UNIVERSITY OF CALGARY
FACULTY OF SCIENCE

Department of Chemistry
Science A 229
403 220-5385
chem.info@ucalgary.ca

COURSE OUTLINE

1. **Course:** CHEM 521, Introduction to Atmospheric Chemistry - Winter 2021

   Lecture 01: TR 11:00 - 12:15 - Online

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

Online Delivery Details:

This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

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.

This course has a registrar scheduled, synchronous final exam. The writing time is 2.0 hours + 50% buffer time.

Online delivery details:

Some aspects of this course are being offered in real-time at scheduled meeting times. For those aspects, you are required to be online at the same time.

The course material will be delivered via **asynchronous, prerecorded lectures,** with exception of the orientation lecture 1 (Jan 12, 2021), the student presentation during lectures 22-24 (Apr 8, Apr 13, and Apr 15, 2021), and the scheduled quizzes (Feb 11, Mar 2, Mar 30, and Apr 15, 2021). Students are expected to have watched all lecture videos posted on D2L ahead of each scheduled synchronous lecture period.

The **synchronous (live) lecture periods** (see D2L for schedule) will be used to complete **worksheets** based on the prerecorded lecture videos. The purpose of the worksheets is intended to enhance student learning and comprehension of the course material. Attendance is tied to the participation score (see section 3). Tentative dates for the live lecture periods are Jan 12 (orientation lecture - no worksheet), Jan 14, Jan 21, Jan 28, Feb 23, Feb 25, Mar 9, Mar 16, Mar 23, and Apr 1, 2021. Students must use their U of Calgary email account to sign in to the synchronous course components (delivered by Zoom with the link posted on D2L). At the beginning of each class, each student will be assigned to a group to jointly work on problems. The answers to the worksheet questions will be discussed during the live lecture periods. To facilitate discussion and dialogue, students are encouraged to have a photograph or image of their face as their "profile picture" and to turn on their webcam or camera (at least when speaking). Note that in-class components will not be recorded unless stated otherwise.

Office hours:
Office hours will be held via Microsoft Teams or Zoom by appointment (in small groups or individually) and may also be scheduled on D2L. Note that students are requested to turn on their webcam or camera (see https://elearn.ucalgary.ca/technology-requirements-for-students/) and may be asked to enable remote control of their screen (e.g., when seeking help with software) for office hours. Students may also contact the instructor via email (hosthoff@ucalgary.ca). Email inquiries will be responded to within 48 hours except on weekends, holidays, or during the Winter Break.

Course Site:

D2L: CHEM 521 L01 - (Winter 2021) - Introduction to Atmospheric Chemistry - W2021CHEM521L01

https://d2l.ucalgary.ca/d2l/home/362551

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 315 and 373.

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 %	Dates
Individualized take-home assignments (best 7 out of 8)	5% each = 35%	Due Jan 21, Jan 28, Feb 4, Mar 9, Mar 16, Mar 23, Mar 25, Apr 1, 2021 at 23:59 MST
Synchronous, in-class quizzes (best 3 out of 4)	6% each = 18%	Feb 11, Mar 2, Mar 30, and Apr 15, 2021 (during scheduled lecture period)
In-class participation (7 out of 10)	1% each = 7%	see below
Group work: summary and presentation of a research paper	10%	Summary due Apr 6, 23:59; presentation on one of Apr 8, Apr 13 or Apr 15, 2021 as scheduled by the instructor.
Final exam	30%	scheduled by the registrar

Except for in-class quizzes and oral presentations, completed assignments must be uploaded to their corresponding Dropbox on D2L in portable document format (.pdf).

There will be 5 different forms of assessments in this course, detailed below.

(1) Take-home assignments

Individualized assignments will be posted on D2L and are due within one week unless an extension was granted via email by Dr. Osthoff beforehand. Assignments need to be completed on the supplied worksheets such that each answer is preceded by its corresponding question.

The best 7 out of 8 assignments will be considered for the final grade. Assignments submitted after the due date will have 10% of their grade deducted for each 24-hr period after the deadline, unless prior approval by the course coordinator was granted by e-mail. New assignment submissions will not be accepted once marked assignments have been returned to students. Any work submitted later than 2 weeks after the posted deadline will not be considered for marking.

(2) In-class participation

Tentative dates are Jan 14, Jan 21, Jan 28, Feb 4, Feb 23, Feb 25, Mar 9, Mar 16, Mar 23, and Apr 1, 2021. Changes to these dates will be announced on D2L. Students will be asked to collaborate in groups of up to 4 on this task and need to participate in a minimum of 7 out of 10 synchronous lecture periods to receive full credit. Accommodations for students facing a significant barrier to completing the synchronous components of the course will be done on a case-by-case basis (see section 4).

(3) In-class quizzes

For the material covered in lectures and on the assignments, there will be 4 **individually-written** quizzes during the scheduled lectures times that will be timed and synchronous. Students will have access to the quizzes at the beginning of the scheduled lecture. The quizzes are designed to be completed in 45 minutes but students will be provided with 75 minutes in order to account for any technical issues.

The best 3 out of 4 quizzes will be counted towards the final grade. Should a student miss a quiz, that will be the one automatically dropped as being the lowest.

(4) In-class group presentations

Each student will be assigned to a group of 3-4 students by Jan 31, 2021. By Feb 12, 2021, each group will have chosen a research paper from the current literature (published in 2020 or 2021) and that paper approved by Dr. Osthoff. The group will prepare a 1-page summary for distribution to all students by April 6, 2021 and give a short presentation (~20 min) to the class on Apr 8, Apr 13 or Apr 15, 2021 (as scheduled by the course coordinator). Summary sheets will be subject to a 10% penalty for each 24-hour period submitted late. Should a group mis

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 %

This course will have a final exam that will be scheduled by the Registrar. 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 2.0 hours.

The final exam will be administered using an on-line platform. Per section G.5 of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform. Due to the scheduling of the final exams, the additional time will be added to **the end** of the registrar scheduled **synchronous** exam to support students. This way, your exam schedule accurately reflects the **start time** of the exam for any **synchronous** exams. E.g. If a **synchronous** exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the **end** time of the **synchronous** exam. This means that if the exam has a 1 hour buffer time, a synchronous exam would start at 9 am and finish at 12pm. – **updated April 6, 2021**

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, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

There are no deferred quizzes; the weight of legitimately missed quizzes will be shifted onto the final exam.

For any synchronous 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; factors such as residence in different time zones, caregiving responsibilities, religious/spiritual observance, or the ability to secure an appropriate test-taking environment will be taken into consideration. Students who need accommodations for quizzes and/or in-class participation must contact Dr. Osthoff **at least one week before the first synchronous activity or immediately after a change in circumstances.**

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

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

6. **Course Materials:**

Required Textbook(s):

Daniel J Jacob, *Introduction to atmospheric chemistry*: Princeton University Press (1999).

Recommended Textbook(s):

Barbara Finlayson-Pitts, James Pitts, *Chemistry of the Upper and Lower Atmosphere*: Academic Press (2000).
John H. Seinfeld and Spyros H Pandis, *Atmospheric Chemistry and Physics: From Air Pollution to Climate Change*: Wiley (2016).

Required textbook:

The required text book is available on-line at no cost at http://acmg.seas.harvard.edu/people/faculty/djj/book/

Recommended textbooks:

The recommended texts are available online via the University of Calgary library web site:
https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=4462549
https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=317000

Software:
In this course, students will be using **Microsoft 365** aka Office (i.e., Word, Excel, PowerPoint, and Teams) and Zoom, which are provided through the University of Calgary's site license.

In addition, students will download a trial version of **Wavemetrics Igor** 6.37 at
https://www.wavemetrics.com/software/igor-pro-637-installer.
Users of the 64-bit Apple computers will need to download a trial version of Wavemetrics Igor 8.03 at http://www.wavemetrics.net/Downloads/Mac/Igor8.03.dmg

The software activation code will be released once students agree to the the licensing conditions by completing a D2L 'quiz'. The conditions are stated below.
1. The software may be used only by students and only for assigned course work.
2. It may not be used for research.
3. The serial name and activation key may not be shared.
4. The software must be removed 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:

- 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:**

All examinations are "open-notes" and "open-book", i.e., the use of any of handwritten notes prepared by the student, the required course text (including the e-text version), or any other printed reference text is permitted. Any form of communication with a third party is not permitted.

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 www.ucalgary.ca/wellnesscentre 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 at (https://www.ucalgary.ca/policies/files/policies/sexual-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:** 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. Yuen-Ying Carpenter by email ahugchem@ucalgary.ca or phone 403-220-6908. 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.

f. **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.

g. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: 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.

Course Outcomes:

- Broadened their baseline of scientific knowledge, specifically knowledge of chemical reactions and processes occurring in the atmosphere
- 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
- Describe the impact of science on society and the environment
- Recognize where the current frontiers of research in atmospheric chemistry lie, and how the currently "accepted knowledge" has evolved in recent years
- Access and use primary literature as source for information (as part of a research project)
- 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 - Apr 06 2021 16:02

Department Approval