

The Ethics of Scientific Research

Description: This course will be a survey of the main ethical issues in scientific research. Topics to be covered include data fabrication, data falsification, plagiarism, conflicts of interest, data management, mentor and trainee responsibilities, collaborative research, authorship and publication, peer review, animal experimentation, and human experimentation.

Class schedule: Tuesdays, 11:00–11:50, in 4011 Wescoe Hall
(enrollment code 64263 for BIOL 420, 63925 for PHIL 500)

Meeting with me and contacting me:

The location of my office is 3071 Wescoe Hall. I will have office hours on Tuesdays at 2:00–2:50 and Fridays at 1:00–1:50, but you should feel free to come by my office at any time. I anticipate being in and around my office most Mondays, Tuesdays, Wednesdays, and Fridays; and although in rare cases I may have to ask you to come back at another time, in general I will be happy to speak to you at your convenience. You are also quite welcome to make an appointment with me, by e-mailing me. My e-mail address is my last name (no capitalization necessary), followed by '@ku.edu'. Please note that I tend to use e-mail only for scheduling appointments and handling logistical matters, not for substantive discussions of course material.

Requirements/grading:

At the end of the course, I'll give you a grade between A and F. The grades A, B, C, and D are given specific interpretations in KU's University Senate Rules and Regulations, which I adhere to. Article 2 of those rules and regulations—"Academic Work and Its Evaluation"—contains a section called "The Grading System" (at <https://documents.ku.edu/policies/governance/USRR.htm#art2sect2>), which says that an A should be given for achievement of outstanding quality, a B for achievement of high quality, a C for achievement of acceptable quality, and a D for achievement that is minimally passing, but of less than acceptable quality.

What letter grade I give you will depend on the final average of the scores you get on the various assignments in the course (which I'll outline below). I'll use the following scale to convert your final average to a letter grade. (For an explanation of how I arrived at these numbers, see the "Plus/Minus Grading" document on my web site.)

<u>final average</u>	<u>letter grade</u>
93.50 and above	A
90.00 through 93.49	A–
86.50 through 89.99	B+
83.50 through 86.49	B
80.00 through 83.49	B–
76.50 through 79.99	C+
73.50 through 76.49	C
70.00 through 73.49	C–
66.50 through 69.99	D+
63.50 through 66.49	D
60.00 through 63.49	D–
59.99 and below	F

Many (if not all) assignments will be graded numerically, rather than with letter grades, and you can also use this scale to interpret the numerical scores you get in this course during the semester.

Your overall grade will be determined by your scores on papers, and on class participation and attendance. If you are taking this course for 1 credit, you will write three or four papers (your choice), and your three best papers will count for 25 percent each, with class participation and attendance also being worth 25 percent; and if you are taking this course for 2 credits, you will write six or seven papers (your choice), and your six best papers will count for 15 percent each, with class participation and attendance being worth 10 percent.

Paper assignments: Each of your papers should be a maximum of 300 words long. Each paper should be on just one topic—that is, if you are writing a paper in a week for which there are multiple topics listed, write your paper on just one of the topics listed. Also, you cannot turn in more than one paper in a given week.

Formatting your papers: At the beginning of every paper, include at least the following identifying information: your name, the date when you are turning it in, and its word count. Use left and right margins of at least 1.25 inches. Finally, make your text double-spaced or 1.5-spaced; I especially encourage the latter if it will enable you to fit your paper on one side of one sheet of paper.

Stylistic expectations: Every paper you turn in should be a finished, polished piece of writing. Additionally, it should be written as if intended for the general reader, not just for me or the members of this class.

Due dates: You can choose the weeks in which you'll write your papers. Just be sure to start writing them soon enough in the semester to leave yourself time to write as many papers as you need, as determined by the number of credits for which you are enrolled.

Deadlines: The deadline for each paper will be the beginning of the class period with which it is associated. This deadline will be strictly enforced: late papers' scores will be reduced by 25 percentage points for each full or partial day of lateness (with each "day" starting at 11 a.m.). Papers submitted in class, or shortly before, will be returned the next week. Papers turned in at least 24 hours early may be graded and returned in the associated class period rather than a week later.

Formatting your files: You can turn in your paper either in hard copy or by e-mail. Acceptable formats for papers turned in by e-mail include the formats associated with the extensions .pdf, .docx, .doc, and .rtf. Be sure that you save your file in one of these formats; do not save it in another format and then just change the extension to one of these. Versions of Microsoft Word capable of saving files in several of these formats are available on most, if not all, of the computers in KU's computer labs, and many other word processors than Word are also capable of saving files in some of these formats.

Attendance and participation: Your attendance and participation score will be based, mainly, on the following considerations. First, you can miss up to one class period at your discretion, without providing an excuse for your absence; if you have more than one absence, you should be prepared to provide excuses for all of them. Second, good class participation consists of offering intelligent, relevant, and helpful comments and questions. You should be an active discussant and should feel free to introduce your own perspective and concerns into the discussion; at the same time, however, you should not think that more participation is always better. Ideal class participation involves not only being willing and able to contribute; it also involves being respectful of others' time and interests, being aware of what concerns are already under discussion and unresolved at any particular point, and being aware of those occasions when a particular topic or thread that interests you would be more appropriately pursued later or outside of class.

Book to buy:

ORI Introduction to the Responsible Conduct of Research, updated edition, by Nicholas H. Steneck
(Office of Research Integrity, Department of Health and Human Services, 2007)

This book is available for purchase at the U.S. Government Bookstore, at <http://bookstore.gpo.gov/collections/ori-research.jsp>.

Course materials on the web:

Some course documents, including this syllabus, will be available on the web site for the course, the URL of which is

<http://web.ku.edu/~utile/courses/esr2>

(If you don't want to type in this whole thing, you can stop after 'utile'—at which point you'll be at my personal web site—and then follow the links to the web site for this particular course.)

Most of the readings mentioned below—every one for which URLs are not provided (and many for which they are)—will be provided on the course Blackboard site. The ones provided there are marked below with '(Bb)'.

E-mail distribution list:

I've had the KU computer folks set up an e-mail distribution list for the course, and its address is the following:

biol420_64263sp11_dl@mail.ku.edu

I've had it set up so that not only I, but also you, can use it, so that you can communicate with everyone in the class (including me) whenever you have a reason to do so.

In general, I'll try to mention everything important (whether substantive or procedural) in class. But at times, I may use the e-mail distribution list to send you information that you will be responsible for having or acting on, so it is your responsibility to make sure that you read mail that I send to this list. You can do this by making sure that you (1) have an e-mail address, (2) are registered for the course (because this list is updated every night to reflect current enrollment, taking account of drops and adds), and (3) read your e-mail. There is one complication that you should be aware of: if you have both an Exchange e-mail address (e.g., so-and-so@ku.edu) and a non-Exchange e-mail address (e.g., so-and-so@gmail.com), and you prefer to receive e-mail at the latter address, then mail sent to the e-mail distribution list for the course will not necessarily go to it, even if you have registered it with KU as your primary e-mail address. (This is a known problem with the KU distribution-list system.) To deal with this problem, either check your Exchange account as often as you check your non-Exchange account, or arrange for mail sent to your Exchange account to be forwarded to your non-Exchange account. For more information on this problem and how to solve it, see the Distribution List Primer (<http://www.email.ku.edu/dlists/primer.shtml>) and look at the answer to the second question: "Some of the people on my list say they're not getting my list mail. Why?"

Also in regard to this list, note that you cannot send e-mail to this list just by sending a message to its address. You also have to send your message *from an authorized e-mail account*. Normally, that is whatever account you use to receive e-mail sent to this list. So, even if you receive mail sent to this list by having your KU e-mail forwarded to (e.g.) your Gmail account, you should not count on being able to use the e-mail list (as a sender) from your Gmail account. You may have to send your message from your Exchange account.

Academic misconduct:

I take academic misconduct, especially cheating on tests and plagiarizing papers, extremely seriously, and am generally disposed to impose the harshest available penalties when it occurs. KU's policy on academic integrity is in article 2, section 6 of the University Senate Rules and Regulations (<https://documents.ku.edu/policies/governance/USRR.htm#art2sect6>).

Disability accommodation:

If you have a disability for which you may be requesting special services or accommodations for this course, be sure to contact Disability Resources (<http://www.disability.ku.edu>), at 22 Strong Hall or at 864-2620 (V/TTY), if you have not already done so, and give me a letter from that office documenting the accommodations to which you are entitled. Please also see me privately, at your earliest convenience, so that I can be aware of your situation and can begin to prepare the appropriate accommodations in advance of receiving the letter from Disability Resources.

Illness and attendance:

Although there is a class-participation component as a determinant of your grade in this class, I don't want to encourage you to come to class when you are ill and might infect others. If you have a contagious illness, please protect your classmates from the risk of catching it from you. Absences in such circumstances will be excused and there will be no adverse effect on your class-participation grade.

Schedule:

Introduction

January 25 ***introduction to course***

reading before class:

(none)

in-class handouts:

Robert Service, "A Dark Tale Behind Two Retractions"
(*Science* vol. 326, no. 5960 [December 18, 2009], pp. 1610–1611;
<http://dx.doi.org/10.1126/science.326.5960.1610>) (Bb)

Nancy E. Levinger and Ellen R. Fisher, "Responsible Researchers Required"
(*Science* vol. 327, no. 5968 [February 19, 2010], pp. 957–958;
<http://dx.doi.org/10.1126/science.327.5968.957-b>) (Bb)

February 1: no class (campus closed due to inclement weather)

February 8 ***introduction to research ethics***

reading before class:

Steneck, introduction to part I, "Shared Values" (pp. 2–3)

Steneck, chapter 1, "Rules of the Road" (pp. 4–17)

Steneck, part V, "Safe Driving and Responsible Research" (pp. 158–164)

Steneck, chapter 2, "Research Misconduct" (pp. 18–29)

University of Kansas University Senate Rules and Regulations article IX, "Guidelines for Dealing with Allegations of Scholarly Misconduct," section 1, "General Provisions"
(<https://documents.ku.edu/policies/governance/USRR.htm#art9sect1>)

paper topics:

1. In the introduction to part I and then again in part V, Steneck singles out the values of honesty, accuracy, efficiency, and impartiality. What is the difference between honesty and accuracy? Is it possible to fall short with regard to one of these values while effectively fulfilling the other?
2. In chapter 2, Steneck notes that a particular institution's definition of research misconduct may include practices other than fabrication, falsification, and plagiarism (pp. 23–24). In looking at KU's definition of scholarly misconduct in light of Steneck's remarks, is it a

narrow definition of scholarly misconduct or a broad one? In your opinion, what aspects of KU's definition of scholarly misconduct are commendable or objectionable?

in-class handouts:

C. K. Gunsalus, "How to Blow the Whistle and Still Have a Career Afterwards" (*Science and Engineering Ethics* vol. 4, no. 1 [March 1998], pp. 51–64; <http://dx.doi.org/10.1007/s11948-998-0007-0>) (Bb)

Fabrication, Falsification, and Plagiarism

February 15

reading before class:

Philip J. Hilts, "The Science Mob" (*The New Republic*, May 18, 1992, pp. 24–31) (Bb)

Daniel J. Kevles, "The Assault on David Baltimore" (*The New Yorker*, May 27, 1996, pp. 94–109) (Bb)

David Warsh, "The Fortune That Never Was" (*The Boston Globe*, June 30, 1996) (Bb)

paper topic:

3. How would you evaluate David Baltimore's conduct in this case? Are there ways in which he handled this case well, and are there ways in which he handled it badly?

in-class video:

Mark S. Frankel, American Association for the Advancement of Science, "Noah's Dilemma"

in-class handouts:

Donald Kennedy, "Editorial Retraction" (*Science* vol. 311, no. 5759 [January 20, 2006], p. 335; <http://dx.doi.org/10.1126/science.1124926>) (Bb)

John Dahlberg, "Findings of Research Misconduct" (case of Sagar Mungekar) (*Federal Register* vol. 75, no. 238 [December 13, 2010], pp. 77641–77642) (Bb)

Mike Rossner and Kenneth M. Yamada, "What's in a Picture? The Temptation of Image Manipulation" (*The Journal of Cell Biology*, vol. 166, no. 1 [July 5, 2004], pp. 11–15; <http://dx.doi.org/10.1083/jcb.200406019>) (Bb)

Conflicts of Interest

February 22 *overview*

reading before class:

Steneck, chapter 5, "Conflicts of Interest" (pp. 66–81)

Paul Basken, "Ethicists Prod NIH to Spend Money Investigating Conflicts of Interest" (*Chronicle of Higher Education*, November 19, 2009) (Bb)

Jocelyn Kaiser, "Lowering the Boom on Financial Conflicts" (*Science* vol. 328, no. 5982 [May 28, 2010], p. 1091; <http://dx.doi.org/10.1126/science.328.5982.1091>) (Bb)

paper topics:

4. Would any of the career paths you are considering be likely to confront you with conflicts of interest? How might you deal with them in order to avoid acting unethically?
5. Can you think of an example (not from a case discussed in this course) in which a person acted in disregard of a conflict of interest? How would you evaluate that person's behavior in light of the considerations discussed in this chapter?
6. Disclosing one's conflict of interest is generally seen as the most important step to take in order to appropriately deal with a conflict of interest when it cannot be avoided beforehand. Why is this considered important? What is accomplished by such disclosure?

March 1 cases

reading before class:

Daniel E. Koshland, Jr., "Editorial: Conflict of Interest Policy"
(*Science* vol. 257, no. 5070 [July 31, 1992], p. 595; <http://www.jstor.org/stable/2877451>) (Bb)

Marcia Barinaga, "Confusion on the Cutting Edge"
(*Science* vol. 257, no. 5070 [July 31, 1992], pp. 616–619; <http://www.jstor.org/stable/2877472>)
(Bb)

Eliot Marshall, "When Does Intellectual Passion Become Conflict of Interest?"
(*Science* vol. 257, no. 5070 [July 31, 1992], pp. 620–624; <http://www.jstor.org/stable/2877473>)
(Bb)

"Conflicting Views: The Readers Respond"
(*Science* vol. 257, no. 5070 [July 31, 1992], p. 625; included after last page of Marshall article)
(Bb)

"*Science* /AAAS Authorship Form and Statement of Conflicts of Interest"
(<http://www.sciencemag.org/about/authors/prep/coi.pdf>) (Bb)

paper topics:

7. Barinaga's article describes some of the early conflict-of-interest issues that journals faced. What were the main issues that journals had to make policies to deal with?
8. Marshall's article describes three cases of possible intellectual conflict of interest. Are any of the cases ones in which the researcher has such a strong commitment to his view that his objectivity is in doubt?
9. Choose question 1, 2, 3, or 4 from the survey "Conflicting Views: The Readers Respond," state what your answer would be, and explain why you would choose it over the other possible answers.
10. How has *Science* magazine's handling of conflicts of interest changed between 1992 and the present? (You might discuss changes in policy and/or changes in information gathering.)

Data Management

March 8

reading before class:

Steneck, introduction to part III, "Conducting Research" (pp. 84–85)

Steneck, chapter 6, “Data Management Practices” (pp. 86–101)

Ralph J. Cicerone, “Ensuring Integrity in Science”
(*Science* vol. 327, no. 5966 [February 5, 2010], p. 624; <http://dx.doi.org/10.1126/science.1187612>)
(Bb)

paper topics:

11. When research at a university is funded by a federal grant, who typically owns the data thereby generated—the institution or the individual researcher(s)? What are the advantages and disadvantages of this arrangement?
12. On p. 87, Steneck presents a case study that ends with three questions. Answer these questions.
13. What are the main reasons for storing some data for as long as is feasible, and what are the main circumstances in which one might need to be sure to destroy some data within a specified period of time?

in-class video:

Mark S. Frankel, American Association for the Advancement of Science, “Of Mice and Mendoza”

Mentor and Trainee Responsibilities

March 15

reading before class:

Steneck, chapter 7, “Mentor and Trainee Responsibilities” (pp. 102–115)

Adil E. Shamoo and David B. Resnik, *Responsible Conduct of Research*, 2nd ed., “Cases for Discussion,” pp. 78–79 (Bb)

paper topics:

14. Steneck presents several questions on p. 113. Answer question no. 2: “What are the qualities of a good mentor? A good trainee?”
15. Shamoo and Resnik present four cases for discussion. Pick one of them and answer the question(s) at the end of it.

March 22: no class (spring break)

Collaborative Research

March 29

reading before class:

Steneck, chapter 8, “Collaborative Research” (pp. 116–127)

paper topics:

16. When a collaborative research project is beginning, what are some of the terms of the collaboration that should be agreed upon in advance?

17. What does Steneck mean when he writes, “when there are choices about appropriate action, select the most demanding option” (p. 123)? Using an example, explain this principle and show how it can be applied in practice.

in-class video:

Mark S. Frankel, American Association for the Advancement of Science, “The Whole Truth”

Authorship and Publication

April 5

reading before class:

Steneck, introduction to part IV, “Reporting and Reviewing Research” (pp. 130–131)

Steneck, chapter 9, “Authorship and Publication” (pp. 132–145)

Mark A. Fine and Lawrence A. Kurdek, “Reflections on Determining Authorship Credit and Authorship Order on Faculty–Student Collaborations” (*American Psychologist* vol. 48, no. 11 [November 1993], pp. 1141–1147; <http://dx.doi.org/10.1037/0003-066X.48.11.1141>) (Bb)

Tom Jefferson, “Redundant Publication in Biomedical Sciences: Scientific Misconduct or Necessity?” (*Science and Engineering Ethics* vol. 4, no. 2 [June 1998], pp. 135–140; <http://dx.doi.org/10.1007/s11948-998-0043-9>) (Bb)

paper topics:

18. Why is it important whether someone is listed as an author of a paper or not?
19. Fine and Kurdek propose an approach to authorship credit and order that they acknowledge is “potentially controversial” (p. 1145). What is the basic idea of their view, and why might it be seen as controversial?
20. What are the main forms of “redundant publication” that Jefferson discusses? What are the ethical problems with these forms of redundant publication? Are the ethical problems the same, and equally serious, for all of these forms of redundant publication?

Peer Review

April 12

reading before class:

Steneck, chapter 10, “Peer Review” (pp. 146–157)

paper topics:

21. Steneck presents several questions on p. 155. Answer question no. 3: “Should peer review be anonymous?”
22. On p. 147, Steneck presents a case study that ends with three questions. Answer these questions.

in-class video:

Mark S. Frankel, American Association for the Advancement of Science, “Only a Bridge”

Animal Experimentation

April 19 overview

reading before class:

Steneck, introduction to part II, “Planning Research” (pp. 32–33)

Steneck, chapter 4, “The Welfare of Laboratory Animals” (pp. 50–65)

paper topics:

23. What is the scientific rationale for using animals in research? Why do some people object to using animals in research? How do you believe the reasons for and against can appropriately be weighed against each other in order to arrive at sound policies concerning this issue?
24. Steneck presents several questions on p. 63. Answer question no. 1: “Should all animals in research be treated the same or are there reasons to treat some animals differently than others?”

April 26 a philosophical perspective

reading before class:

Peter Singer, “All Animals Are Equal” (*Philosophic Exchange* vol. 1, no. 5 [Summer 1974], pp. 103–116) (Bb)

paper topics:

25. What does Singer mean by the claim (in the title of his paper) “All animals are equal”? (For example, does he mean that all animals are equally intelligent, or anything like that?) Does his view imply the immorality of all animal experimentation, or might it allow for some animal experimentation?
26. Singer criticizes both a perspective he calls “speciesism” and several views and practices that he regards as reflecting speciesism. Is he right that speciesism is unjustifiable, and is he right that it is reflected in many common views and practices?

Human Experimentation

May 3 overview

reading before class:

Tuskegee University, “Research Ethics: The Tuskegee Syphilis Study” (<http://www.tuskegee.edu/Global/Story.asp?s=1207598>) (Bb)

Steneck, chapter 3, “The Protection of Human Subjects” (pp. 34–49)

paper topics:

27. The exposure of the Tuskegee syphilis study led to the development of many of the guidelines for experimentation on humans that Steneck describes. What were the ethical shortcomings of the Tuskegee syphilis study, and how do the guidelines that Steneck describes address those shortcomings?

28. Steneck presents several questions on p. 47. Answer question no. 4: “What other principles could be used for evaluating the ethics of human subjects besides respect for persons, beneficence, and justice?”
29. Steneck presents several questions on p. 47. Answer question no. 5: “Should subjects be allowed to enroll in experiments that either promise no direct benefit to them or cannot provide them with the opportunity to withdraw completely?”
30. On p. 46, Steneck describes an experiment in which researchers assessed the benefits of a common surgical procedure used to relieve arthritis pain. Based on Steneck’s description of the experiment, do you believe it was ethical? In your opinion, does the justifiability of the experiment depend on its apparently having successfully shown that the medical community had been mistaken about the benefits of the commonly performed procedure?
31. On p. 35, Steneck presents a case study that ends with three questions. Answer these questions.

in-class video:

clips from *Extreme Measures* (directed by Michael Apted, 1996)

May 10 ***stem-cell research***

reading before class:

Adil E. Shamoo and David B. Resnik, *Responsible Conduct of Research*, 2nd ed., “Stem Cell Research,” p. 313 to first paragraph break on p. 315 (Bb)

“Stem Cells” (*New York Times*, updated September 10, 2010;
<http://topics.nytimes.com/topics/news/health/diseasesconditionsandhealthtopics/stemcells/index.html>) (Bb)

Katharine Q. Seelye, “The President’s Decision: The Overview; Bush Gives His Backing for Limited Research on Existing Stem Cells” (*New York Times*, August 10, 2001;
<http://www.nytimes.com/2001/08/10/us/president-s-decision-overview-bush-gives-his-backing-for-limited-research.html>) (Bb)

Sheryl Gay Stolberg, “Obama Lifts Bush’s Strict Limits on Stem Cell Research” (*New York Times*, March 9, 2009; <http://www.nytimes.com/2009/03/10/us/politics/10stem.html>) (Bb)

paper topics:

32. What are the ethical issues at stake in the debate over the moral permissibility of stem-cell research, and how do you evaluate the relative strengths of the competing reasons on the two sides of this debate?
33. In regard to stem-cell research, both President Bush and President Obama have sought to position themselves as moderates rather than extremists. How, specifically, have they sought to do this, and have they succeeded?

end-of-semester information:

The papers are the only written assignments in the course. There is no final exam.

If you would like to retrieve any work that you have turned in, but have not yet had returned to you, please retrieve it by May 31, 2012. After that date, I may discard unclaimed work from this semester.