

Responsible conduct of environmental research (GEOS 596K)

Spring Semester 2012

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Office hours: by appointment

Class location: Gould-Simpson Rm. 209

Class time: Thursday 9:00 am to 10:50 am for eight weeks

Class number: 90692

Course description:

This course is designed to provide instruction in the responsible and ethical conduct of research (RECR) for graduate students in earth and environmental sciences. This will be done using structured discussions and role-play based on readings and other materials provided in advance of each class meeting. The aim is to develop awareness of RECR issues both as they apply to scientists in general and more particularly to the special needs of scientists working in the earth, atmospheric, hydrologic, ecological and other environmental fields.

Reading:

Frequent reference will be made to "On being a scientist: a guide to the responsible conduct of research", 3rd Edition, published by the National Academies Press (NAP) and available free at http://www.nap.edu/catalog.php?record_id=12192

In addition, materials and examples complementary to those in the NAP book have been developed in support of the structured discussions and role-play, and will be available to students online. These include materials concerning: a) the events leading to the criminal trial of several European geoscientists in connection with statements made ahead of an earthquake; b) permit problems on foreign field work leading to graduate students being detained by local authorities; c) conflict within an academic department concerning a graduate student's published research results; and d) an apparently genuine difference of opinion between groups of qualified scientists concerning the death of a captured member of a protected species, in this region. These materials will be further supplemented from technical and general media outlets.

Proposed Schedule of sessions: Spring 2012

There will be eight 2-hour sessions in consecutive weeks.

Session 1

Introduction and overview

- a) Trust and honesty in science
- b) Relationships within a group/laboratory

Session 2

Whose data and materials are they?

- a) Intellectual property; ownership of data and samples
- b) Collected materials – recording, archiving, sharing
- c) Transparency
- d) Good housekeeping – records and meta-data

Session 3

Proposals and Publication

- a) Who (authorship)?
- b) Where (to send it) ?
- c) How (what to expect)?
- d) The roles of editors, panels, program managers and reviewers
- e) Explicit and assumed ‘rules of the game’

Session 4

Research misconduct and other questionable research practices

- a) Fabrication
- b) Falsification
- c) Plagiarism
- d) Conflict of interest
- e) Responding to misconduct

Session 5

Responsible conduct of field-based research

- a) Safety for you, your crew and for others
- b) Environmental impacts of your research
- c) Permits and liaison with landowners and land managers
- d) Field research in other countries, including returning materials to your lab

Session 6

Subject-specific standards – rules and expectations vary by field, institution, agency and journal. Which apply to you in your chosen field?

- a) Privacy and confidentiality
- b) Access to materials and data
- c) Promptness of publication
- d) Algorithms and code
- e) Private and public domain geospatial information

Session 7

Honest mistakes

- a) Your own
- b) Someone else’s

Session 8

Communicating science to non-experts

- a) Speaking in your professional capacity
- b) Honesty
- c) Effectiveness
- d) Consequences

Grading:

Credit: 1 unit. Students who attend the class sessions, prepare each session's readings and participate actively in class discussions and role-play will receive a grade of P (pass).

Students and postdoctoral fellows are expected to register for the course. All participants are expected to attend all sessions. You may miss one session and still pass the course, but if you miss more than one session, you may receive a grade of Incomplete for the course. Absences for religious purposes should be discussed with the instructor in advance.

Federal requirements for training in responsible and ethical conduct of research:

This class has been designed with the National Science Foundation's requirements in mind, with particular emphasis on the needs of graduate students and early-career scientists in a range of earth and environmental, mainly field-based, sciences.

Course Policies:

- a) It is essential that you feel free to present opposing views, but this must be done in a constructive and civil manner. Ideas are legitimate targets, but the persons expressing them are not.
- b) If you do not join in the discussions and activities, you will be called on to do so.
- c) Do not discuss personal information in class. Consider all course discussions confidential with respect to personal information, remembering that secrets have a way of becoming public knowledge.
- d) Turn off your cell phones before the start of the class.
- e) Come to the class on time.
- f) Students are expected to follow the Student Code of Academic Integrity: <http://studpubs.web.arizona.edu/policies/cacaint.htm>
- g) Students are expected to follow the University policy on threatening behavior: <http://policy.web.arizona.edu/~policy/threaten.shtml>.
- h) Students who are registered with the Disability Resource Center must submit appropriate documentation to the instructor at the start of the class if they are requesting reasonable accommodations: <http://drc.arizona.edu/instructor/syllabus-statement.shtml> .
- i) Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.