

Biology 355 – Science, Ethics, and Society

Cedar Crest College Fall 2008 Syllabus

Section	Room	Instructor	Office Hours, office, phone, email
01 Mon 2:30 – 4:00 PM	Miller 20	Dr. Audrey Ettinger	Tuesday 3-4, Thursday 11-12 and by appointment ajetting@cedarcrest.edu Science Center 108, x3512
02 Tue 2:30 – 4:00 PM	Miller 20	Dr. Amy Reese	Mon/Tues 1-1:50, Wed 3:30-4:20, Thurs 12-12:50 ajreese@cedarcrest.edu Science Center 110, x3517

Required text: A Feeling for the Organism: The Life and Work of Barbara McClintock by Evelyn Fox Keller. 10th Anniversary Edition

COURSE DESCRIPTION

BIO 355 Science, Ethics and Society 2 credits

Part of the capstone and normally taken in the senior year, this course provides science majors with an opportunity to form connections between their scientific background and society as a whole. Students will gain an understanding of the role of science in society and the importance of ethics within science.

COURSE THEMES AND OBJECTIVES

This course enters into basic questions that scientists face continuously, from our responsibilities to the human and animal subjects of our research to the social consequences of our discoveries to the treatment of individual scientists within the greater scientific community.

Ethics in Science: The scientific community's experience in dealing with ethical issues in research has demonstrated that faculty and students need a forum in which to discuss the ethical issues that may arise in a scientist's career.

Women in Science: Numerous studies have addressed the relatively low numbers of women who have reached the highest echelon of the scientific professions. Despite this methodical approach, the notion that women are less capable of scientific thought is still asserted as an explanation for the data. We will approach this question from a scientific perspective, considering the available data on these issues.

Scientists in Society: Scientific research takes place within the context of history and our current society. In this section of the course, we will address issues where science and public discourse intersect. We will consider the role of scientists in responsibly conveying science to the public and incorporating modern scientific discoveries into societal practice.

A biography of the scientist Barbara McClintock, entitled [A Feeling for the Organism](#), weaves together the three themes, and will be read over the course of the semester.

COURSE OUTCOMES AND ASSESSMENT

Upon successful completion of this course, students will:

1. Demonstrate an understanding of ethical issues in science, their background and the dilemmas they present. Assessment: in-class discussions, online discussions, written assignments.
2. Demonstrate an understanding of how individual scientists are treated within the scientific community by interpreting the data regarding women scientists' careers. Assessment: in-class discussions, online discussions, written assignments.
3. Demonstrate an understanding of the scientist's role within the larger society. Assessment: in-class discussions, online discussions, written assignments.
4. Demonstrate the ability to communicate clearly and effectively, using both oral and written formats and to target communication specifically to either other scientists or to the general public. Assessment: in-class discussions, informal oral presentation, written assignments, peer editing, and online discussions.

COURSE SCHEDULE

The course schedule is subject to change and should be read as a general guideline. Topics may be added or deleted based on student interest.

Course Schedule		
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Class	Date	Topics / Assignments
		UNIT 1: SCIENTIFIC ETHICS
1	M Aug. 25 T Aug. 26	Course introduction
2	T Sept. 2 M Sept. 8	Authorship and Plagiarism Case study <i>Chapters 1-2, A Feeling for the Organism</i> Topic selection for “Conveying Research to the Public” DUE
3	T Sept. 9 M Sept. 15	Authorship and Plagiarism – presentations Granting, Funding Disclosures, Industry-Funded Studies <i>Chapters 3-4, A Feeling for the Organism</i>
4	T Sept. 16 M Sept. 22	Fabrication Case study <i>Chapters 5-6, A Feeling for the Organism</i> Draft of “Conveying Research to the Public” DUE
--	Tues. Sept. 23	Lunchtime Panel Discussion (TCC Alcove A) on Grad School (For Junior Colloquium, but seniors are invited)

		UNIT 2: WOMEN, SCIENCE, AND ETHICS
5	T Sept. 23 M Sept. 29	Is there a problem? <i>Chapters 7-8, A Feeling for the Organism</i> ESSAY 1 DUE
6	T Sept. 30 M Oct. 6	Women: Career issues <i>Chapters 9-10, A Feeling for the Organism</i> Peer Review of “Conveying Research to the Public” DUE
7	T Oct. 7 M Oct. 20	Women: Families and work-life balance <i>Chapters 11-12 A Feeling for the Organism</i> First revision of “Conveying Research to the Public” DUE
--	M Oct. 13 T Oct. 14	Fall Break - no class
8	T Oct. 21 M Oct. 27	Book discussion: <i>A Feeling for the Organism</i> (about Barbara McClintock)

9	T Oct. 28 M Nov. 3	Women in Science – presentations Conclusions - Women in Science Final version of “Conveying Research to the Public” DUE with 2 drafts, 2 reviews attached
		UNIT 3: SCIENTISTS IN SOCIETY
10	T Nov. 4 M Nov. 10	Animal Use in Scientific Research Animal use – presentations ESSAY 2 DUE
11	T Nov 11 M Nov. 17	Human Subjects Use in Scientific Research Human subjects – presentations Draft of Letter assignment DUE
12	T Nov. 18 M Nov. 24	The Collision of Science and Society: Creationism – Why Intelligent Design is Not Science Stem Cells – Who Controls Science?
13	T Nov. 25 M Dec. 1	Science and Scientists Out of Context: James Watson, <u>The Bell Curve</u> , and Racism Final version of Letter assignment DUE
14	T Dec. 2 M Dec. 8	Course Conclusions ESSAY 3 DUE
	TO BE SCHEDULED	MAJOR FIELDS ASSESSMENT TEST WILL BE SCHEDULED DURING THE FINAL EXAM PERIOD

ASSIGNMENTS

Readings will be distributed at most class meetings. You are responsible for completing the readings before the next class EVEN IF you are absent from class on a given day. Additional readings may be posted on the class eCompanion site.

Additional information about each assignment may be distributed in class.

Conveying Research to the Public [10% final document, 5% writing peer review, 5% responding to reviewers’ comments with corrections and submitting both reviews with final draft]

Can you make your research seem interesting and important to a non-scientist, general public reader? This assignment will give you an opportunity to find out. You will write

a one page description of your senior research (or, for those not conducting research, on an **instructor-approved** alternate topic), and then comment on the writing of one of your peers. After you incorporate her input, you will identify an additional, non-scientist reader and ask that individual to comment on your paper. You might ask a Cedar Crest student or someone in your family. Guidelines for the outside reader will be distributed in class.

Attendance and participation [20%]

Because this course is discussion-based, attendance and class participation are crucial. One unexcused absence will be permitted without penalty; any further absences must be documented through the Dean of Student Affairs.

Your class participation will be graded according to the following criteria.

GRADE	CRITERIA
A	<ul style="list-style-type: none">• Demonstrates excellent preparation; shows evidence of having identified and analyzed the key issues raised in the readings.• Volunteers contributions to discussions which reflect a systematic effort to utilize the ideas, interpretations and information presented in the readings as an opportunity to raise ideas and questions that go beyond those found in the readings.
B	<ul style="list-style-type: none">• Demonstrates good preparation; shows evidence of having identified and analyzed the key issues raised in the readings.• Typically does not volunteer contributions to discussions, but will contribute when called upon; contributions consistently draw upon or reference the ideas, interpretations and information presented in the readings.
C	<ul style="list-style-type: none">• Demonstrates adequate preparation; shows familiarity with the key issues raised in the readings.• Typically does not volunteer contributions to discussions, but will contribute when called upon; contributions do not consistently draw upon or reference the ideas, interpretations and information presented in the readings.
D	<ul style="list-style-type: none">• Demonstrates minimal preparation; shows familiarity with few of the key issues raised in the readings.• Does not volunteer contributions to discussion and has little to say when called on; contributions do not reference the ideas, interpretations or information presented in the readings.
F	<ul style="list-style-type: none">• Demonstrates little preparation; shows no evidence of having read the material.• Does not volunteer contributions to discussion; does not respond when called on.

Online Discussion [15%]

An eCompanion site has been established for this course. A discussion board will be used for discussion of A Feeling for the Organism and for extending in-class discussions on selected topics. A minimum of five topics will be assigned for online discussion, and discussions will generally last for one week. Participation in each discussion requires, at a minimum, one “original” posting and one response to a classmate. Topics for discussion and posting deadlines will be announced in class and posted on the site.

Letter to an elected representative or to the press [10% for final product, 5% for providing and responding to peer comments]

This assignment is designed to give you an opportunity to write about a science-related issue that interests you, and to make that assignment useful: we expect you to actually submit your letter to the elected representative or to a press source (observe that the letter will be due shortly after we have elected a new President!). You will also have the opportunity to act as a peer reviewer.

Oral presentation [10%]

Each student will give one 5-10 minute oral presentation about a short article related to one of the course topics. Articles for presentation will either be distributed in class, or students will be asked to identify an appropriate supplementary reading.

Essays [20% - 3 essays total, one per unit]

The essays will provide an opportunity for you to consider your own reaction to a selected reading, especially the case studies. Typically, an essay will be due before classroom discussion of that topic.

Major Fields Assessment Test (MFAT)

As part of the ongoing effort in the Department of Biological Sciences to assess student learning, all students enrolled in BIO 355 are required to take the MFAT, which enables comparisons to peer institutions. You do not need to study for this test, but you **MUST** complete it in order to pass this course. The date and time will be scheduled by the Registrar during the final exam period.

The Department appreciates your support of this endeavor; the recent changes in the Principles of Biology labs and the development of the new sophomore core courses are a direct result of student performance on this exam.

POLICIES

Grading

Your grade will be based on the assignments described above. Please take some time to examine the due dates for assignments, which are listed in the table on pages 3-4, and discuss any anticipated conflicts with the instructor well in advance. Unexcused late work, including electronic bulletin board submissions, will be penalized 5% per day. Letter grades will be assigned as follows:

93.0-100% A	90.0-92.9% A-	87.0-89.9% B+	83.0-86.9% B
80.0-82.9% B-	77.0-79.9% C+	73.0-76.9% C	70.0-72.9% C-
67.0-69.9% D+	60.0-66.9% D	less than 60.0% F	

The instructor reserves the right to “curve” grades to your benefit.

Honor Code

We fully support the Cedar Crest College Honor Code and the associated Community Standards for Academic Conduct. We adhere to its positions on Academic Misconduct, Academic Dishonesty or Plagiarism, Classroom Protocol, and Attendance. Students are responsible for reading the current versions of these documents in “A Student’s Guide to Cedar Crest College.”

Students with documented disabilities who may need academic accommodations should discuss these needs with their instructor during the first two weeks of class. Students with disabilities who wish to request accommodations should contact the Advising Center.