

**UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF CHEMISTRY
COURSE OUTLINE
WINTER 2019**

1. **Course:** Course CHEM 315 Analytical Chemistry: Introductory Instrumental Analysis

LEC	DAYS	TIME	ROOM	INSTRUCTOR	OFFICE	EMAIL	OFFICE HOURS
L01	TR	12:30-1:45	ENA103	Dr. J. Gailer	SB405	jgailer@ucalgary.ca	TR: 2:00-3:00 pm

Course website or D2L course name: CHEM 315 L01 - (Winter 2019) - Analy Chem: Intro Instrument Analy
 Departmental Office: Room SA 229, Tel: 403-220-5341, e-mail: uginfo@chem.ucalgary.ca

2. **Course Description: Lectures:** Principles and practice of instrumental measurements for the quantitative determination of substances. Spectroscopic analysis. Analytical separations; liquid-liquid extraction, solid phase extraction, chromatography. **Laboratory:** Quantitative analysis of organic and inorganic materials using simple instrumental techniques.

3. **Recommended/ Required Textbook(s):** Quantitative Chemical Analysis, D.C. Harris, 9th Edition, W.H. Freeman and Company.

4. **Topics Covered* and Suggested Readings:**

Chapter 4 Statistics, sections 4-7 and 4-8

Chapter 5 Quality Assurance and Calibration Methods

Chapter 28 Sample Preparation

Chapter 18 Fundamentals of Spectrophotometry

Chapter 20 Spectrophotometers

Chapter 21 Atomic Spectrometry

Chapter 22 Mass Spectrometry

Chapter 23 Introduction to Analytical Separations

Chapter 24 Gas Chromatography

Chapter 25 High-Performance Liquid Chromatography

Chapter 26 Chromatographic Methods and Capillary Electrophoresis

Chapter 14 Fundamentals of Electrochemistry

* Given time constraints, not all indicated Topics may be covered.

LABORATORY EXPERIMENTS: (10 weeks, 40 hours total experiment time)

Determination of Aluminum by EDTA titration (2 weeks)

Spectrophotometric Analysis of Trace Iron

Copper by Electrogravimetry

Copper by Atomic Absorption Spectroscopy

Cyclic Voltammetry of Ferricyanide

Analgesics by High-Performance Liquid Chromatograph

Chlorocarbons by Gas Chromatography

Tartaric Acid in Wine by Ion Chromatography

Fluoride by Ion-Selective Electrode

Department Approval _____ Date _____