

**CHEM:4873 ATMOSPHERIC AND ENVIRONMENTAL CHEMISTRY
FALL 2016****INSTRUCTOR:**

Prof. Mark A. Young

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Office Hours: M,W,F 8:30 - 9:30 AM or by appointment

COURSE CONTENT: This course explores fundamental chemical processes of importance in the atmosphere, water and soil with an emphasis on the kinetics and photochemistry of homogeneous and heterogeneous reactions, the role of particulate matter, organic and inorganic speciation, global biogeochemical cycles, chemistry-climate relationships, and anthropogenic influences on the environment.

PREREQUISITES: Knowledge of basic chemistry, chemical kinetics and thermodynamics. Basic calculus.

LECTURE: T, Th 11:00 am – 12:15 pm in W323 CB (alternative location: E226 AJB); attendance is expected.

TEXT AND MATERIALS:

- “Air Composition and Chemistry”, by P. Brimblecombe, Cambridge University Press, 2nd. ed., 1995.
- “Aquatic Environmental Chemistry”, by A.G. Howard, Oxford University Press, 1998.
- “Soil Chemistry and Its Applications”, by M. Cresser, K. Killham, and T. Edwards, Cambridge University Press, 1993.
- Various handouts and web sites.
- Course ICON site (icon.uiowa.edu).

COURSE RESERVE: The three texts and various other course materials will be on reserve in the [Sciences Library](#) located on Iowa Avenue. The [status](#) of the reserve list can be checked on line.

SOFTWARE: Students may need to make use of graphing software (e.g. Kaleidagraph, Excel) or numerical and symbolic mathematics software (e.g. Mathematica) to complete some of the assignments. These programs, as well as other scientific software and office productivity software, are available in the [Chemistry Computer Centers](#) in W241 (PC only), W238 (PC only), and W244 (Mac only) CB. Use of these programs will not be

covered in class. Tutorials and informational links can be found on the course web site and software manuals and related books are available in the Chemistry Center (E225 CB).

GRADING: The final course grade will be based on performance in the following activities:

Homework assignments	15 %
Presentation	5 %
Exams (two exams)	40 %
Final project	40 %

While the distribution of grades will generally be similar to that of previous semesters, variations between classes are common. Plus/minus grades will be assigned within each range.

EXAMINATIONS: There will be two exams, each covering approximately half of the course material. There will be no final examination. Students should bring a #2 pencil, their University ID, and a basic scientific calculator to each exam. The use of cell phones, graphing or programmable calculators, or data transmitting devices will not be permitted during the exam. Make-up and early examinations must be arranged in advance, when feasible, with the instructor and are only available in the event of a University recognized excuse (e.g. a documented medical emergency). Exams will not be rescheduled to accommodate holiday or other travel plans.

HOMEWORK: There will be two to four graded homework assignments. Problem sets are due in the Chemistry Center (E225 CB) by 4:00 PM on the announced due date. Late assignments and assignments submitted by e-mail will not be accepted. All figures and plots should be prepared and printed with appropriate computer software unless otherwise specified. The homework assignments must be securely fastened with a staple. Students are encouraged to discuss the problem sets with others in the class but the submitted work should represent the student's own work. (Please see the section in the [Student Academic Handbook](#) on [Rights and Responsibilities](#) for University policy on [academic misconduct](#)).

PRESENTATION: Each student will make one brief, approximately five minute, presentation to the class using slides to discuss a topical issue related to environmental and atmospheric chemistry. Presentations will be scheduled throughout the semester.

FINAL PROJECT: The final project will consist of a brief (five page) written report on a topic relevant to atmospheric and environmental chemistry. Possible project topics will be discussed and each student will confirm their choice with the instructor. The final project will be due at the end of the final examination week.

REGRADE POLICY: If you feel that an error was made in the grading of your work, you may request a re-grade by notifying the instructor within one week of receiving the graded material. The request should be in writing and indicate the sections of the work that are in question. Please note that the entire work may be subject to a re-grade.

OTHER POLICIES AND PROCEDURES: This course is given by the College of

Liberal Arts and Sciences (CLAS). This means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by CLAS. Students wishing to add or drop this course after the official deadline must receive the approval from the office of the Dean of CLAS. Students with questions about these or other CLAS policies should speak with an academic advisor or with the staff in 120 Schaeffer Hall. Please see the [CLAS Academic Handbook](#) for further information.

A student seeking academic accommodations should first register with Student Disability Services (SDS) and then meet with a SDS counselor who determines eligibility for services. A student approved for accommodations should meet privately with the course instructor to arrange particular accommodations. Please see the [Student Disability Services](#) web site for more information.

Please inform the instructor and/or teaching assistant if you have any complaints about the course. If you feel that your complaints have not been resolved, follow the procedure described in the [Rights and Responsibilities](#) section of the Student Academic Handbook.

Exams, problem sets and other work handed in for a grade should represent the individual student's work and should not be copied or plagiarized. Academic fraud will be reported to the departmental DEO and to the Associate Dean for Academic Programs and Services in CLAS. If necessary, review the [CLAS Code of Academic Honesty](#).

[Sexual harassment](#) subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. Consult the [UI Operations Manual](#) for the full University policy.

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue, if possible, when the event is over. For more information visit the [Hawk Alert](#) web page. The siren warning system is explained [here](#).

The instructor will respond to student questions sent via e-mail with a typical response time of two working days. In addition, general notices concerning the course may be sent to students by electronic mail. Due to privacy considerations, the official University e-mail address (firstname-lastname@uiowa.edu) as listed on the class roster will be used for all communications. Each student is considered to be on notice for information sent to their official e-mail address. Also note that assignments submitted by e-mail will not be accepted. Please see the policy on the [Dean of Student's website](#) for additional information.