
GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE
THIRTIETH SESSION 1995/96

CHEMISTRY 1010: Introductory University Chemistry I

PREREQUISITE: Chemistry 30 or equivalent

TEXT BOOK: *CHEMISTRY* The Molecular Nature of Matter and Change
Martin Silberberg
Mosby, Toronto ©1996

LABORATORY: Chemistry 101/102 Experiments, University of Alberta, 1995/96
Lab coats and safety glasses are compulsory, and are available at the Bookstore.

SEMINAR: Seminars consist of problem solving, discussion of weekly problem sets, quizzes, and a brief introduction to the upcoming Laboratory experiment.

COURSE EVALUATION

October Midterm	15.0%
November Midterm	15.0%
December Exam	40.0%
Assignments and Quizzes	10.0%
Laboratory	20.0%
Total	100.0%

Assignments will be distributed on a weekly basis. Completion of assignments is essential to successfully understanding 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.

CH1010 COURSE CONTENT

- A: Matter and Stoichiometry** Chapters 1, 2, 3, 4 Pages 1-171
- A.1 Units, uncertainty, significant figures, dimensional analysis
 - A.2 Periodic table
 - A.3 Naming simple compounds
 - A.4 The mole
 - A.5 Determining the formula of a compound
 - A.6 Calculations involving a limiting reagent
 - A.7 Aqueous solutions and molarity
 - A.8 Precipitation reactions
 - A.9 Acid-Base reactions
 - A.10 Oxidation-Reduction reactions
- B: Gases** Chapter 5 Pages 172-219
- B.1 Gas laws of Boyle, Charles, and Avogadro
 - B.2 Ideal gas law
 - B.3 Gas stoichiometry
 - B.4 Partial pressures
 - B.5 Kinetic molecular theory
 - B.6 Real gases
- C: Thermochemistry** Chapter 6 Pages 220-254
- C.1 Types of energy; work and heat
 - C.2 Enthalpy—endothermic and exothermic processes
 - C.3 Calorimetry
 - C.4 Hess's law
 - C.5 Standard enthalpy of formation
- D: Chemical Equilibrium** Chapter 16 Pages 694-735
- D.1 Equilibrium condition
 - D.2 Mass-action expression and the equilibrium constant
 - D.3 Heterogeneous equilibria
 - D.4 Applications of the equilibrium constant
 - D.6 Le Châtelier's Principle

E: Acids and Bases	Chapter 17	Pages 736–783
E.1 The Nature of acids and bases		
E.2 Acid strength and the pH scale		
E.3 Calculating the pH of strong/weak acids		
E.4 Bases		
E.6 Salts		
E.7 Buffer systems		
E.7 Acid/base titrations		
F: Atomic Structure	Chapters 7 and 8	Pages 255–323
F.1 Electromagnetic radiation		
F.2 Atomic spectra and the Bohr model		
F.3 Quantum mechanics and the atom		
F.4 Orbital shapes and energies		
F.5 Many-electron atoms		
F.6 Building of the periodic table		
F.7 Trends in atomic properties		
G: Bonding	Chapter 9	Pages 324–369
H.1 Types of chemical bonds		
H.2 Ionic bonding		
H.3 Covalent bonding		
H.4 Electronegativity and bond polarity		
H.5 Lewis structures; octet rule, resonance, formal charge, exceptions		