

SEP. 10 2002

GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE AND TECHNOLOGY
DIVISION OF CHEMISTRY

FALL 2002

CHEMISTRY 2110

Instructor: Barry Ramaswamy

Office: J218

Phone: Office: 539 2072 Home: 539 6239

Prerequisite: Chem 1010 and Chem 1020

Transfer Credits: U of Alberta; CH211 3 Credits

Lectures: Monday 1.00 - 2.20 E306 Friday 11.30 - 12.50 E 306

Laboratory: Friday 2.30 - 6.30 pm J 119

Textbook: Quantitative Chemical Analysis, 6th Edition
Daniel C. Brown, W.H. Freeman and Co, 2002

Laboratory: Chemistry 211, Quantitative Analysis
B. Kratochvil and W.E. Harris
University of Alberta, 2002

COURSE EVALUATION

Quizzes	15%
Lab Work	40%
Midterm	15%
Final	30%
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Total	100%

Note: *There will be quizzes every week for 15 minutes. Attendance to the Quiz and labs are Compulsory. If you cannot make it for a quiz or a lab arrange for alternate dates with the instructor. Absence from the quiz or the Lab without permission will be tolerated only if a doctor's certificate is provided.*

The first Quiz is on Sept 20, 2002

CHEMISTRY 2110

FALL 2002

SYLLABUS

1.0 ANALYTICAL PROCESS

Measurements

Tools of Trade

Volumetric flasks

Glassware

Analytical Balance

Experimental Error

Types of Error

Statistics and Spreadsheets

Gaussian Distribution

Confidence Intervals

Comparison of mean and student's t

Q test for bad data

Spreadsheets

Calibration Methods

Finding the best straight line

Calibration curves

A spreadsheet for least squares

Reports

Application of Q tests

Reporting mean and medians

Calculation of overall standard deviations

EXCEL

Excel will be used for finding all these material.

LABORATORY

All the labs to be done for the year will be discussed.

2.0 CHEMICAL EQUILIBRIUM

The equilibrium Constant

Equilibrium and Thermodynamics

Solubility Products

Common Ion Effects

Separation by Precipitation

Complex Formation

Protic Acids and Bases

pH

Strength of Acid and Bases

Charge Balance

Mass Balance

Systematic Treatment of Equilibrium

3.0 MONOPROTIC ACID BASE EQUILIBRIA

Strong Acids and Bases
Weak Acid and Bases
Weak Acid Equilibria
Weak Base Equilibria
Buffers

4.0 POLYPROTIC ACID BASE EQUILIBRIA

Diprotic Acid and Bases
Diprotic Buffers
Polyprotic Acid and Bases
Polyprotic Buffers

5.0 Acid Base Titrations

Titration of a Strong Acid with a Strong Base
Titration of a Strong Acid and a Weak Base
Titration of a Strong Base and Weak Acid
Titration in Diprotic Systems
Titration of a Weak acid and a Weak base
Calculation of Titration Curves with Spreadsheets

6.0 EDTA TITRATIONS

Metal Chelate complexes
EDTA
EDTA Titration Curves
Metal Ion Indicators