

# **GRANDE PRAIRIE REGIONAL COLLEGE**

DEPARTMENT OF SCIENCE

**DIVISION OF CHEMISTRY**

**WINTER 2004**

Instructor: Barry Ramaswamy

Office: J218

Phone: Office: 539 2072                      Home: 539 6239

Prerequisite: Chemistry 2110 or equivalent courses

Transfer Credits: U of Alberta, CH213              3 Credits

Lectures:              Wednesday 11.30 – 12.50 J203      Thursday 10.00 – 11.20 J202

Laboratory:              Friday 2.30 – 6.20 pm

Text Book:              Quantitative Chemical Analysis, 6<sup>th</sup> Edition  
Daniel C. Harris, WH Freeman and Company, 2001

Laboratory:              Chemistry 213, Quantitative Analysis  
B. Kratochvil              and W.E Harris  
University of Alberta, 2004

### **COURSE EVALUATION**

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

Note:

Quizzes: There will be a quiz every week during the term. The first Quiz will be on Wednesday January 21, 2004. The Quiz will include Laboratory work and Lectures done in class. Attendance to the quizzes is compulsory. Absence due to illness has to be substantiated with a report from the nurse or the physician. Attendance to the Laboratory is Compulsory. Absence should be substantiated with a letter from the nurse or the physician.

## SYLLABUS

1. Spectrophotometry. Chapter 18 and Chapter 19  
  
A first look at Spectrophotometry. Simple spectrophotometer and Analysis using Spectrophotometers.  
Properties of Light  
Absorption and Transmission  
Beers Law  
Analysis of a Mixture  
The Scatchard plot  
Least Square Analysis using excel  
See Lab Book.  
19-1, 19-2, 19-3, 19-4, 19-5,  
20-1, 20-2, 20-3, 20-4, 20-6,
2. Electrochemistry  
Fundamentals of Electrochemistry  
Galvanic cells, Cell potential and Nernst equation  
 $E^{\circ}$  and equilibrium Constant  
Reference cells  
Indicator Electrodes  
Ion Selective Electrodes  
Ph Measurements and the Glass Electrode  
Redox Titration's and Titration Curves  
End Point Voltages  
Electrochemistry, Redox Titration's, Polarography and Ion Selective Electrodes  
15-1, 15-2, 15-3, 15-4, 15-5, 15-6, 15-7  
16-1, 16-2, 16-3, 16-4, 16-5, 16-6, 16-7,  
17-1, 17-2, 17-3, 17-4, 17-5  
18-1, 18-2, 18-3, 18-6, 18-8  
Radiochemical determination of Thorium  
Determination of Fluoride using ion Selective Electrode
3. Atomic Spectroscopy and Spectrometers  
Determination of Copper using AA spectroscopy  
Instrumentation and Simple Analysis  
21-1, 21-2, 21-3, 21-4, 21-5,  
22-1, 22-2, 22-3, 22-4, 22-5
4. Introduction to Analytical Separations  
  
Solvent Extraction and Analysis  
23-1, 23-2, 23-3, 23-4, 23-5
5. Chromatography  
Determination of Nitro anilines using HPLC  
Dextromethorphan in Cough Syrup  
Gas Chromatography, High performance Liquid Chromatography, Ion Exchange Chromatography  
24-1, 24-2, 24-3, 24-5, 24-7  
25-1, 25-2, 25-3, 25-4, 25-5,  
26-1, 26-2, 26-4,
6. Literature Search  
Using Chemical Abstract to search a chemical analysis and reporting to the Class

