GRANDE PRAIRIE REGIONAL COLLEGE

DEPARTMENT OF SCIENCE AND TECHNOLOGY

DIVISION OF CHEMISTRY

FALL 2000

Instructor:	Barry Ramaswamy
Office:	J218
Phone:	Office: 539 2072 Home: 539 6239
Prerequisit:	Chem 1010 and Chem 1020
Transfer Credits:	U of Alberta: CH211 3 Credits
Lectures:	Monday, Wednesday 10.00 – 11.20 am J202
Laboratory:	Friday 1.00 – 5.30 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

CH2110

CHEMISTRY 2110

FALL 2000

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

COURSE EVALUATION

Quizzes	15%
Lab Work	40%
Midterm	15%
Final	30%
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.*