GRANDE PRAIRIE REGIONAL COLLEGE

DEPARTMENT OF SCIENCE Fall 94

CHEMISTRY 1010

Instructor	**Dr. Barry Ramaswamy**	**Room J218**
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Instructor	**Dr Leslie Rawluk**	**Room J214**
Telephone	**Office**	**539 2738**
Prerequisites	**CHEM 30**	**MATH 30**
Transfer Credits	**(CHEM1010 + CHEM1020 will be**	
	University of Alberta CHEM 100	**6 Credits)**
	University of Calgary CHEM 201	**3 Credits**
	University of Lethbridge CHEM 1000	**3 Credits**
Text Book	**CHEMISTRY, 3rd Edition**	
Author	**Stephen S. Zumdahl** **D. C. Heath and Company** **Lexington, Mass.**	
Laboratory Manual	**University of Alberta Chemistry 100/104 Experiments.**	

Lab Coats are compulsory and available at the Book Store.

Safety Glasses are compulsory and available at the book store. You cannot attend a Laboratory session without safety glasses.

COURSE EVALUATION

FALL SEMESTER

First Midterm		10 Marks
Second Midterm		10 Marks
Final Exam		45 Marks
Assignments		10 Marks
Quizzes		5 Marks
Laboratory		20 Marks
Total		100 Marks

The midterm examinations will be of 1 hour duration. The Final examination will be three hours.

Assignments will be handed out every week and are due the following Friday. Late Assignments will not be accepted. Quizzes will be given as necessary during the Seminar Hours. The Marks for the Quizzes and Assignments will be 15 Marks. You have to attend every Quiz to obtain full Marks.

Attendance to all Lectures and Seminars is strongly recommended. Laboratory Attendance to each specific experiment is Compulsory; a passing Grade in the Lab is required to pass the course. A doctors's medical note is required for **all** excused absences.

A student is required to obtain an average of 50% to pass the course.

SYLLABUS

Fall Semester. **Sept 6 - December 9, 1994**

Chemistry 1010

1.0 REVIEW

[A] CHEMICAL FOUNDATIONS

(i) Scientific Method
(ii) Units of Measurement.
(iii) Significant Figures and Calculations
(iv) Dimension Analysis
(v) Temperature, Density , etc
Chapter 1 Pages 1 - 32

[B] STOICHIOMETRY

(i) Atomic Masses, The Mole
(ii) Molecular Weight/ Molar Mass, Percent Composition of Compounds.
(iii) Determining the Formula of a Compound
(iv) Stoichiometric Calculations
(v) Calculations involving Limiting Reagents.
CHAPTER 2, 3 Pages 41 - 115

[C] SOLUTION STOICHIOMETRY

(i) The Nature of Aqueous Solutions.
(ii) The Concept of Molarity
(iii) Precipitation Reactions
(iv) Limiting Reagents in Aqueous Solutions.
(v) Simple Acid Base Reactions Involving Stoichiometry.
CHAPTER 4 Pages 127 - 173

2.0 GASES

(i) Early Experiments
(ii) The Gas Laws of Boyles, Charles and Avogadro
(iii) Gas Stoichiometry
(iv) Daltons Law of Partial Pressures
(v) Effusion and Diffusion
(vi) Real Gases
(vii) Intermolecular Collisions

CHAPTER 5 Pages 183 - 222

3.0 THERMOCHEMISTRY

(i) Calorimetry
(ii) Hess's Law
(iii) Standard Enthalpies of Formation
(iv) First Law of Thermodynamics

CHAPTER 6 Pages 233 - 269

4.0 ATOMIC THEORY

(i) Daltons Atomic Theory
(ii) Early Experiments to Characterise the Atom
(iii) Modern View of the Atomic Structure: An Introduction.
(iv) Atomic Spectrum of Hydrogen
(v) The Wave Mechanical Model of the Atom
(vi) The Bohr Model
(vii) The Wave Mechanical Model of the Atom
(viii) Quantum Numbers
(ix) Orbital Shapes and Energies
(x) Electron Spin and Pauli Principle
(xi) Polyelectron Atom
(xii) The Aufbau Principle and the Periodic Table
(xiii) Periodic Trends in Atomic Properties

CHAPTER 2 Pages 41 - 71
CHAPTER 7 Pages 279 - 330

5.0 STRUCTURE AND BONDING

(i) Types of Chemical Bonds
(ii) Electronegativity
(iii) Bond Polarity and Dipole Moments
(iv) Ion: Electron Configuration and Sizes

(v) Formation of Binary Ionic Compounds
(vi) Partial Ionic Character of Covalent Bonds
(vii) The Localized Electron Bond Model
(viii) Lewis Structures and the Octet Rules
(ix) Exceptions to the Octet Rules
(x) Resonance
(xi) Valence Shell Electron Pair Repulsion, VSEPR, Model
(xii) Hybridization and the Localized Electron Model
(xiii) The Molecular Orbital Model

Chapter 8 Pages 341 - 392
Chapter 9 Pages 403 - 430

6.0 TRANSITION METALS AND COORDINATION CHEMISTRY

(i) The Transition Metals: A Survey
(ii) The First Row Transition Metals
(iii) Coordination Compounds
(iv) Isomerism
(v) The Crystal Field Model

Chapter 20 Pages 935 - 968