



UNIVERSITY OF CALGARY

DEPARTMENT OF CHEMISTRY COURSE OUTLINE WINTER 2015

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

Lecture Sections:

L01: TuTh, 12:30-1:45, ENE 243, Dr. J. Gailer, Office SB405, Tel: 210-8899, jgailer@ucalgary.ca
Office Hours: TuTh 2:00-3:00

Course website or D2L course name: CHEM 315 L01 - (Winter 2015) - Analy Chem: Intro Instrument Analy

Departmental Office: SA 229, Tel: 220-6049, e-mail: chem.undergrad@ucalgary.ca

2. **Prerequisites:** CHEM 311 (<http://www.ucalgary.ca/pubs/calendar/current/chemistry.html>)
3. **Grading:** The University policy on grading and related matters is described sections [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Quizzes (5; in-class, 6% each)	30%	dates: announced Jan 13 th -Orientation
Laboratory	35%	
Final Examination	35%	to be scheduled by Registrar's Office

Grading Scale:

A+	A	A-	B+	B	B-
90% - 100%	85% - 89%	80% - 84%	76% - 79%	72% - 75%	68% - 71%

C+	C	C-	D+	D	F
64% - 67%	60% - 63%	56% - 59%	52% - 55%	48% - 51%	< 48%

Depending on the final overall performance of the class, the minimum percentage required for any particular letter grade may be lowered. An average grade of 50% or higher in the laboratories and a weighted average of 50% or higher on examinations is required to attain a letter grade of C- or higher. The Faculty of Science requires a minimum grade of C- in any course to be used as a prerequisite.

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar
5. **Scheduled out-of-class activities:** N/A
6. **Course Materials:** Quantitative Chemical Analysis, D.C. Harris, 8th Edition, W.H. Freeman and Company.

7. **Examination Policy:** Calculators of any type may be used on examinations. If a quiz contains calculations it will be announced one week before the quiz will be administered. The assignment – which will only contain calculations – will include a list of equations and constants. A list of equations and constants will also be provided on the final exam. Students should also read the Calendar, Section G, on Examinations: <http://www.ucalgary.ca/pubs/calendar/current/g.html>. Students should also read the Calendar, [Section G](#), on Examinations.
8. **Approved Mandatory and Optional Course Supplemental Fees:** The Department of Chemistry has a laboratory glassware breakage fee. At the start of the course, each student is assigned a locker and checks-in to establish that they have a complete set of usable glassware. By signing for check-in, a student agrees that they are now responsible for the glassware until check out. Any equipment that is missing, unusable or has been replaced during the semester will be charged to the student. All students, even those who withdraw early from the course must check out of the laboratory before the last day of lectures. Any student who fails to check out before the last day of lectures for the term will be assessed a charge of \$30.00. If this fee is not paid by the last day of the final examination period of the term, an additional \$10.00 administrative fee will be charged and university services (registration, transcripts, etc.) may be withheld.
9. **Writing across the curriculum statement:** e.g. “In this course, the quality of the student’s writing in laboratory reports will be a factor in the evaluation of those reports.” See also [Section E.2](#) of the University Calendar.
10. **Human studies statement:** indicating whether students in the course may be expected to participate as subjects or researchers. See also [Section E.5](#) of the University Calendar.
11. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**
- (a) **Academic Misconduct:** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties
 - (b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
 - (c) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: [Calendar entry on students with disabilities](#) and [Student Accessibility Services](#).
 - (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
 - (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
 - (f) **Student Union Information:** VP Academic Phone: 220-3911 Email: suvpaca@ucalgary.ca.
SU Faculty Rep. Phone: 220-3913 Email: sciencerep@su.ucalgary.ca; [Student Ombudsman](#)
 - (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
 - (h) At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

TOPICS COVERED AND SUGGESTED READING:

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

Chapter 5 Quality Assurance and Calibration Methods

Chapter 27 Sample Preparation

Chapter 17 Fundamentals of Spectrophotometry

Chapter 19 Spectrophotometers

Chapter 20 Atomic Spectrometry

Chapter 21 Mass Spectrometry

Chapter 22 Introduction to Analytical Separations

Chapter 23 Gas Chromatography

Chapter 24 High-Performance Liquid Chromatography

Chapter 25 Chromatographic Methods and Capillary Electrophoresis

Chapter 13 Fundamentals of Electrochemistry

Chapter 14 Electrodes and Potentiometry

Chapter 16* Electroanalytical Techniques

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

LABORATORY EXPERIMENTS:

Determination of Aluminum by EDTA titration

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: Approved by Department Head

Date: December 12, 2014