

Science, Policy, and Management of Environmental Issues
ATS 581A1 and CHEM 581A1
Spring 2021

Prof. A.R. (Ravi) Ravishankara
2 credits (lecture)

Prerequisites: ATS 350 or CHEM 474, or instructor's permission.

*THIS COURSE WILL BE DELIVERED ONLINE UNLESS THE COVID SITUATION
IMPROVES DRASTICALLY.*

Important information for students on COVID-19:

All students are required to follow public health guidelines in any university space, and are encouraged to continue these practices when off-campus(es). Students also are required to report any COVID-19 symptoms to the university immediately, as well as if they have potentially been exposed or have tested positive at a non-CSU testing location. If you suspect you have symptoms, please fill out the COVID Reporter (<https://covid.colostate.edu/reporter/>). If you have COVID symptoms or know or believe you have been exposed, it is important for the health of yourself and others that you complete the online COVID Reporter. Do not ask your instructor to report for you; if you report to your instructor that you will not attend class due to symptoms or a potential exposure, you are required to also submit those concerns through the COVID Reporter. If you do not have access to the internet to fill out the online COVID-19 Reporter, please call (970)491-4600.

If you report symptoms or a positive test, your report is submitted to CSU's Public Health Office. You will receive immediate, initial instructions on what to do and then you will also be contacted by phone by a public health official. Based on your specific circumstances, the public health official may:

- choose to recommend that you be tested and help arrange for a test
- conduct contact tracing
- initiate any necessary public health requirements or recommendations and notify you if you need to take any steps

If you report a potential exposure, the public health official will help you determine if you are at risk of contracting COVID.

For the latest information about the University's COVID resources and information, please visit the CSU COVID-19 site (<https://covidrecovery.colostate.edu/>).

Working title: The science, policies (past, current, and future policies), and management of four current environmental issues.

I will post weekly PowerPoint, written, additional reading, and discussion materials on the course website. My primary mode of communication will be through CANVAS.

This is an online class but expect everyone to attend the lectures online. Please use a **computer** (not your smartphone) to get online. *The lecture and the class discussions will be recorded and posted. I assume that you are permitting me to record the lectures and discussions. If you have reservations about it, please let me know ahead of time!*

Office Hours: This is an online class. There are people from multiple departments. So, we will figure out good times for having online “office hours.”

Course Structure, Expectations, and Grading Criteria:

This is a 2-credit course. Course material will be delivered partly as lectures/presentations and partly as discussions. We will meet for 110 minutes (50 mins + 10 min break + 50 mins) once a week during the semester (January 22- May 7, 2021). There is no final exam. You will write a take-home essay assigned to you via mutual agreement. You will have weekly assignments and a significant amount of reading ahead of lectures. You will take part in breakout and panel discussions and take part in mock negotiations.

You will get letter grades. Please note: Getting a C-minus would be pretty much a “fail” for graduate students. Please take this seriously. *You will not be graded on a curve.* The grades will be based on:

1. In-class and breakout participation: 30%
2. Homework: 30%
3. Final writeup/essay (this is your final exam): 40%

These divisions may change after I get a feel for how you all are doing!!

We will have the class broken up into four or five groups. You will be required to meet outside of the class time to discuss and come up with your conclusions on various assigned topics. It is important to get groups who can meet at specified convenient times via zoom or Teams apps.

There is no textbook for the course. However, you will be directed to the needed material through the CANVAS portal. You are responsible for reading the assigned material before the class. Material from lectures (.ppt or .pdf format) will be posted on the class website. At least 6 hours of effort outside of class each week is expected for readings, online group discussions, and “homework” assignments; it may take more time, depending on your preparation level. If you don’t read the assigned material before the class, you will not be able to participate in the discussions! Your participation in these discussions is an essential component of your grade (see above).

The lectures and discussions will be **recorded** and posted for your use later. I am assuming that you are permitting me to record the class lectures and discussions. There also be assigned videos

to watch.

This is a discussion-based class. Students will be graded on your participation in the discussions.

This class assumes mandatory attendance and participation in class discussions. Students may have one (at most 2 in extenuating circumstances) excused absence from class during this Spring semester (the class duration). If you have an approved absence, you should make arrangements with me to make up any assignments etc.

You must submit the required material on time. If there are extenuating circumstances, please check with me ahead of the deadline. Late submissions, of at most a week, will lose 50% credit. Submissions beyond the one-week of the deadline will not be graded and will get a zero.

You will submit all written material as word-processed documents. I prefer Microsoft WORD for all writeups. If you do not have WORD, you can submit them as PDFs. NO HANDWRITTEN DOCUMENTS, PLEASE! (No LaTeX or similar programs, please!)

I expect your documents to be grammatically correct and free of spelling errors. ***All submissions must have your name on each page and have numbered pages. (You can do this by setting up a template.)***

Dropping and withdrawals from the course will be according to CSU regulations.

Academic Integrity: All students are subject to academic integrity and student conduct code policies, found at <http://catalog.colostate.edu/general-catalog/policies/students-responsibilities/>. Examples of academic dishonesty can be found in these sources. At a minimum, violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.

ACADEMIC MISCONDUCT IN THIS COURSE WILL NOT BE TOLERATED. I EXPECT EVERYONE TO TREAT OTHERS WITH RESPECT, PATIENCE, AND TOLERANCE. ANY VIOLATIONS WILL RESULT IN YOUR GRADES BEING LOWERED AND OTHER APPROPRIATE ACTIONS, IF NECESSARY. THIS IS ESPECIALLY IMPORTANT SINCE A LOT OF THE CLASS IS BASED ON DISCUSSIONS.

Special Needs: Please see me during the first two weeks of the semester if you have special learning needs that should be accommodated in this class and refer to <http://rds.colostate.edu/csuinto/accommodations.asp> for more information. Please set up a meeting time/date via email. I would need proper documents from Resources for Disabled Students (RDS). Please do this no later than February 1, 2021.

Disclaimer: I have tried to make sure that the policies and information given here are accurate and appropriate. However, unexpected events or changes may occur. I will communicate any changes in class or via email. You are responsible for keeping informed of these changes.

Mode of Delivery: Online, via zoom. The zoom link will be posted on CANVAS before each class.

Guest lecturers who have worked on policies and/or management of issues will present information regarding past, current, and future policies, and offer you opportunities to discuss these issues in detail. Before those presentations, we will prepare to understand the science behind the issues through lectures and discussions. You will be read, via group discussions, to bring up critical issues to the guest lecturers during the set Q&A sessions. You will have an opportunity to interact with very high-level people. So, it is imperative to be prepared! After the guest lectures and A&A, we will analyze the guest speakers' material via student presentation, in-class breakout group discussions, and written analyses.

Course Learning Objectives:

1. Explain the science behind the issues of air quality, ozone layer depletion, acid rain, and climate change, and how they impact our environment;
2. Explain how past and current policy were formulated, consider future policies implemented for our changing society (mostly US-centric);
3. Investigate how these issues are managed on state and local levels;
4. Explain, from a scientific perspective, how our society is coping with these policies and management;
5. Discuss how the management of these issues' effects on our environment is critical to our future.

Tentative Weekly Schedule:

Week Topic

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| 1 | Basics of atmospheric science that influence the four policies. The role of assessments |
| 2 | The Science Behind Air Quality |
| 3 | Past and Present Policies Regarding Air Quality |
| 4 | The Management of Air Quality |
| 5 | The Science Behind Ozone Layer Depletion |
| 6 | Past and Present Policies Regarding Ozone Layer Depletion- UNEP policymaker |
| 7 | The Management of Ozone Layer Depletion |
| 8 | The Science Behind Acid Rain |
| 9 | Past and Present Policies Regarding Acid Rain- US policymaker |
| 10 | The Management of Acid Rain |
| 11 | The Science Behind Climate Change |
| 12 | Past and Present Policies Regarding Climate Change- the IPCC process |
| 13 | Management of Climate Change |
| 14 | Science Behind Interconnected (cross-cutting) Environmental Issues |
| 15 | Dealing with cross-cutting Environmental Issues- CA policy facilitator |
| 16 | Final thoughts and final paper |
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Texts:

- Scientific Assessment of Ozone Depletion 2006; 2010; 2014; and 2018 including Summary for Policy Makers (SPM) (in parts)
- Climate Change 2013 and 2019: The Physical Science Basis (in parts): The summary for policymakers and some of the primary assessments.
- Air Quality Management in the U.S. - National Research Council of the National Academies (in parts)
- Seinfeld & Pandis, Atmospheric Chemistry & Physics (in parts)

You are NOT expected to buy any of these. Much of this material is online.