

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

SEP. 10 2002

FALL 2000

CH211

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: Wednesday and Friday 1.00 – 2.20 pm J202

Laboratory: Friday 2.30 – 6.30 pm

Textbook: Quantitative Chemical Analysis, 5th Edition
Daniel C. Brown, W.H. Freeman and Co, 1998

Laboratory: Chemistry 211, Quantitative Analysis
B. Kratochvil and W.E. Harris
University of Alberta, 2000

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.*

CHEMISTRY 2110

FALL 2001

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

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