
GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE AND TECHNOLOGY
1997/98

CHEMISTRY 1010: Introductory University Chemistry I

PREREQUISITE: Chemistry 30 or equivalent

INSTRUCTOR: Les Rawluk Office J214 539-2738

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

LABORATORY: Chemistry 101/102 Experiments, University of Alberta, 1997/98
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 weekly problem sets, quizzes, and a brief introduction to the upcoming Laboratory experiment.

COURSE EVALUATION

| | | |
|-------------------------|-------------------|--------|
| October Midterm | October 8, 1997 | 17.5% |
| November Midterm | November 19, 1997 | 17.5% |
| December Exam | | 35.0% |
| 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 Naming simple compounds
 - A.3 The mole
 - A.4 Determining the formula of a compound
 - A.5 Calculations involving a limiting reagent
 - A.6 Aqueous solutions and molarity
 - A.7 Precipitation reactions
 - A.8 Oxidation-Reduction reactions
- B: Atomic Structure** Chapters 7 and 8 Pages 255-323
- B.1 Electromagnetic radiation
 - B.2 Atomic spectra and the Bohr model
 - B.3 Quantum mechanics and the atom
 - B.4 Orbital shapes and energies
 - B.5 Many-electron atoms
 - B.6 Building of the periodic table
 - B.7 Trends in atomic properties
- C: Gases** Chapter 5 Pages 172-219
- C.1 Gas laws of Boyle, Charles, and Avogadro
 - C.2 Ideal gas law
 - C.3 Gas stoichiometry
 - C.4 Partial pressures
 - C.5 Kinetic molecular theory
 - C.6 Real gases
- 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.5 Le Châtelier's Principle
- E: Acids and Bases** Chapters 17 and 18 Pages 736-836
- 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.5 Salts
 - E.6 Mixtures of weak acids and bases
 - E.7 Common ion effect
 - E.8 Buffer systems
 - E.9 Acid/base titrations
 - E.10 Slightly soluble salts
 - E.11 Complex ion equilibria
- Optional*
- F: Descriptive Chemistry of the Main Group Elements** Chapter 13 Pages 520-584
- F.1 Alkali metals
 - F.2 Alkaline earths
 - F.3 Halogens
 - F.4 Noble gases
 - F.5 Other main group elements