

General Chemistry I
CHEM 111A
Summer 2009

Professor: Dr. Sue Saum

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Lecture: MTWThF 9:00 – 10:45

Office Hours: 8:30 – 9:00 Monday through Friday LS 101

Additional problem solving time 10:45-11:15 (M-F) Lab Sciences 201

Course Description: This course will cover fundamental chemical principles and their applications including atomic and molecular theories, law of chemical combination, periodic classification of the elements and properties of gases, liquids, solids and solutions. 3 credit units

Prerequisites: two years of high school mathematics and one year each of high school chemistry and physics.

Required Materials:

Text: “Principles of Modern Chemistry”, Oxtoby, Gillis and Campion, 6th Ed.,
Thompson, Brooks/Cole

Recommended: “Principles of Modern Chemistry – Student Solutions Manual”
Freeman, 6th Ed., Thompson, Brooks/Cole

Non-Programmable calculator

Course Outline:

Unit I

- 1.2 Classifying Matter
- Conversions and Significant Figures (Appendix A.3 and B.1)
- 1.3 Molecules, Ions and Compounds
- 2.1 Moles and Molar Mass
- 2.2 Percent Composition, Empirical and Molecular Formulas
- 11.1 Molarity and Dilution
- 2.4 Chemical Reactions and Balancing Equations
- 2.5, 11.3 Reaction Stoichiometry
- 2.6 Limiting Reactants, Percentage Yields

Unit II

- 1.4 Elements and Atoms
- 4.1 – 4.6 Electromagnetic Radiation, quantum theory
- 5.1, 5.3, 5.5 Electronic configuration, periodic table and periodic properties
- 3.1 – 3.4

Unit III

3.6–3.11	Ionic and Covalent Bonds, Lewis Dot Structures, Inorganic Nomenclature, Valence Shell Electron Pair Repulsion Theory
6.4, 7.2-7.4	Valence Bond Theory, VB Theory of Organic Molecules
6.1.5, 6.2.2, 6.2.3	Molecular Orbital Theory
11.2	Reaction Types, Ionic and Net Ionic Reactions
11.3	Acids and Bases
11.4	Redox Reactions

Unit IV

Ch. 9	The Gaseous State
Ch. 10	Solids, Liquids and Phase Transitions
12.1-12.5	Thermodynamics: The First Law

This outline is tentative and may be adjusted to fit the test schedule.

Grading:

4 unit exams	20% each
Comprehensive Final	20%

There are no make-up exams. A low grade obtained on any one of the first three unit exams due to incomplete preparation or absence may be replaced by the grade obtained on the final exam. The final exam is mandatory for obtaining a passing grade in the course. Cheating of any form will result in a score of zero on the exam. A zero obtained by cheating will not be replaced with the grade obtained on the final exam.

A non-programmable calculator is required for the tests.

A list of suggested problems and readings will be given for each unit.

Test Dates: 6/16 (T), 6/23 (T), 6/30 (T), 7/8 (W), Final Exam, July 10th (F)
There is no class on July 3rd.

Grading Scale: +’s and –’s will be given for the upper and lower 2% of each range

87 - 100%	A
77 - 86%	B
63 - 76%	C
52 - 62%	D
51% and lower	F

For students taking the course CR/NCR a minimum grade of C must be obtained to receive credit.

Disability Services:

Washington University is committed to providing accommodations and/or services to students with documented disabilities. Students who are seeking support for a disability or suspected disability should contact the Disability Resource Center (DRC) at 935-4062 or drc@aismail.wustl.edu. DRC is located at Cornerstone in Gregg Hall on the South 40. The DRC is responsible for approving and arranging all accommodations for university students.

Suggested Problem List General Chemistry I
Principles of Modern Chemistry Oxtoby, Gillis and Campion 6th Ed.

Unit I

Sig. Fig. Appendix A (pg.A.7 11, 13, 15, 17, 19 21)
Conversions Appendix B (pg A.19 1, 3, 5, 7, 11, 13, 15)
Ch. 1 1, 5, 7, 11, 23
Ch. 2 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 31, 33, 35, 37, 39,
41, 43, 45, 47, 49, 51, 55, 57, 61, 63
Ch. 11 3, 8, 11, 15, 17, 25, 39

Unit II

Ch. 1 15, 17, 19, 21, 24, 28
Ch. 4 1, 3, 5, 7, 11, 13, 15, 21, 25, 27, 29, 31, 35, 37
Ch. 5 1, 3, 5, 15, 17, 19, 21, 31, 33, 37
Ch. 3 3, 9, 13, 15

Unit III

Ch. 3 21, 31, 33, 39, 41, 43, 45, 47, 51, 53, 55, 57, 59, 61, 63, 65, 69,
71, 73, 75, 77, 81, 83, 91
Ch. 6 9, 11, 15, 17, 19, 21, 23, 49, 51, 53, 55
Ch. 11 13, 19, 21, 23, 27, 29, 31, 33, 35, 37

Unit IV

Ch. 9 5, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41,
43, 55, 57, 61, 75, 77
Ch. 10 3, 5, 7, 13, 15, 17, 21, 23, 27, 35, 37, 45, 47
Ch. 12 1, 5, 7, 9, 11, 13, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41