Objectives:

The intent of this seminar-style course is to introduce graduate students and early career scientists 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:

For reading, distributed electronically:


Miguel Roig, Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing, 2015 update. US Department of Health and Human Services, Office of Research Integrity

Weekly PowerPoints and reading and discussion materials are posted in Dropbox:

https://www.dropbox.com/sh/sb2wri46vk1qzac/AADAqypWpsu4WEb15KcNEkMla?dl=0

Of interest:

CSU Graduate School Professional Development website:
https://graduateschool.colostate.edu/professional-development/

Course Structure, Expectations, and Grading Criteria:

IMPORTANT:
All students are expected to complete the online RCR training course, accessed as explained here: https://www.research.colostate.edu/ricro/wp-content/uploads/sites/22/2021/12/CITI-SSO-Integration-Instructions_RCR.pdf

We will complete these modules during the semester.
Course material will be delivered in an online lecture/discussion format, meeting for one 50-minute period each week. All students are expected to join the class synchronously and are encouraged to participate via video. Lectures (.pptx or .pdf format) are posted in the class Dropbox. At least 2 hours of effort (2 hours per each hour of class time) outside of class each week are expected to complete readings and homework assignments. In particular, all students are expected to read assigned materials and complete online modules prior to the class time in which it will be discussed.

This class is graded on a satisfactory/unsatisfactory (S/U) basis. This is a discussion-based class and satisfies CSU and federal agency requirements for face-to-face training. As such, students will be graded based on their (mandatory) attendance and participation in the class. Students may have up to two excused absences from class, and should make arrangements with the instructor to make up any assignments and to ensure they are prepared for the next class.

**Academic Integrity:**

All students are subject to the policies regarding academic integrity found in the CSU General Catalog, https://catalog.colostate.edu/general-catalog/policies/students-responsibilities/ and the student conduct code (https://resolutioncenter.colostate.edu/student-conduct-code/). 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 Student Resolution Center.

**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/csuinfolaccommodations.asp for more information.

**COVID-19 (updated information at the CSU COVID-19 site):**

All students are directed to report any COVID-19 symptoms to the university immediately, as well as exposures or positive test results from a medical provider or home test.

- If you suspect you have symptoms, or if you know you have been exposed to a positive person or have tested positive for COVID (even with a home test), you are directed to fill out the COVID Reporter.
- If you know or believe you have been exposed, including living with someone known to be COVID positive, or are symptomatic, 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 do not have internet access to fill out the online COVID-19 Reporter, please call (970) 491-4600.
- You may also report concerns in your academic or living spaces regarding COVID exposures through the COVID Reporter. You will not be penalized in any way for reporting.
- When you complete the COVID Reporter for any reason, the CSU Public Health Office is notified. Students who report symptoms or a positive antigen test through the COVID Reporter may be directed to get a PCR test through the CSU Health Network’s medical services for students.
<table>
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<tr>
<th>Week</th>
<th>Discussion Topic</th>
<th>Accompanying Module / Reading or Activity Assignment</th>
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| Jan 20 | Course overview  
Roles and responsibilities in academia                                      | Introduction to RCR Module  
Bebeau et al., Developing a Well-Reasoned Response to a Moral Problem in Scientific Research |
| Jan 27 | Authorship (and IP ownership)                                                    | Authorship Module  
Jessica Banks case |
| Feb 3  | Reproducibility; lab notebooks                                                    | Reproducibility of Research Results  
Discuss record keeping with group members  
Bring to class: your notebook / record |
| Feb 10 | Plagiarism                                                                       | Plagiarism Module  
Charlie West case; Roig article (resource) |
| Feb 17 | Research Misconduct                                                             | Research Misconduct Module |
| Feb 24 | Conflicts of Interest / Whistleblowing  
(guest: Kim Cox-York)                                                           | Conflicts of Interest Module  
Marty Brown Case / Bob Bailey case |
| Mar 3  | Mentoring (guest: Emily Fischer)                                                 | Mentoring Module |
| Mar 10 | Peer Review / Publishing                                                         | Peer Review Module  
Diane Archer case |
| Mar 24 | Data Management (guest: Mara Sedlins)                                            | Data Management Module |
| Mar 31 | Research with Humans and Animals; Lab Safety                                     | Human Subjects and Animal Subjects Modules |
| Apr 7  | Collaborative research                                                           | Collaborative Research Module |
| Apr 14 | Preparing Research Budgets  
Financial Management & Fiscal Responsibility  
(guest: Shannon Irey)                             | Bring to class: your laptop, with the budget spreadsheet uploaded |
| Apr 21 | Developing a Proposal / Prospectus                                               | Bring to class: a hypothesis-based research idea / outline |
| April 28 | Implicit Bias (guest: Melissa Burt)                                             | Complete online exercises (URLs will be emailed to you) |
| May 5  | Export Controls and Related Issues                                               |                                                     |