50, 54, 56, 59, 60, 61, 62, 63, 65, 69, 70, 73, 77, 79, 85, 87, 91, 94, 95.

Chapter 5 Gases (pages 168-208)

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17.

End of Chapter Questions and Problems: 14, 20, 22, 24, 32, 34, 36, 40, 44, 48, 52, 54, 58, 64, 68, 78, 82, 94, 98.

Chapter 6 Thermochemistry (pages 222-254)

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

End of Chapter Questions and Problems: 18, 20, 26, 32, 34, 38, 46, 52, 54, 58, 62, 64, 80.

Chapter 7 Quantum Theory and the Electronic Structure of Atoms (pages 266-302)

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

End of Chapter Questions and Problems: 8, 10, 16, 18, 30, 32, 34, 40, 42, 56, 58, 60, 62, 64, 66, 68, 70, 76, 78, 88, 90.

Chapter 8 The Quantum Mechanical Atom (pages 303-344)

In-Chapter Example Problems: 1, 2, 3, 4, 5

End of Chapter Questions and Problems: 20, 22, 24, 26, 30, 32, 38, 42, 44, 46, 52, 58, 62, 64, 82.

Chapter 9 Chemical Bonding I: Basic Concepts (pages 356-390)

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14.

End of Chapter Questions and Problems: 16, 18, 20, 36, 38, 44, 46, 48, 52, 54, 56, 62, 64, 72, 100.

Chapter 10 Chemical Bonding II: Molecular Geometry and Hybridization of Atomic Orbitals (pages 398-442)

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6.

End of Chapter Questions and Problems: 8, 10, 12, 14, 20, 24, 34, 36, 38, 40, 42, 52, 54, 58, 60.

Chapter 11 Intermolecular Forces and Liquids and Solids (pages 450-493)

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7.

End of Chapter Questions and Problems: 8, 10, 12, 14, 16, 38, 40, 42, 48, 94.

Chapter 12 Physical Properties of Solutions (pages 502-534)

In-Chapter Example Problems: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

End of Chapter Questions and Problems: 10, 12, 16, 18, 22, 24, 28, 52, 54, 56, 58, 60, 62, 64, 66, 68.

Laboratory Schedule

Each week we will meet to perform an experiment according to the schedule listed below. You are expected to bring your safety glasses and laboratory manual to each meeting. The experimental background and procedure should be read before coming to the laboratory meeting. Several of the experiments we will perform require the use of graphs in the data analysis (*). The graphing software we use is called Vernier Graphical Analysis. Bring a USB flash drive or formatted 3.5 inch diskette to these meetings.

Meeting	Experiment
1	Check-in and Density
2	Graphical Analysis*
3	The Determination of an Empirical Formula
4	The Properties of Molecular Oxygen
5	The Acid Content in Vinegar
6	The Determination of Chloride in Seawater
7	Determination of Hypochlorite in Bleach
8	Heats of Reaction and Hess's Law *
9	The Spectral Properties of Atomic Hydrogen*
10	Molecular Models and Chemical Structure
11	Spectrophotometry*
12	Freezing-Point Depression*