

**METEOROLOGY 113 (METR 113)  
ENVIRONMENTAL STUDIES 113 (ENVS 113)  
ATMOSPHERIC POLLUTION  
Spring 2011**



**Instructor:** Dr. Frank R. Freedman

**Course Meeting Time & Place:** TTh 1330-1445, DH 515

**Office Hours:** TTh 1500-1615, DH 618

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**Website:** <http://www.sjsu.edu/people/frank.freedman/courses/metr113>

**Course Description:** METR/ENVS 113 is an Integrated Studies course in “Area R, Earth and Environment”. It is a survey course on air pollution. During the course, we will identify various air pollutants, study how each is regulated, and study the “science” behind each, i.e. the emission sources, formation mechanisms in the atmosphere, removal processes from the atmosphere, and the meteorological conditions affecting concentrations for each studied pollutant. Pollutants covered include: ozone, carbon dioxide, criteria air pollutants, toxic air pollutants, particulates and indoor air pollutants. Topics covered include: global climate change, stratospheric ozone depletion, ground-level “smog” formation, acid rain, indoor air pollution, and personal air pollution exposure and health effects. Emphasis will also be on linking these topics to the broader and increasingly important topic of energy, environment and economy (the “three Es”). You are encouraged to link the various air pollution topics covered in this class to your own life. One way to do this is by exploring links to your academic major. The class coursework will guide you along this path.

**Prerequisite:** Completion of core GE, satisfaction of Writing Skills Test and upper division standing. For students who began continuous enrollment at a CCC or a CSU in Fall 2005 or later, completion of, or corequisite in a 100W course is required.

**Learning objectives:** The learning objectives for this course are:

1. What is the definition of air pollution?
2. What are the agencies responsible for regulating air pollution in the United States? What are the seven “criteria” air pollutants and how are they regulated? How are pollutants aside from the seven criteria air pollutants regulated?
3. What is the agency responsible for regulating air pollution in California? What are some specific programs/laws by which this agency controls air pollution?
4. What is the agency responsible for regulating air pollution in the S.F. bay area? What are the two air pollutants that are the subject of S.F. bay area “Spare the Air” alerts? Why are these two air pollutants the subject of these alerts?
5. What are the three air pollutants that are the subject of motor vehicle smog checks? Why are these three air pollutants the subject of smog checks?
6. What is the ozone layer? Why does it form? Why is it beneficial for life on earth? What is meant by ozone-layer depletion? What air pollutants cause ozone-layer depletion? Does ozone-layer depletion lead to global warming? Why or why not?
7. What is global warming? What air pollutants cause global warming, and why? How have scientists determined that these air pollutants, rather than other potential reasons, are the main cause of global warming?

In addition, the *Area R* learning objectives are:

1. A student should be able to demonstrate an understanding of the methods and limits of scientific investigation.
2. A student should be able to distinguish science from pseudo-science.
3. A student should be able to apply a scientific approach to answer questions about the earth and environment.

**Textbook and Course Reading:** There is *no assigned textbook*. Instead, readings from various sources will be used to support lecture. However, two books you can purchase that will be helpful are:

- ***The Rough Guide to Climate Change, Robert Henson:*** This is a “pocket guide” that covers basic concepts of global warming and climate change. It is non-technical (i.e. no math or equations).
- ***Essentials of Meteorology, Fifth Edition, C. Donald Ahrens:*** Covers the basic concepts of meteorology and climate science. The textbook is used for the METR10 course – so if you want to purchase it at the bookstore search under METR10.

**Lectures:** Lectures will be given as powerpoint slides, with some “chalkboard” presentation from time to time. Powerpoint lecture slides will be posted on the course website before lecture and updated after lecture if changed or added to. *It is your responsibility to download the lecture slides from the course website – slides will not be handed out in class.* You are encouraged to also take notes during lectures to supplement the powerpoint slides. Laptop computers are allowed during class in order to download lectures, take notes electronically, and access websites mentioned during lecture if desired. The use of laptops must be done responsibly, for class purposes only. Any other use of laptops during class for purposes not related to class is not allowed. Also, no cell/smart phone use is allowed during class.

**Assignments, Exams, Grading:** Grades will be assigned according to performance on assignments and exams.

**Assignments** will involve both scientific exercises and writing. Area R classes require 3000 words of writing per semester. Assignments will be designed so that this requirement is met provided satisfactory completion by the student. Writing will be graded according to its clarity, conciseness, the degree of relevance to what is asked in the assignment, and the amount of such errors as (among other things): typographic and spelling errors, proper use of punctuation marks, improperly aligned paragraphs/margins/tab-stops, inconsistent formatting, for example of font size and type, and the presence of extraneous spaces in the writing. Please make every effort to turn in assignments in class on the due date. I reserve the right to dock points for assignments turned in after the due date.

**Exams** will be about half multiple choice and half short answer. Exams will be graded only on content (i.e. writing errors will not be docked). Bring a scantron (Form No. 882-ES) for exams.

See the course calendar below for exam dates and due dates for assignments. In all, there will be four exams (Exam 1, 2, 3 and the Final Exam) and four assignments (Assignments 1, 2, 3 and 4). So there will be a total of eight scored coursework items in the class. The **final course grade** will be calculated by assigning the following percentage weights to the individual scores on your coursework:

- Assignments: 10% each
- Highest scoring exam: 20%
- Lowest scoring exam: 10%
- Remaining two exams: 15%

After adding up the scores on all exams and assignments weighted according to the above percentages, letter grades will then be assigned as follows: 85 – 100 = A; 70 – 85 = B; 60 – 70 = C; 50 – 60 = D; below 50 = F. A +/- grading system will be used for final grades.

## **Plagiarism, Copying, Cheating, etc ...**

The policy on academic integrity can be found at <http://www.sjsu.edu/senate/S07-2.pdf>. Here, formal university definitions of actions that violate academic integrity (plagiarism, copying, cheating, etc ...) are given. It is the student's responsibility to know these definitions, as well as the consequences of any academic integrity violations. Among these is the **requirement** that faculty members report all infractions of academic integrity to the Office of Judicial Affairs.

Of particular importance is plagiarism, which has become an increasing problem on college campuses with the easy availability of electronic information on the internet. Plagiarism is copying more or less word-for-word the written work of another and representing it as your own. Even if the work is cited in a bibliography, this would still be plagiarism.

Violations of academic integrity (plagiarism, copying, cheating, etc ...) will be penalized by assigning a grade of zero to the assignment or exam, and possibly lowering the overall course grade (by an amount determined by me). Also, the incident **will be** reported to the university judicial board for review, as required by the university.

### **Campus policy in compliance with the Americans with Disabilities Act:**

If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with DRC to establish a record of their disability.

**Incompletes:** An "incomplete" will be given for the course only under the following conditions:

1. At least 60% of the course work has been completed **and**
2. *Unexpected* circumstances prevent the completion of the remaining work.

An incomplete will **not** be given to circumvent rules concerning the dropping of courses.

## **Tentative Course Calendar**

<b>Exam/Assignment</b>	<b>Date/Due Date</b>
Exam 1	Thursday, February 10
Assignment 1	Thursday, February 24
Exam 2	Thursday, March 10
Assignment 2	Thursday March 24
Exam 3	Thursday, April 7
Assignment 3	Thursday, April 21
Assignment 4	Thursday, May 12
Final Exam	Friday, May 20 (1215-1430)

## **Academic Calendar**

See [http://www.sjsu.edu/academic\\_programs/calendars/academic\\_calendar](http://www.sjsu.edu/academic_programs/calendars/academic_calendar) for the academic calendar, especially for important dates such as add and drop deadlines.