Biology 355 – Science, Ethics, and Society

**Cedar Crest College**

**Fall 2011 Syllabus**

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| **Section** | **Room** | **Instructor** | **Office Hours, office, phone, email** |
| 01 Mon 2:30 – 4:00 PM | Miller 20  | Dr. Audrey Ettinger | Monday, 11:30-1:30, Friday 10:30-12:00 and by appointmentajetting@cedarcrest.eduScience Center 108, x3512Science Center 108, x3512 |
| 02 Tue 2:30 – 4:00 PM | Miller 20 | Dr. Amy Reese | Wednesday, Friday 10:00-11:00, Wednesday 1:30-2:30, and by appointmentajreese@cedarcrest.eduScience Center 110, x3517Science Center 110, x3517 |

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**Required texts:**

Coursepack of readings available in the campus bookstore. Second packet to be distributed in class without further charge. Other readings will be distributed during the semester.

The Cutter Incident: How America’s First Polio Vaccine Led to the Growing Vaccine Crisis by Paul A. Offit. (ISBN# 0-300-10864-8)

The Immortal Life of Henrietta Lacks by Rebecca Skloot. (ISBN #978-1-4000-5218-9)

**COURSE DESCRIPTION**

**BIO 355 Science, Ethics and Society 2 credits**

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. This course is part of the capstone requirement for all majors in the Department of Biological Sciences and is normally taken in the senior year. Prerequisite: BIO 350.

**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.

**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.

**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.

**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.

Two non-fiction works weave together the three themes and will be read over the course of the semester. The Immortal Life of Henrietta Lacks is about the woman whose cells were used to establish the first immortal cell line, and The Cutter Incident describes the history of developing the first polio vaccine.

**COURSE OUTCOMES AND ASSESSMENT**

Upon successful completion of this course, students will:

1. Demonstrate an understanding of the scientist’s role within the larger society. 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 ethical issues in science, their background and the dilemmas they present. 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.

Readings must be completed before class on the date they are listed.

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| **Course Schedule** |
| **Class** | **Date**  | **Topics / Assignments** |
|  |  | **UNIT 1: SCIENTISTS IN SOCIETY** |
| 1 | M Aug. 29T Aug. 30 | Course introduction Online surveys Course study survey |
|  | M Sept. 5 | Labor Day – no Monday class |
| 2 | T Sept. 6M Sept. 12 | Scientists and Science Personalities**Topic selection for “Conveying Research to the Public” DUE:****Title, 2 sentence summary, and a statement about whether you are actively conducting this project***Reading: The Cutter Incident Prologue, Intro, Chapters 1-2 (p. xi-43)* |
| 3 | T Sept. 13M Sept. 19  | Animal Use in Scientific ResearchIntroduction to Letter assignment*Reading: The Cutter Incident Chapters 3-4 (p. 44-82)* |
| 4 | T Sept. 20M Sept. 26 | Human Subjects Use in Scientific Research**Double-spaced draft of “Conveying Research to the Public” DUE***Reading: The Cutter Incident Chapters 5-7 (p. 83-153)* |
| 5 | T Sept. 27M Oct. 3 | The Collision of Science and Society: Creationism – Why Intelligent Design is Not Science**Peer Review of “Conveying Research to the Public” DUE****(\*Copy with comments must be signed by the reviewer)***Reading: The Cutter Incident Chapters 8-9, Epilogue (p. 154-193)* |
|  |  | **UNIT 2: WOMEN, SCIENCE, AND ETHICS** |
| 6 | T Oct. 4M Oct. 17 | Unit 1 Summary and Conclusions: Articles chosen by studentsWomen in Science: Is there a problem?**Double-spaced draft of Letter assignment DUE; Peer Review in class (\*Copy with comments must be signed by the reviewer)***Reading: The Immortal Life of Henrietta Lacks Prologue, Deborah’s Voice, and Part One: Life (p. ix -86)* |
| -- | M Oct. 10T Oct. 11 | Fall Break - no class |
| 7 | T Oct. 18M Oct. 24 | Women’s Leadership in Science**ESSAY 1 DUE***Reading: The Immortal Life of Henrietta Lacks Part Two: Death (p. 89-176)* |
| 8 | T Oct. 25M Oct. 31 | Women in Science: Career issues, Families and work-life balance**First revision of “Conveying Research to the Public” DUE***Reading: The Immortal Life of Henrietta Lacks Part Three: Immortality Chapters 23-32 (p. 179-267)* |
| 9 | T Nov. 1M Nov. 7 | Scientific approaches to gender differences**Final version of Letter assignment DUE***Reading: The Immortal Life of Henrietta Lacks Chapter 33 – end (p. 268-337)* |
|  |  | **UNIT 3: SCIENTIFIC ETHICS** |
| 10 | T Nov. 8M Nov. 14 | Unit 2 Summary and Conclusions: Articles chosen by studentsDiversity in Science**Final version of “Conveying Research to the Public” DUE with 2 drafts & 2 reviews labeled, signed, and attached (Final version must be on top; remainder in reverse chronological order)** |
| 11 | T Nov 15M Nov. 21 | Authorship and PlagiarismCase Study: Charlie West and Diane Archer**ESSAY 2 DUE** |
| 12 | T Nov. 22M Nov. 28 | Funding Disclosures, Industry-Funded StudiesWho Controls Science? |
| 13 | T Nov. 29M Dec. 5 | Fabrication of dataCase Study: Marty Brown |
| 14 | T Dec. 6M Dec. 12 | Case Study: Bob BaileyUnit 3 Summary and Conclusions: Articles chosen by studentsCourse study survey**ESSAY 3 DUE** |
|  | TO BE SCHEDULED | MAJOR FIELDS ASSESSMENT TEST WILL BE SCHEDULED DURING THE FINAL EXAM PERIOD |

**ASSIGNMENTS**

**Readings** are found in your course packets; additional 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 will be posted on the class eCompanion site. Readings from the assigned books are listed on the syllabus and should be completed BEFORE class on the date that they are listed. Additional information about each assignment may be distributed in class.

**Writing Assignments:** ALL written assignments must be submitted on paper, with your name on the REVERSE side of the first page. If you send assignments by email, you do so at your own risk, and you MUST still submit a paper copy. In addition, you MUST submit an electronic copy of all final written assignments to the eCollege dropbox for archival purposes. For assignments requiring multiple drafts, each version must be clearly titled and dated. The most recent version should appear on the top of a stapled set, with the remainder arranged in reverse chronological order.

**Conveying Research to the Public** [10% final document, 5% writing peer review, 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 reviewers will be discussed in class. The key to success with this assignment is successful incorporation of both sets of external comments. The best examples of student work may be utilized in departmental or College literature.

**Essays** [30% - 3 essays total, one per unit]

The essays will provide an opportunity for you to consider your own reaction to the topics discussed in class. Essay 1 will address science and the media, Essay 2 will focus on women in science issues, and Essay 3 will analyze an ethics case study.

**Letter to an elected representative or to the press** [10%; grade includes 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. You will also have the opportunity to act as a peer reviewer. Your letter should be formally and properly addressed to a specific individual and should mention what action or response you wish for that person to take. See the eCompanion site for guidelines for writing a successful letter to an elected representative.

**Online Discussion** [15%]

An eCompanion site has been established for this course. A discussion board will be used for discussion of The Immortal Life of Henrietta Lacks, The Cutter Incident, and for extending in-class discussions on selected topics. 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. You are responsible for confirming that your participation in the discussions is appearing in eCollege. You may wish to type your entries offline and save them before copying and pasting online.

**Oral presentation(s)** [10%]

Each student will give one or two 5-10 minute oral presentation(s) about an 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. Your job will be to lead the discussion of the paper by introducing the article, by posing questions to your classmates and by facilitating discussion.

**Attendance and participation** [20%]

Because this course is discussion-based, attendance and class participation are crucial. One unexcused absence will be permitted without penalty BUT, this absence CANNOT be used during the week of Thanksgiving Break (11/21, 11/22); any further absences must be documented through the Dean of Student Affairs. For expected absences or early departures due to Cedar Crest-sanctioned events, please notify the instructor as soon as possible and see your coach or instructor for official documentation in advance.

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

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| **GRADE** | **CRITERIA** |
| **A** | * 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.
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| **B** | * 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.
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| **C** | * 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.
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| **D** | * 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.
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| **F** | * Demonstrates little preparation; shows no evidence of having read the material.
* Does not volunteer contributions to discussion; does not respond when called on.
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**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. If you email an assignment to guarantee that it is received on time, you do so at your own risk; you must also still submit a paper copy. 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.