



COURSE OUTLINE

1. **Course:** CHEM 521, Introduction to Atmospheric Chemistry - Winter 2024

Lecture 01 : TR 11:00 - 12:15 in SA 015

Instructor	Email	Phone	Office	Hours
Dr Hans Osthoff	hosthoff@ucalgary.ca	403 220-8689	SB 205	online by appointment

This course does not have a laboratory component.

To account for any necessary transition to remote learning for the current 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 and the midterm examination will be held in-person as scheduled (by the registrar) in Student Centre.

Selected lectures may be delivered via pre-recorded videos that students will be expected to have watched ahead of class time. In those cases, class time will be used to complete (unmarked) worksheets that are based on the prerecorded lecture material and are intended to enhance student learning and comprehension of the course material. Details will be posted on the course's D2L web site.

Course Site:

D2L: CHEM 521 L01 - (Winter 2024) - Introduction to Atmospheric Chemistry
<https://d2l.ucalgary.ca/d2l/home/569083>

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 (bjmheyne@ucalgary.ca)

2. **Requisites:**

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

Prerequisite(s):

Chemistry 315 and 373.

Please see the calendar entry at <https://www.ucalgary.ca/pubs/calendar/current/chemistry.html#30269>

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
Student group presentations ¹	10%	Ongoing		
Assignment 1 ²	4%	Jan 25 2024		
Assignment 2 ³	4%	Feb 01 2024		
Assignment 3 ⁴	4%	Feb 08 2024		
Midterm exam	20%	Feb 15 2024 at 11:00 am (75 Minutes)	in-person	SA 015
Assignment 4 ⁵	4%	Feb 29 2024		
Assignment 5 ⁶	4%	Mar 14 2024		
Assignment 6 ⁷	4%	Mar 28 2024		
Executive summary ⁸	4%	Mar 29 2024		
Registrar Scheduled Final Exam	42%	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 Students will choose a research paper from the current literature (2023 or 2024 publication date). This choice must be communicated to and approved by the instructor prior to the term break. Students will prepare a 1-page "executive summary" (worth 4%) and give an in-class presentation on the chosen research paper on April 2, April 4 or April 9 as assigned by the instructor (worth 10%).

² Take-home assignments will be posted on the course's D2L web site ~1 week prior to the due date. Answers will be submitted electronically via a D2L quiz and/or in portable document format via a D2L "dropbox". A 10% late penalty will be applied for each day this is handed in late.

³ See assignment 1 for details.

⁴ See assignment 1 for details.

⁵ See assignment 1 for details.

⁶ See assignment 1 for details.

⁷ See assignment 1 for details.

⁸ Uploaded in portable document format to a dropbox on D2L - see student group presentations for details.

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	90 %	85 %	80 %	76%	72%	68 %	64 %	60%	55%	50 %	45 %

The marks for each of the course components will be recorded as a numerical score and combined as shown above to arrive at the total numerical score, which will then be converted to a letter grade to be reported to the Registrar.

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 3 hours.

The University of Calgary offers a [flexible grade option](#), 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:

In the event that a student legitimately fails to submit any online or in-person assessment on time (e.g. due to illness, domestic affliction, 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, or possible exemption and reweighing of components. Absences not reported within 48 hours will not be accommodated. Students may be asked to provide supporting documentation ([Section M.1](#)) for an excused absence, See [FAQ](#).

If an excused absence is approved, options for how the missed assessment is dealt with is at the discretion of the coordinator or course instructor. Some options such as an exemption and pro-rating among the components of the course may not be a viable option based on the design of this course.

There are no deferred Midterm/ term test examinations or assignments. In the event of a legitimately missed midterm exam or assignment (as determined by the instructor), the weight of the missed component will be added to that of the final exam.

5. Scheduled Out-of-Class Activities:

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

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.

6. Course Materials:

Required Textbook(s):

Daniel J. Jacob, *Introduction to Atmospheric Chemistry*: Princeton University Press.

Required: "Introduction to Atmospheric Chemistry", Daniel J. Jacob, Princeton University Press (1999), ISBN 978-1400841547. This book is available on-line at <https://acmg.seas.harvard.edu/education/introduction-atmospheric-chemistry>.

Recommended: "Chemistry of the Upper and Lower Atmosphere", Barbara Finlayson-Pitts, James Pitts, Academic Press (2000), ISBN 978-0122570605. This book is available via the University of Calgary library web site at <https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?pq-origsite=primo&docID=6512477>.

Recommended: "Atmospheric Chemistry and Physics: From Air Pollution to Climate Change", 2nd or 3rd ed., John H. Seinfeld and Spyros H. Pandis, Wiley (2006 or 2016). This book is available via the University of Calgary library web site at <https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?pq-origsite=primo&docID=7104487>.

Software: Students will be expect to use Microsoft 365 products (i.e., Word Excel, and Powerpoint). Further, students will use [Wavemetrics Igor Pro](https://www.wavemetrics.com/downloads), available as a 30-day trial at <https://www.wavemetrics.com/downloads> for either PC or MAC platform. The software activation code will be released once students agree to the licensing conditions by completing a D2L 'quiz'. The conditions are:

1. The software may be used only by students and only for assigned course work.
2. The software may not be used for research.
3. The serial number and activation key may not be shared.
4. The software must be uninstalled once course work has been completed at the end of term.

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:

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

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

7. Examination Policy:

All examinations will be closed book. Only non-programmable calculators (e.g., Casio FX260) are permitted for use during the exam components of the course.

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.

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 their [website](#) or call [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 (svsa@ucalgary.ca) or phone at [403-220-2208](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Student Ombuds Office:** A safe place for all students of the University of Calgary to discuss student related issues, interpersonal conflict, academic and non-academic concerns, and many other problems.
- e. **Student Union Information:** [SU contact](#), Email your SU Science Reps: science1@su.ucalgary.ca, science2@su.ucalgary.ca, science3@su.ucalgary.ca.

f. 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 Associate Head, Undergraduate by email ahugchem@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- g. **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](#)
[Faculty of Science Academic Misconduct Process](#)
[Research Integrity Policy](#)

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

- h. **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.

- i. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). 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.
- j. **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.

Course Outcomes:

- o Broadened their baseline of scientific knowledge, specifically knowledge of chemical reactions and processes occurring in the atmosphere
- o Perform a computer simulation of a chemical kinetic system to illustrate and interpret the evolution of chemical species in the atmosphere using the software package Igor Pro
- o Describe the impact of science on society and the environment
- o Recognize where the current frontiers of research in atmospheric chemistry lie, and how the currently "accepted knowledge" has evolved in recent years
- o Access and use primary literature as source for information (as part of a research project)
- o Practice communication of scientific information to their peers in the form of a project report that consists of both an oral component and written summary

Electronically Approved - Jan 05 2024 14:47

Department Approval