
GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE AND TECHNOLOGY
2003/2004

CHEMISTRY 2730: Physical Chemistry — Physical Properties and Dynamics
of Chemical Systems

PREREQUISITE: CHEM 2710 or equivalent

INSTRUCTOR: Les Rawluk Office J214 539-2738

TRANSFER CREDITS: CH2730 to U. of Alberta CHEM 273, 3 credits

TEXT BOOK: Physical Chemistry, 7th Edition.
by P.W. Atkins

EMAIL: lrawluk@gprc.ab.ca

LABORATORY ITEMS: Chemistry 273 Laboratory Manual
University of Alberta, 2003
Lab coats and safety glasses
Hard cover Physics Laboratory Note Book

COURSE EVALUATION

Midterm Exam	20%
Final Exam	45%
Assignments	10%
Laboratory Reports	15%
Laboratory Exam	10%

I. Colligative Properties

- Boiling point elevation, freezing point depression, and osmotic pressure

II. Ionic Solutions

- Conductance, molar conductivity,
- Weak electrolytes, strong electrolytes
- Drift speed, ion mobility, ion conductivity
- Thermodynamic functions of formation, activity coefficients
- Ionic equilibria

III. Electrochemical Cells

- Standard potentials, measurement of activity coefficients
- Thermodynamic functions from cell potential measurements

IV. Kinetic Molecular Theory

- Gas pressure, Maxwell-Boltzmann distribution
- Collision frequency, mean free path, collision density
- Diffusion
- Gas imperfections

V. Chemical Kinetics

- Differential and integrated rate laws
- Experimental methods and techniques
- Influence of temperature
- Collision theory and transition state theory
- Composite mechanisms, consecutive reactions
- Rate constants and equilibrium constants
- Free radical reactions
- Catalysis

VI. Surface Chemistry

- Adsorption, adsorption isotherms
- Chemical reactions on surfaces, surface structure, surface tension
- Surfactants
- Colloids