

**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	Virtual	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

**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, 10th 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

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

**LABORATORY EXPERIMENTS:** (8 weeks, 34 hours total experiment time)

Determination of Aluminum by EDTA titration (2 weeks)

Spectrophotometric Analysis of Trace Iron

Copper by Electrogravimetry

Cyclic Voltammetry of Ferricyanide

Analgesics by High-Performance Liquid Chromatography

Chlorocarbons by Gas Chromatography

Tartaric Acid in Wine by Ion Chromatography

Fluoride by Ion-Selective Electrode

Department Approval \_\_\_\_\_ Date \_\_\_\_\_