



COURSE OUTLINE

1. **Course:** CHEM 315, Analy Chem: Intro Instrument Analy - Winter 2022

Lecture 01 : MWF 10:00 - 10:50 in ENC 70

Instructor	Email	Phone	Office	Hours
Dr Jurgen Gailer	jjgailer@ucalgary.ca	210-8899	SB 405	Mon, Wed, Fri 10:00-11:00 am

To account for any necessary transition to remote learning in the winter 2022 semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

In Person Delivery Details:

Lectures will be delivered in-person starting February 28 (after the Winter Break).

Until February 19 pre-recorded **lectures** will be **made available to students synchronously via D2L** (i.e. during regular class time on Monday, Wednesday and Friday from 10:00 to 10:50 pm). Students that miss an online class because of legitimate reasons (e.g. IT problems, health issues, taking care of a relative/child) will be provided with a link to the missed lecture to catch up. Students that need clarifications of any material covered in class should send an e-mail to the instructor who will answer all questions in an e-mail to the class anonymously (the name of the student who asked the question will not be identified).

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

If students have questions/inquiries about certain aspects of the course they can e-mail the instructor and he will respond within 24 h except on weekdays and holidays.

Laboratories (Lab experiments) will **run in-person in SA 169 and 259** from the week of February 28th onwards (laboratories will remain online prior to this date). Check your Student Centre to see rooms and times for which you are registered. Students will attend their registered lab section based on the schedule that will be set during the first week and posted on the course D2L site.

Completion of Lab experiments is required in order to pass the course - if it is not possible for you to attend on-campus sessions, contact the course instructor immediately (before the add/drop deadline or within 2 days of enrolling in the course, whichever is earlier).

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#).

Course Site:

D2L: CHEM 315 L01-(Winter 2022)-Analy Chem: Intro Instrument Analy

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

Equity Diversity & Inclusion:

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote

academic excellence and foster belonging for all.

The Chemistry EDI Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Associate Head EDI, Belinda Heyne (bjmayne@ucalgary.ca)

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:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Laboratory Experiments (6) ¹	35%	Ongoing		
Quiz 1 ²	7.5%	Jan 31 2022		
Quiz 2 ³	7.5%	Feb 28 2022		
Quiz 3 ⁴	7.5%	Mar 21 2022		
Quiz 4 ⁵	7.5%	Apr 11 2022		
Laboratory Notebook	5%	Apr 12 2022		
Registrar Scheduled Final Exam	30%	Will be available when the final exam schedule is released by the Registrar	in person	Will be available when the final exam schedule is released by the Registrar

¹ Weekly, starting January 31. Online until Feb 28. In-person after Feb 28.

² 30 min, in class

³ 30 min, in class

⁴ 30 min, in class

⁵ 30 min, in class

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 %

This course will have a Registrar Scheduled Final exam that will be delivered in-person and on campus. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

The final exam is an **in-person** assessment.

Quizzes will take place during class-time, in the delivery mode **matching** the current guidance from the university, *i.e. if the lecture that week is online, the quiz will be delivered synchronously online* If the lecture component has returned to in-person delivery, the quiz will be administered in-person as well.

- Quizzes delivered online will have a reasonable buffer time added to account for technical difficulties (30 min +20 min buffer time).
- For any synchronous online assessment, time will be adjusted for SAS students if needed. As well,

accommodations for students facing a significant barrier to writing the assessment during the scheduled time will be done on a case-by-case basis, e.g. *caregiving responsibilities, ability to secure an appropriate test-taking environment*. If any student expects to have difficulty completing a synchronous activity during its scheduled time slot, please contact the course instructor as early as possible to discuss alternate arrangements.

In order to receive the prerequisite requirements (i.e. a grade of C- or higher) for further Science courses, a student must meet **all** of the following requirements.

1. Perform and submit results for at least 4 of 6 Laboratory experiments as in-person lab activities
2. Achieve a minimum 50% average on the Laboratory experiments
3. Achieve a minimum 50% weighted average on the examinations (4 Quizzes and Final Exam)

That means if a student scores below 50% on the exam average OR does not achieve a minimum Lab grade OR misses more than two lab experiments (for any reason), the maximum grade they can obtain in CHEM 315 is a D+.

The University of Calgary offers a [flexible grade option](https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

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

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

There are no deferred quizzes, however, some accommodations may be made for students with caregiving and/or health issues. If you are unable to write a quiz during the scheduled time, notify the instructor either 10 business days in advance for scheduled absences, or within 48 h of the missed exam for emergency absences so that alternative arrangements can be made. If it is not possible to complete the exam within the exam writing window, the weight of the missed quiz will be shifted to the final exam.

There is **no make-up Lab section in CHEM 315**. If you are unable to attend your scheduled Lab section, notify the course instructor as soon as possible. All make-up labs must be performed in the same 2-week cycle as the missed lab. As such, as much notice as possible is needed in order to find available space to perform make-up exams for excused absences. A minimum of **48 hours** notice (after the missed lab) for emergency absences or illness is required, and **10 business days** ADVANCE notice (before the missed lab) for scheduled absences such as doctor's appointments. Due to scheduling and restrictions on lab occupancy, it may not be possible to make up a missed experiment even if sufficient notice is supplied. In such cases the weight of the missed lab activity will be distributed over the remaining Lab experiments. Please note the course policies on minimum number of labs completed in Section 3.

There are **no deferred quizzes**, however, some accommodations may be made for students that are caregivers or health related issues. If you are unable to write either quiz during the scheduled time, notify the instructor either **10 business days in advance** for scheduled absences, or **within 48 h** of the missed exam for emergency absences so that alternative arrangements can be made. If it is not possible to complete the exam within the exam writing window, the weight of the missed quiz will be shifted to the final exam.

For all other absences or missed deadlines, contact the instructor following the instructions above. Failure to provide timely notice or absences for non-excusable reasons (e.g. late arrival or safety violations in the lab) will result in a grade of 0 for the missed course component.

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

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

6. Course Materials:

Recommended Textbook(s):

Daniel C. Harris and Charles A Lucy, Quantitative Chemical Analysis, 10th Edition: MacMillan Learning: MacMillan Learning.

Required laboratory materials:

Lab coat (full length / knee length)

Safety glasses or goggles - CSA approved, with side shields

Hardcover, permanently bound laboratory notebook (such as the blue and black "lab notes" and "physics notes" books available from the Bookstore)

Masks are required in indoor public areas on campus and in the laboratory. If you will wear a mask in the lab:

Non-medical masks made of heat-resistant material - at least 2 (note: many common disposable masks are not suitable - see course D2L for details on material specs and requirements).

Technological Requirements:

This course will have in-class discussion via Zoom: Use of a webcam and microphone during these sessions will be beneficial.

Specific software that will be used in this course:

A modern web browser - for accessing D2L and viewing course videos and other content.

Zoom - for attending lecture and office hours.

Office 365 suite: (Available to students at no additional cost)

1. OneNote - for accessing notes and assignments.

2. Excel - full version, not iOS or web version - or equivalent software.

3. Word - or equivalent word processor.

PDF viewer (e.g. Acrobat Reader, Nitro Reader). Preview or in-browser reader is not sufficient.

A scanner or phone app that can save documents/photos as PDF (e.g. OneDrive app).

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

Only non-programmable calculators are permitted for use during any **in-person** exam in this course.

Policies for any **online** examination (i.e. Quiz 1) will be provided in advance of the specific examination. For any synchronous assessment, time will be adjusted for SAS students if needed. Any student with academic accommodations must be registered with Student Accessibility Services (see Section 12(e) below), and have reviewed their accommodations as described on the SAS documents with the course coordinator within the first 15 days of the semester or at least 10 business days before any scheduled activity for which accommodations are required. An email confirming mutual understanding of the accommodations will suffice.

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

8. Approved Mandatory And Optional Course Supplemental Fees:

Laboratory Breakage Fees and Locker Check-out: 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 (April 12, 2022). 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 posted deadline, university services (registration, transcripts, etc.) may be withheld.

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.

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 **ten business 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 submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. 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.

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 Services:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** 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 (syva@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
Student Academic Misconduct [Policy](#) and [Procedure](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

e. Academic Accommodation Policy:

It is the student's responsibility to request academic accommodations according to the University policies

and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Dr. Yuen-Ying Carpenter by email yyscarpe@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP). 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.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- h. **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.
- i. **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 exemptions

Students repeating the course within the last three years can be exempted from the Laboratory Component of the course if a grade of 75% or higher was obtained on the lab portion. Students choosing to exempt from the lab should be aware that,

- the material covered in these in-person labs will be integrated into other course assessments; and,
- the lab grade achieved on the previous attempt will be carried forward.

Prior to applying for an exemption, students are encouraged to connect with their course instructor or coordinator to better understand the risks and benefits in their specific online course, as well as what access they will (or will not) have to lab materials or feedback as an exempt student.

Students applying for a lab exemption should contact the Undergraduate Science Center (science.advising@ucalgary.ca) **no later than Monday January 17th, 2022** to apply. Students registering in the course after this date should contact the USC as soon as possible if they wish to apply for an exemption.

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 and must be completed prior to the first in-person laboratory. 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.

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)
- Recognize operating principles of analytical measurement processes (i.e., spectroscopy, chromatography,

sample preparation)

- 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 (i.e., pipetting, reading a balance)
- Demonstrate hands-on troubleshooting skills with regard to the operation of analytical instruments
- Practice recordkeeping that conforms to professional and ethical standards

Electronically Approved - Jan 20 2022 15:49

Department Approval

Electronically Approved - Jan 20 2022 17:17

Associate Dean's Approval