

CHEM 2800-A

Fundamentals for Environmental Chemistry

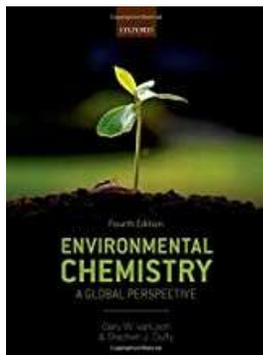
Winter 2024 Syllabus

Instructor: Prof. Edward Lai
Office: Steacie 230
E-mail: Edward.Lai@carleton.ca

Lectures: Tuesday and Thursday, 11:35 am - 12:55 pm
Southam Hall - SA 502

Tutorials/Office hours: Tuesday, 6:05 pm - 6:55 pm
Tori Building - TB 240

Textbook:



Environmental Chemistry: A Global Perspective

by Gary W. vanLoon and Stephen J. Duffy | Nov 20 2017

- Amazon: available now for only CAD 46.94 (originally CAD 94.99) while supplies last:
https://www.amazon.ca/Environmental-Chemistry-Perspective-Gary-vanLoon/dp/019874997X/ref=sr_1_1?crid=1LVMARNAVIHHP&keywords=Environmental+Chemistry%3A+A+Global+Perspective&qid=1704128672&sprefix=environmental+chemistry+a+global+perspective%2Caps%2C89&sr=8-1
- Carleton University Bookstore: <https://www.bkstr.com/carletonstore/home>

- Google Books:
https://books.google.ca/books/about/Environmental_Chemistry.html?id=4Zk6DwAAQBAJ&redir_eSC=y
- Redshelf: Students can follow the link below to pay USD 54.99 for 180-day digital rental, including built-in study tools (highlights, study guides, annotations, definitions, flashcards, and collaboration):
<https://redshelf.com/book/1062565/environmental-chemistry-1062565-9780192522634-gary-w-vanloon-stephen-j-duffy>

Modality: For all lectures of this course, learning will be in person and synchronous. Blended learning will be included, where the instructor combines in-person instruction with online learning activities, to require that students complete some components online.

Course website: Brightspace will be used. Please visit Brightspace on the Carleton University website <https://brightspace.carleton.ca/d2l/home/220705> for course announcements, tutorial schedule, assignments, recorded lectures, and learning activities/exercises.

Tentative Lecture Topics

| | |
|------------|---|
| Chapter 1 | Environmental chemistry – a global perspective |
| Chapter 2 | The earth's atmosphere |
| Chapter 3 | Stratospheric chemistry – ozone (up to p. 49) |
| | Midterm test 1 (February 1 st , Thursday) on Brightspace 80 min, from 11:35 am - 12:55 pm |
| Chapter 3 | Stratospheric chemistry – ozone (p. 49-72) |
| Chapter 4 | Tropospheric chemistry – smog |
| Chapter 6 | Atmospheric aerosols – particulate emissions |
| | Midterm test 2 (March 7 th , Thursday) on Brightspace 100 min, from 11:25 am to 1:05 pm |
| Chapter 12 | Organic matter in water |
| Chapter 14 | Environmental chemistry of colloids and surfaces |
| Chapter 16 | Water pollution and treatment chemistry |
| Chapter 20 | Toxic organic chemicals |
| | Final exam (formally scheduled) in Brightspace 150 min |

Assignments: Questions and problems will be assigned regularly out of the textbook chapters to help students learn the course materials better. If you do not complete the assignments and receive prompt feedback, the midterm tests and final exam may become very challenging.

Lecture TA/Marker: Amos Onomhante AmosOnomhante@cmail.carleton.ca

Grading: Assignments: 10%
In-class midterm tests 2@15%
Final exam: 30%
Lab: 30%

None of the assignments, midterm tests, exam or labs are optional, and the marking scheme is the same for everyone. Bell curving will not be used on laboratory, midterm tests, final exam or course grades.

Late assignments are accepted if permission is obtained from the TA/marker beforehand. There will be penalties of 20% for each day after due.

Make-up midterm tests will not be offered. If a midterm test is missed and adequate proof of the reason of absence is provided by a self-declaration form, the weight of the other grading components will be adjusted to compensate for the removal of the missed test.

The final exam will not be weighted more to make up for a poor mark on a midterm test. You must complete the lab to pass the course. You must have a total course grade of 50.0% to pass the course.

Self-declaration form:

<https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>

When required, this form is used by students to support a request for academic consideration for missed course work, midterms, or final exams due to short-term incapacitation (illness, injury, or extraordinary circumstances beyond a student's control), normally lasting no more than 10 days. The form replaces the need for a medical note or supporting documentation.

e-Proctoring: Please note that tests and examinations in this course will use a remote proctoring service provided by Scheduling and Examination Services. You can find more information at <https://carleton.ca/ses/e-proctoring/>.

Mandatory required materials to be acquired:

Hardware: Desktop or laptop
OS: Windows 10, Mac OS 10.14, Linux Ubuntu 18.04
Internet Browser: Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge
Internet Connection: (High-speed internet connection recommended)
Webcam: (HD resolution recommended)
Note: Tablets, chromebooks and smartphones are not supported at this time.

Lab Instructor: Dr. Daniel Xun Sun

Laboratory: The chem2800 lab will be completed both online and in person.

Please visit Brightspace for schedule and list of experiments.

One criterion for passing this course is that you must complete all laboratory experiments.

1. All students are required to attend the 1st tutorial (Jan. 9th 6:05 pm in Tory Building room #240) for lab introduction (in-person).
2. Lab training starts on Jan. 9th. No experiment in the first two weeks (Jan. 9th-19th). Students will use that two weeks to get familiar with the Brightspace course site by themselves. (Note: CHEM 2800 lab and lecture use the same Brightspace site. You can find all lab materials on the lecture site. The site is now open to you.) Then, lab experiments start from the week of Jan. 22nd-26th, and finish on Mar. 18th.
3. To pass this course, students are required to complete all laboratory works. It means students who missed any one of experiments, lab videos, quizzes, pre-labs or lab reports will fail this course. So, remember to finish everything on time. If students have trouble with due dates, please contact Dr. Sun ASAP. He can always make arrangement. But never wait until the end of the term!
4. The laboratory is worth 30% of the final course work.
5. Students do not need to buy lab manual. It has been posted on Brightspace. Students need to buy lab coat, safety goggles and lab notebook at the Science Stores. (Note: Students can use their previous lab coat, safety goggles and old lab notebooks if still functional.)
6. Jerry Diener, Kieran Lawford and Phuc Tu will be the TAs. They are all super-good in teaching this lab.
7. More details can be found in the CHEM 2800 lab modules on Brightspace.

Academic Accommodation for Students with Disabilities:

Carleton University is strongly committed to providing access and accommodation for all individuals with identified and duly assessed disabilities. The University has a Senate-approved policy on Academic Accommodation that forms part of its Human Rights Policy. This policy should be consulted for further information and is available in the Undergraduate Calendar and online at: <https://students.carleton.ca/services/academic-accommodations/>. The policy promotes efforts to accommodate students with disabilities so that they will have the opportunity to meet learning objectives and be fairly evaluated in their performance. In no case, however, does academic accommodation negotiate away, lower, or remove the academic standards and learning objectives of any course or program, rule, regulation, or policy at the University.

The Paul Menton Centre for Students with Disabilities (www.carleton.ca/pmc/) is the designated unit at the University for assisting the Carleton community in integrating persons with disabilities into all aspects of Carleton's academic and community life. The Paul Menton Centre provides assessment of academic accommodation, advises students on strategies to open a dialogue with instructors and acts as consultant, facilitator, coordinator and advocate in this area for all members of the University community.

The Paul Menton Centre provides individualized support services, based on appropriate and up to date documentation, to persons who are deaf or hard of hearing, with learning disabilities, attention deficit disorder (ADD), visual impairments, head injuries, physical disabilities including mobility impairments, or who have psychiatric, other medical or non-visible disabilities. Students are responsible for applying for special services by making an appointment with the appropriate coordinator at the Paul Menton Centre. All requests will be considered on the basis of individual need. Students are advised to visit the Centre early in the term to discuss service requests.

Examination accommodations for all tests and examinations (in-class, CUTV, or formally scheduled) must be arranged by specific deadline dates. Please consult the Paul Menton Centre for a list of deadlines for all examinations. Accommodation requests not made prior to the specified deadlines will not be fulfilled. Students with disabilities requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities for a formal evaluation of disability-related needs. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website: <https://carleton.ca/pmc/faculty-and-instructors/accommodation-process/#:~:text=A%20request%20can%20be%20made,restrictions%20on%20their%20accommodation%20protocol.>

Academic Accommodation for Students with Religious Obligations:

Carleton University accommodates students who, due to religious obligation, must miss an examination, midterm, test, laboratory, or other compulsory events. The University has a Senate-approved policy on religious accommodation that forms part of its Human Rights Policy, available at: www.carleton.ca/equity. Students requesting academic accommodation on the basis of religious observance should make a formal, written request to their instructors for alternate dates and/or means of satisfying academic requirements. Such requests should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory academic event. Accommodation is to be worked out directly and on an individual basis between the student and the instructors involved. Instructors will make accommodations in a way that avoids academic disadvantage to the student. Students or instructors who have questions or want to confirm accommodation eligibility of a religious event or practice may refer to the Equity Services website for a list of holy days and Carleton's Academic Accommodation policies, or may contact an Equity Services Advisor in the Equity Services Department for assistance. Students unable to reach a satisfactory arrangement with their instructors should contact the Director of Equity Services. Instructors who have questions or wish to verify the nature of the religious event or practice involved should also contact an Advisor. For more details visit the Equity Services website: <https://carleton.ca/FASS-FPA-teaching-regulations/accommodation/#:~:text=II.-,Religious%20Accommodation,satisfying%20any%20academic%20requirements%20involved.>

Academic Accommodation for Pregnant Students:

Pregnant students requiring academic accommodations are encouraged to contact an Equity Advisor in Equity Services to complete a letter of accommodation. The student must then make an appointment to discuss her needs with the instructor at least two weeks prior to the first academic event in which it is anticipated the accommodation will be required. For more details visit the Equity Services website: <https://carleton.ca/FASS-FPA-teaching-regulations/accommodation/#:~:text=ll.,Religious%20Accommodation,satisfying%20any%20academic%20requirements%20involved.>

Student Conduct:

The University has adopted a policy to deal with allegations of academic misconduct. This policy is expressed in the document Carleton University Academic Integrity Policy. The policy describes in detail its scope of application, principles, definitions, rights and responsibilities, academic integrity standards, procedures, sanctions, transcript notations, appeal process, and records implications.

The complete policy is available at: <https://carleton.ca/studentaffairs/student-rights-and-responsibilities/#:~:text=Policy%20and%20Procedures-,No%20student%20shall%3A,use%20of%20the%20student%20non%2D>

Plagiarism:

Plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own. Plagiarism includes reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to: books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, art works, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/software, and material on the Internet.

Examples of plagiarism include, but are not limited to:

- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another's data or research findings;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one's own;

- failing to acknowledge sources through the use of proper citations when using another's works and/or failing to use quotation marks.

For more information, see: <https://carleton.ca/secretariat/wp-content/uploads/Academic-Integrity-Policy-2021.pdf>

e-Proctoring:

Please note that midterm tests and final examination in this course will use a remote proctoring service (CoMas or Zoom) provided by Scheduling and Examination Services. You can find more information at <https://carleton.ca/ses/e-proctoring/>

The minimum computing requirements for this service are as follows:

Hardware: Desktop, or Laptop

OS: Windows 10, Mac OS 10.14

Internet Browser: Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge

Internet Connection (High-Speed Internet Connection Recommended)

Webcam (HD resolution recommended)

Note: Tablets, Chromebooks and Smartphones are not supported at this time. Windows-based tablets are not supported at this time.