

BIO 301 -- History of Biological Thought – Spring 2007

Prof. Jackie Brown

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I tend to read email at the beginning and end of the day and will try to reply within 24 hrs. If you need an immediate answer, call or drop by my office.

Office hours: Mon 9-10 am , Tues and Wed 11-noon, Thurs 3-4 pm, Fri 3:15-4:15 pm. Please contact me for appointments at other times.

Web page: The Web page for this course includes course information and links to online resources for the study of history of science: <http://web.grinnell.edu/courses/bio/S07/bio-301/> Get to it via the Biology Department Web page at <http://www.grinnell.edu/academic/biology/courses>.

Course goals:

- To understand the historical development of the major fields of biology
- To understand the roles of intellectual and social context in the development of biological theories
- To become critical readers of history of science

This seminar course will consider how fundamental biological theories emerge and change in a complex environment of empirical knowledge and social/political concerns. We will examine conceptual changes in an array of subdisciplines by reading a contemporary history of each, along with excerpts from primary and secondary texts. Areas of study will include reproductive biology, evolution and genetics, and medicine. Readings will consider the interactions of biological theory with discussions of race, ethics and feminist theory.

Required texts

Moore, John A. 1993. *Science as a way of knowing: The foundations of modern biology*. Harvard U.P.: Cambridge, MA.

Pinto-Correia, Clara. 1998. *The Ovary of Eve: Egg and sperm and preformation*. Chicago: The University of Chicago Press.

Kevles, Daniel J. 1995. *In the Name of Eugenics: Genetics and the uses of human heredity*. Cambridge: Harvard UP.

Porter, Roy (ed.) 1997. *The Greatest Benefit to Mankind: A medical history of humanity*. New York: Norton.

Class meetings

Class meetings are from 8:00-8:50 AM (yikes!) Monday, Wednesday and Friday; please plan your sleep/wake schedule so that you are awake and coherent. Please let me know ahead of time if you must miss class because of a conflict with an extracurricular activity and let me know by email if you have or will miss a class because of illness.

Since this class is a seminar, it will be run in a significantly different manner than other biology classes. Most importantly, I will not lecture *at all*. You will be given study questions to guide your reading ahead of time, and someone (I, at first, then one of you) will be responsible for facilitating discussion. Your responsibilities will be

- (a) to spend a considerable amount of time in advance carefully reading each assignment,
- (b) to send the discussion leader via email **by 8 pm the day before class** two thoughtful questions that will generate interesting discussion, and
- (c) to contribute to class discussions.

What you get out of this course depends directly on whether you fulfill these responsibilities. Your grade also depends on it (see below). If you are planning on sitting back and absorbing knowledge from your classmates, or me, think again!

The semester schedule (below) is divided into 4 sections, one for each text, followed by a couple weeks during which you will refine and present your own historical research. For the first text -- a general and more traditional history of biology -- I will be choosing the readings from the primary literature and facilitating the discussion. A team of students will then work with me in organizing and leading discussions of each of the three remaining texts. Each of these has a distinct style and focus, and you should consider which of them you would be most interested in undertaking. With my help, each group will develop a relevant bibliography of primary literature on the subject and decide which excerpts from primary literature we will read alongside the history text. A schedule of deadlines for groups to meet with me (outside class time) in preparation for this assignment are shown below:

	Part		
	II	III	IV
Discuss history*	2/4	2/20	3/12
Bibliography of primary lit	2/7	2/23	3/16

*Note that you should have already read the history before the first deadline above.

<i>Part I</i>	<i>Overview (Moore)</i>	1/22 through 2/9
<i>Part II</i>	<i>Reproductive Biology (Pinto Correia)</i>	2/11 through 2/26
<i>Part III</i>	<i>Evolution, Genetics and Eugenics (Kevles)</i>	2/28 through 3/16
<i>Part IV</i>	<i>History of Medicine (Porter)</i>	4/2/ through 4/27
<i>Individual consultations on research projects</i>		Week of 4/30-5/4
<i>Student presentations of research projects</i>		Week of 5/7-11

Assignments

Writing, speaking, and interacting with other minds is every bit as important in science as in other academic disciplines. If there is one thing I'd like you to take from this class, it is the realization that the study of biology is the study of IDEAS, not simply the memorization of facts. The only way I know of assessing whether you really understand the ideas is to ask you to communicate them clearly, orally and in written form. I hope you'll find out that the process of writing is not just a means by which you are evaluated, but an important means for you to explore and discover the exciting intellectual content of biology.

Weekly writing -- Each week you will be expected to respond to one of the focus or discussion questions circulated from the previous week. These responses should be carefully thought out and formulated -- essentially, a short essay -- and less than 500 words. They are due by **5 pm each Monday**. They should be sent as MS-Word files (or RTF, if you use Wordperfect) attached to emails to me. The subject line should say "Weekly writing #1" (#2, etc.) and the file should be named **YOURLASTNAME_Week#.doc**. I will give you feedback on these within 6 days, also electronically. They will be graded on the following rubric:

- √+ Unusual insight – carefully written and argued, demonstrating original ideas about the material. I learned something that I'll remember.
- √ Well-argued and coherent. Answer is not surprising, but makes good sense based on the reading. I didn't necessarily learn something new, but I appreciated the way you made the argument.
- √- Argument is weakened by either its structure or content. Problems may stem from faulty assumptions or logic, a lack of evidence, or sloppy writing. I learned that you needed to work harder on this.

Your grade for this writing will be based on the best 8 responses I get (thus you may skip some weeks if you wish). My goals in making this assignment are to make sure you can (1) express the ideas we have been considering in your own words and (2) develop your own opinions about the ideas.

Research paper -- Over the semester, you will be working sequentially on a large research paper that should focus on the development of a theory or idea in biology over at least 50 years. The paper will be written in three stages. During the first stage, you will focus on the early period of consideration of the theory, and during the second, the later stages of the theory (these periods will be defined in consultation with me). These papers should concentrate on defining the important events, people and experiments involved in the development of the ideas; thus, they should indicate a careful reading of the primary literature. The final paper will involve the integration of these two papers into a single research paper; in this synthesis, you should develop your own conclusions concerning the nature of the theory and the process of its acceptance, rejection or modification. More details on the first stage of this assignment are attached. The due dates for these sections of the paper will be 5pm Monday 3/5, Monday 4/30, and Thursday 5/17). Your papers should be emailed to me as a Word (or RTF) document named **YOURLASTNAME_HisRes#.doc**

Late assignments will be accepted with a 10%/day penalty, except in cases of documented illness. Assignments in other classes are not reasons to feel sick – plan ahead!

Oral presentations

During the last week of the semester, you will present a synopsis (or excerpt) of your developing final project in the form of a public presentation. I will schedule these so that they may be attended by members of the campus/public, as well as all of us – perhaps in the form of a “symposium” on history of biological thought.

Grades

Your final grade will be based on the following breakdown of assignments:

Class Participation	20%
Weekly writing (best 8)	20%
Class leadership	10%
Research Paper I (3/5)	10%
Research Paper II (4/30)	10%
Research Paper Presentation (Hell week)	10%
Final Research Paper (5/17)	20%

When deciding on your final grade, I always consider improvement over the course as more important than the numerical average of your grades. I have very high expectations of you and take no greater pleasure than helping you meet them. Please feel free to discuss with me your performance in the course at any time.

Learning disabilities – I am committed to accommodating all documented learning disabilities. Please speak with me early in the semester if there is a way I can facilitate your success in this course.