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



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|---|---|
| CHEMISTRY 1020: | Introductory University Chemistry II |
| PREREQUISITE: | Chem 1010 or equivalent |
| INSTRUCTOR: | Barry Ramaswamy Office: C218 539-2072 |
| TEXTBOOK: | CHEMISTRY The Molecular Nature of Matter and Change<br>Martin Silberberg<br>Mosby, Toronto ©1996 |
| LABORATORY: | Chemistry 102/105 Experiments. University of Alberta, 1997/98<br>***Lab Coats and safety glasses are compulsory;*** and are available at the Bookstore.<br>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, discussions of weekly problem sets, quizzes, and a brief introduction to the upcoming Laboratory class. |

## COURSE EVALUATION

| | | |
|---|---|---|
| February Midterm | Feb 10/11, 1998 | 15.00 % |
| March Midterm | Mar 25/26, 1998 | 15.00 % |
| April Exam | | 35.00 % |
| Assignment and Quizzes | | 10.00 % |
| Laboratory | | 20.00 % |
| Lab Examination | | 5.00 % |
| Total | | 100 % |

Assignments will be distributed on a weekly basis. Completion of assignment is essential to successfully understand 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.**

CH1020 COURSE CONTENNT

A Acids and Bases Chapter 18 Pages 794-828
- A.1 Acid / base titration's
- A.2 Polyprotic acids and bases
- A.3 Slightly soluble salts
- A.4 Complex ion Equilibria

B. Thermochemistry and Thermodynamics Chapter 6, 19 Pages 220-245
- B.1 Heat, work, and 1st Law of thermodynamics Pages 837-861
- B.2 Enthalpy and Calorimetry
- B.3 Hess Law
- B.4 Entropy, Free energy and the 2nd Law of thermodynamics
- B.5 3rd Law of Thermodynamics

C. Electrochemistry Chapter 20 Pages 874-921
- C.1 Half reactions and Electrochemical Cells
- C.2 Voltaic Cells
- C.3 Free Energy and Electrical Work
- C.4 Electrolytic Cells

D. Kinetics Chapter 15 Pages 644-684
- D.1 Expressing the reaction rate
- D.2 Rate law and its Components
- D.3 Reaction Mechanism: Steps in Overall Reactions
- D.4 Catalysis

E. Chemical Bonding and Molecular Shapes Chapter 9, 10 Pages 324 - 404
- E.1 Atomic properties and Chemical Bonds
- E.2 Ionic and Covalent Bonding'
- E.3 Lewis Structures
- E.4 Valence Shell Electron Pair Repulsion Theory and Molecular Shape
- E.5 Molecular Orbital Theory

F. Intermolecular Forces Chapter 11 Pages 412-454
- F.1 Types of intermolecular Forces
- F.2 Properties of liquid and solid state
- F.3 Quantitative aspects of Changes in State
- F.4 The Uniqueness of water

Optional

G. Transition Elements and their Coordination Compounds Chapter 22 Pages 972-997
- G.1 An Overview of Transition Elements
- G.2 The inner transition Elements
- G.3 Coordination Compounds
- G.4 Theoretical Basis for Bonding and Properties of Complexes.

CHEMISTRY 1020

LAB SCHEDULE

WINTER 1998

| Week of | Expt | Name of Experiment |
|---|---|---|
| | | |
| 14-Jan | Expt K | Analysis of an unknown acid |
| 20-Jan | Expt V | Preparation of a Nickel Coordination Compound |
| 28-Jan | Expt W | Stoichiometry of a Nickel Coordination Compound |
| 4-Feb | Expt N | Qualitative Identification of Cations |
| 11-Feb | Expt O | Thermochemistry |
| 4-Mar | Expt P | Electrolysis and Spontaniety of Redox Reactions |
| 11-Mar | Expt T | Effect of Temperature on Rate of a Reaction |
| 18-Mar | Expt M | Bonding and Chemical Properties |
| 25-Mar | | Shapes of Molecules |
| 2-Apr | | Lab Exam |