

**ATS786, Spring 2012**  
**Research in Atmospheric Science**  
Fridays noon – 12:50 PM  
ATS West 121

Instructor: Prof. Sonia Kreidenweis  
Atmospheric Chemistry Bldg., Room 19  
491-8350 / [sonia@atmos.colostate.edu](mailto:sonia@atmos.colostate.edu)

**Objectives:**

The intent of this seminar-style course is to introduce graduate students and early career postdocs to the research process, the responsible conduct of research, and the MS and PhD degree processes in the Department of Atmospheric Science. Research topics will range from conceptual (developing research questions, time management) to practical (keeping research notebooks, laboratory safety) and ethical (data manipulation, intellectual property) considerations. This course is designed to satisfy federal agency requirements for face-to-face training in responsible conduct of research.

**Texts:**

R.V. Smith, *Graduate Research: a Guide for Students in the Sciences*, 3rd ed., 1998.  
I. Valiela, *Doing Science: Design, Analysis, and Communication of Scientific Research*, 2nd ed., 2009.

Additional reading and discussion materials will be posted on the course website.

**Course Structure and Grading Criteria:**

This is a discussion-based class. All students are expected to read assigned materials prior to the class time in which it will be discussed. Also, all students are expected to have completed the online RCR training course and the associated Mastery Quiz, at <http://rcr.colostate.edu/training.html>, prior to attending the first class.

Students will be graded based on their (mandatory) attendance and participation in class discussions. Students may miss one or two class sessions, provided that arrangements are made with the instructor to complete a make-up assignment. This class is graded on a satisfactory/unsatisfactory (S/U) basis.

**Academic Integrity:**

All students are subject to the policies regarding academic integrity found in Section 1.6 of the 2010 – 2011 General Catalog, found at <http://www.catalog.colostate.edu>, and the student conduct code (<http://www.conflictresolution.colostate.edu/conduct-code#conduct>). Other information on academic integrity can be found on the Learning@CSU website (<http://learning.colostate.edu/integrity/index.cfm>). Examples of academic dishonesty can be found in these sources. Due to the nature of this course, there is no general restriction on the sources that students might refer to. Rather, students are encouraged to be resourceful and to find

and share material from outside sources that they find helpful in understanding the discussion topics of this course. In all cases, students must provide complete citations for all sources, including individuals and electronic sources, used in this class. Failure to do so constitutes a violation of this policy.

**Special Needs:**

Please see the instructor 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/csuinfor/accommodations.asp> for more information.

**Course Topics and Tentative Outline:**

<b>Week</b>	<b>Discussion Topic</b>	<b>Reading assignment (for next week)</b>
Jan 20	Course overview Roles and responsibilities in academia	Boyer Preface, Ch. 1-2; Smith Ch. 1; “When Personalities Clash” Nature 439 758-759 (2006)
Jan 27	Mentor/Trainee Relationships	Valiela Ch. 1, 2
Feb 3	Scientific Investigation	Valiela Ch. 3, 4 Two articles on “False Findings”
Feb 10	Design and Conduct of Research	Smith Ch. 5 Nature articles on research misconduct
Feb 17	Research Misconduct	Smith Ch. 7-10 Valiela Ch. 5 and 6
Feb 24	Publication Practices and Responsible Authorship	Valeila Ch. 7-9
Mar 2	Articles, Tables, and Figures	Smith Ch. 11 Articles on bioethics
Mar 9	Research with Human and Animal Subjects	Articles on chemical safety
Mar 16	Spring Break	
Mar 23	Research with Chemical Hazards	Smith Ch. 6 Articles on ethics
Mar 30	Ethics and Social Responsibility	Smith Ch. 2 Articles on conflicts of interest
Apr 6	Conflicts of Interest	Smith Ch. 3-4
Apr 13	Time management Collaborative research	Smith Ch. 12-13
Apr 20	Research as a career	Valiela Ch. 11-12
Apr 27	Writing grant proposals and managing research; fiscal responsibility	
May 4	Intellectual Property	