

General Chemistry II
CHEM 112A
Summer 2009

Professor: Dr. Sue Saum

Lecture: MTWThF 9:00 – 10:45 Lab Sciences 201

Office Hours: 8:40 – 9:00 Monday through Friday Lab Sciences 101

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

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Course Description: This course will cover fundamental chemical principles and their applications including thermodynamics, kinetics, chemical equilibria, ionic equilibria and electrochemistry. 3 credit units

Prerequisites: General Chemistry I

Required Materials:

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

Non-Programmable calculator

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

Course Outline:

Unit I Chapters 14 & 15.1-15.4, 15.7

Ch. 14 Chemical Equilibria Equilibrium Constants, Le Chatelier’s Principle

Ch. 15 Acids and Bases Bronsted-Lowry Acids and Bases, pH and pOH, Weak
Acids and Bases, Polyprotic Acids and Bases

Unit II Chapters 15.5-15.8, 16, 17

Ch. 15 Aqueous Equilibria Buffers, Titrations, Polyprotic acids

Ch. 16 Solubility and Precipitation Equilibria, K_{sp}

Ch. 17 Electrochemistry Redox Reactions, Galvanic Cells, Electrolytic Cells

Unit III Chapter 12 (new and review) and Chapters 13 & 11.1, 11.5-11.7

Ch. 12 The First Law, Expansion Work, Heat Transfers and Capacities

Ch. 13 Thermodynamics: Second and Third Law, Spontaneous Change, Entropy,
Free Energy

Ch. 11.1, 11.5-11.7 Physical Equilibria Vapor Pressure, Solubility, Colligative
Properties

Unit IV Chapters 18 & 7

Ch. 18 Chemical Kinetics Reaction Rates, Concentration and Time, Reaction
Mechanisms, Catalysts

Ch. 7 Organic Chemistry: Hydrocarbons Nomenclature, Reactions and Functional Groups

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 for the exam. A zero obtained by cheating will not be replaced with the grade obtained by 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: 7/21(T), 7/28(T), 8/4 (T), 8/11 (T), Final Exam, August 13th (Th)

Grading Scale:	+’s and –’s will be given for the upper and lower 2% of each range
85%	A
75%	B
62%	C
50%	D
below 50%	F

For students taking the course CR/NCR a 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 II
Principles of Modern Chemistry Oxtoby, Gillis and Campion 6th Ed.

Unit I

Chapter 14 1, 3, 5, 9, 11, 13, 15, 17, 21, 23, 25, 27, 29, 31, 33, 37, 41, 43, 45,
47, 49, 51, 53, 55, 59, 61, 63, 65

Chapter 15 1, 3, 5, 7, 13, 15, 17, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 85

Unit II

Chapter 15 43, 45, 47, 49, 51, 53, 55, 61, 71, 99, 101

Chapter 16 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 35, 37,
61, 63

Chapter 17 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 41,
57, 61

Chapter 11 27, 29, 31, 33, 35, 37

Unit III

Chapter 12 Review 1, 5, 7, 9, 11, 13, 23, 25, 27, 29, 31, 33, 35, 37, 39,
41

Chapter 12 New 51, 57

Chapter 13 9, 13, 15, 17, 19, 21, 23, 25, 27, 31, 33, 37, 39

Chapter 11 1, 5, 7, 41, 43, 45, 47, 49, 51, 53, 57, 61, 63

Unit IV

Chapter 18 3, 5, 7, 9, 11, 13, 15, 19, 21, 25, 27, 29, 35, 37, 39

Chapter 7 3, 7, 9, 11, 13, 19, 23, 27, handout