
GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE AND TECHNOLOGY

2002/2003

CHEMISTRY 1010: Introductory University Chemistry I

SECTION: A3

PREREQUISITE: Chemistry 30 or equivalent

INSTRUCTOR: Barry Ramaswamy Office J218 539-2072

TEXT BOOK: *CHEMISTRY 5th Edition*

Steven S. Zumdahl and Susan A. Zumdahl

Houghton Mifflin Company ©2000

LABORATORY: Chemistry 101 Experiments, University of Alberta, 2002/2003

Lab coats and safety glasses are compulsory, and are available at the Bookstore.

A Laboratory Breakage Deposit of \$30 per Chemistry course must be paid to the Cashier (Room C315), and the receipt must be shown to the Laboratory Technician (Mrs. Omana Pillay) during the first Laboratory class.

SEMINAR: Seminars consist of problem solving, discussion of lecture materials, and a brief introduction to the upcoming Laboratory experiment. A short quiz will be part of most seminars.

COURSE EVALUATION

February Midterm	20%
March Midterm	20%
Final Exam	38%
Quizzes	2%
Laboratory Reports	12%
Laboratory Exam	8%

Assignments will be distributed on a weekly basis. These assignments will not be graded, but answers and complete solutions will be available for the student. Completion of assignments is strongly recommended to succeed in the course.

Attendance to all lectures and seminars is strongly recommended. Laboratory attendance to each specific experiment is compulsory; a passing grade in the laboratory component is required to pass the course. A doctor's medical note is required for **all** excused absences!

Students are required to maintain an overall average of 50% or better to pass the course.

According to GPRC policy (see page 34 of the 2002/2003 calendar), a repeat final examination will not be granted in this course.

CH1010 COURSE CONTENT

A: Matter and Stoichiometry	Chapters 1, 2, 3, 4	Pages 1-185
A.1 Units, dimensional analysis		
A.2 Naming simple compounds		
A.3 The mole		
A.4 Empirical and molecular formula of a compound		
A.5 Calculations involving a limiting reagent		
A.6 Aqueous solutions and molarity		
A.7 Precipitation reactions		
B: Chemical Equilibrium	Chapter 13	Pages 611-655
B.1 Equilibrium condition		
B.2 Mass-action expression and the equilibrium constant		
B.3 Heterogeneous equilibria		
B.4 Applications of the equilibrium constant		
B.5 Le Châtelier's Principle		
C: Acids and Bases	Chapters 14 and 15	Pages 657-757
C.1 The nature of acids and bases		
C.2 Acid strength and the pH scale		
C.3 Calculating the pH of strong/weak acids		
C.4 Bases		
C.5 Salts		
C.6 Mixtures of weak acids and bases		
C.7 Effect of structure upon acid strength		
C.8 Common ion effect		
C.9 Buffer systems		
C.10 Acid/base titrations		
C.10 Acid/base indicators		
D: Atomic Structure	Chapters 2 and 7	Pages 39-55 and Pages 291-347
D.1 Introduction to Atomic Structure		
D.2 Electromagnetic radiation		
D.3 Atomic spectra and the Bohr model		
D.4 Quantum mechanics and the atom		
D.5 Orbital shapes and energies		
D.6 Many-electron atoms		
D.7 Building of the periodic table		
D.8 Trends in atomic properties		
E: Chemical Bonding	Chapters 8 and 9	Pages 349-438
E.1 Types of chemical bonds and electronegativity		
E.2 Ionic bonding		
E.3 Lattice energy		
E.4 Covalent bonding		
E.5 Bond energies and chemical reactions		
E.6 Lewis structures; octet rule, resonance, formal charge, exceptions		
E.7 VSEPR theory and molecular shape		
E.8 Hybridization		
E.9 Molecular orbital theory		
<i>Optional</i>		
F: Chemistry of the Main Group Elements	Chapters 18 and 19	Pages 889-961
F.1 Alkali metals		
F.2 Alkaline earths		
F.3 Halogens		
F.4 Noble gases		
F.5 Other main group elements		