



## COURSE OUTLINE

1. **Course:** CHEM 315, Analy Chem: Intro Instrument Analy - Winter 2019

Lecture 01: TR 12:30 - 13:45 in ENE 243

Instructor	Email	Phone	Office	Hours
Jurgen Gailer	jgailer@ucalgary.ca	210-8899	SB 405	TR 2:00-3:00pm

**Course Site:**

D2L: CHEM 315 L01-(Winter 2019)-Analy Chem: Intro Instrument Analy

**Note:** Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

**Prerequisite(s):**

Chemistry 311.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
Quizzes (5, in-class)	30%	announced in Orientation
Laboratory	35%	
Laboratory Notebook	5%	
Final Exam	30%	to be scheduled by the Registrar

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

Depending on the final overall performance of the class, the minimum percentage 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.

This course has a registrar scheduled final exam.

#### 4. **Missed Components Of Term Work:**

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see [Section N.1](#); for more information regarding the use of statutory declaration/medical notes, see [FAQ](#)). Absences must be reported within 48 hrs.

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 themselves with these regulations. See also [Section E.3](#) of the University Calendar.

In the event that a student missed a quiz (e.g. due to illness), the instructor needs to be notified **within 48 hrs**. The student will be allowed to write a make-up quiz **within 7 days** of the date of the quiz if a legitimate reason is given. If the student cannot write the make-up quiz then the percentage weight the missed quiz will be pro-rated among the remaining components of the course OR will be transferred to the final examination (see Section E.3 of the University Calendar).

If a student missed an experiment or a make-up lab for non-legitimate reasons (e.g. vacation, incomplete or insufficient score in pre-lab assignment), and did not perform the experiment, the contribution of that experiment in the final course grade will be zero.

#### 5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

#### 6. **Course Materials:**

Recommended Textbook(s):

D.C. Harris, *Quantitative Chemical Analysis*: W.H. Freeman and Company.

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

#### 7. **Examination Policy:**

No aids are allowed on tests or examinations.

Students should also read the Calendar, [Section G](#), on Examinations.

#### 8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

#### 9. **Writing Across The Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports.

#### 10. **Human Studies Statement:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

## 11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **15 days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

Term-work: A student who feels that a piece of graded term work (term paper, essay, test, etc.) has been unfairly graded, may have the work re-graded. The student shall discuss the work with the Instructor within 15 days of either being notified about the mark, or of the item's return to the class. If not satisfied, the student shall immediately submit the Reappraisal of Term work Grade form to the Associate Head of Chemistry, Dr. Farideh Jalilehvand ([ahugchem@ucalgary.ca](mailto:ahugchem@ucalgary.ca)), who will arrange for a reassessment of the work if, and only if, the student's argument is valid. Note: Students should attempt to present their rationale as effectively and as fully as possible. Mere dissatisfaction with a decision is not sufficient grounds for the appeal of a grade, or other academic decision. See sections [I.1](#) and [I.2](#) of the University Calendar.

Final exam: A student wishing a reappraisal of the final grade should contact the instructor. If not satisfied, the student shall submit the request to the Enrolment Services. See [Section I.3](#) of the University Calendar.

## 12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](tel:403-220-2208).
- d. **Misconduct:** 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. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the

information on [assembly points](#).

- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Chemistry, Dr. Farideh Jalilehvand by email [ahugchem@ucalgary.ca](mailto:ahugchem@ucalgary.ca) or phone 403-220-5353. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). 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 [Legal Services](#) website.
- i. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). Student Ombudsman, Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

### 13. Laboratory Information

Laboratory activities will begin the week of [January 21]. It is mandatory that students wear a lab coat and safety glasses at all times when working in the lab. Students wearing inappropriate laboratory attire will not be permitted to conduct experiments for safety reasons. The manual can be found online (course D2L site). You must consult the online laboratory manual prior to attending any of your scheduled lab periods and printout the required portion of the manual that outlines the procedures you will be doing.

Students repeating the course within the last two years can be exempted from the Laboratory Component of the Course if a grade of 75% or higher was obtained. The lab grade achieved on the previous attempt will be carried forward. Such students must contact the Chemistry Undergraduate Program Administrator in the Chemistry Main Office, SA 229 before the drop date (May 18th, 2018).

- 14. Laboratory Safety Course:** All undergraduate students taking chemistry laboratories are required to

complete an introductory course (approx. 50 minutes) on laboratory safety. This course is presented in an online format. The Safety Course must be completed before the first laboratory experiment. Students who do not complete the safety lessons will subsequently be denied admission to the laboratories. While it will not count directly to the final grade, the material is considered to be part of the course and is therefore appropriate for inclusion into laboratory pre-labs and exams. Students who have previously completed the Chemistry Safety Course at the University of Calgary in the past five years are NOT required to repeat it.

**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.

**Course Outcomes:**

- describe the relevance of instrumental analytical chemistry in modern society
- identify common pitfalls in the analytical measurement process: sample collection, sample preparation, measurement, quality assurance and quality control (QA/QC)
- make sense of the theory that is the foundation of the analytical measurement process
- explain the basic operating principle of common building blocks of analytical instruments
- decide which instrumental techniques are most appropriate to solve an analytical problem
- develop hands-on skills to execute analytical measurements in order to achieve accurate and precise analytical results
- demonstrate hands-on troubleshooting skills with regard to the operation of analytical instruments

Department Approval:

Electronically Approved

Date: 2019-01-08 10:03