

## **PHILOSOPHY OF BIOLOGY (FALL 2009)**

**PHIL-272-01 – Class Number 2118 ♦ 205 Stein Hall ♦ T-Th 2-3:15pm**

---

Andrea Borghini • e-mail: [aborghin@holycross.edu](mailto:aborghin@holycross.edu) •

url: <http://college.holycross.edu/faculty/aborghin/>

course url: [http://college.holycross.edu/faculty/aborghin/filosofia\\_biologia.html](http://college.holycross.edu/faculty/aborghin/filosofia_biologia.html)

### **Course Description**

What is life? How evolution affects the way in which we think about ourselves and the natural world? How are living organisms classified and how does this affect our perception and measurement of biological diversity? Is 'race' a biological concept? In this course, we will explore fundamental philosophical questions prompted by what we know of the biological realm. Readings will include a selection of classical texts as well as recent articles.

### **Structure and Course Requirements:**

Readings, Class Participation and Moodle Postings: You will be expected to complete the assigned readings before the class for which they are assigned, to bring the texts under discussion with you to class, and to come to class prepared to discuss them. For some topics, I will open a discussion tread on the Moodle website for the course; when I will do so, I will notify you by email and give you a deadline by when to answer to the tread (typically, you should post an answer to the tread no later than 1pm for the day of the class; e.g.: for a class on Tuesday, January 26, 2pm you should post an answer no later than Tuesday, January 26, 1pm); your answer will count towards participation.

Attendance: You are expected to attend each class. If you will be absent, please e-mail me in advance ([aborghin@holycross.edu](mailto:aborghin@holycross.edu)). The only grounds for which absences will be excused are religious holidays, family crises, or illness; absences due to the last two reasons must be explained by a note from a dean or a doctor. For each class, I keep track of students who are late. Accumulating several late arrivals will incur in a grade reduction of one third of a grade. If you have scheduling conflicts, please come see me.

Weekly Assignments: Each week, I will post an assignment on the Moodle website for the course. Typically, I will post the assignment on Monday, and you are expected to reply by the following Thursday by class time (2:00pm). Anytime an assignment is posted, I will send you a notification message through Moodle. Please bring your reply to class. There will be eleven assignments. You may skip four during the semester. (I will count only the seven best assignments towards your final grade.) Missing more than four will result in a substantial grade reduction (see below). I keep track of late postings. Accumulating several late postings will incur in a grade reduction of one third of a grade.

Papers: two papers, 1200 to 1600 words each. The first paper is due in class on Tuesday, February 17; the second paper is due in class on Thursday, April 23. Papers should be typed in Times New

Roman, size 12 font, double-spaced, and all the page margins should measure one inch. Paper topics will be distributed one week to ten days in advance.

Final Exam: Comprehensive of all the materials discussed during the course

### **Required Texts:**

The following books are required:

Schrödinger: *What Is Life? The Physical Aspect of the Living Cell*, Cambridge, 1944, ISBN: 978-0521427081

Lewontin, *It Ain't Necessarily So*, New York Review Books, 2001, ISBN: 978-0940322950

### **Grade Breakdown:**

Weekly Assignments: 21%

Final: 20%

Paper I: 20%

Paper II: 25%

Participation: 14%

*Please be advised:* In order to pass the class you are required to do *all* the coursework (e.g. completing one out of two papers will result in failing the class). Late papers incur in a penalty of one third of a letter grade per day (e.g. from A to A-). As for weekly assignments, if you miss more than four, a penalty of one third of a letter grade will be applied to your overall final grade. Finally, plagiarism, cheating, and collusion, in any form, will not be tolerated, in accordance with the *Student Handbook* (see end of syllabus for details).

### **Office Hours:**

My office hours are on Wednesday, 2 to 5pm, in 519 Smith Hall. I am also on campus at many other times, and you can make an appointment to see me by e-mail ([aborghin@holycross.edu](mailto:aborghin@holycross.edu)). Please don't hesitate to get in touch with me about any aspect of the course.

## Tentative Schedule:

### Week 1

1.15 (Th) Introduction

## SECTION I: COORDINATES

### Week 2

1.20 (T) *What Is Life?*  
➤ Schrödinger: *What Is Life? The Physical Aspect of the Living Cell* (1944) (Required Text)

1.22 (Th) *What Is Life?*  
➤ Dan Cloud: "Darwin's Snowflakes"  
<http://www.rescogitans.it/main.php?articleid=156> (2006)  
**(Assignment #1 due)**

### Week 3

1.27 (T) *Evolution: Darwin*  
➤ Darwin, *On the Origin of Species*, Chapters 4 and 11 (1859)  
<http://www.literature.org/authors/darwin-charles/the-origin-of-species/>

1.29 (Th) *Evolution: Darwin*  
➤ Darwin, *On the Origin of Species*, Chapters 4 and 11 (1859)  
<http://www.literature.org/authors/darwin-charles/the-origin-of-species/>  
**(Assignment #2 due)**

### Week 4

2.3 (T) *Evolution After Darwin I*  
➤ Gould, *Wonderful Life*, Chapter 5 (1989) (Eres)  
➤ Gould and Lewontin, "The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme" (1978) (Also on Eres)  
<http://ethomas.web.wesleyan.edu/wescourses/2004s/ees227/01/spandrels.html>

#### **PAPER #1 TOPICS DISTRIBUTED**

2.5 (Th) *Evolution After Darwin II*  
➤ Dennet, *Darwin's Dangerous Ideas*, excerpts from Chapter 10 (1995) (Eres)  
➤ Dawkins, *The Selfish Gene*, Chapters 1-3 (1976) (Eres)  
**(Assignment #3 due)**

### Week 5

2.10 (T) *Evolution After Darwin III*  
➤ Behe, *Darwin's Black Box*, Chapter 1 (1998) (Eres)  
➤ Kitcher: *Living With Darwin*, Chapter 2 (2007) (Eres)

2.12 (Th) *Recap Class*  
**(Assignment #4 due)**

### Week 6

2.17 (T) *Sex*

- E.O. Wilson, *On Human Nature*, Chapter 6 (1978) (Eres)
- S. De Beauvoir, *The Second Sex Human Nature*, Part I, Chapter 1 (1949) (Eres)
- A. Fausto-Sterling, "The Five Sexes: Why Male and Female Are Not Enough" (1993)  
<http://frank.mtsu.edu/~phollowa/5sexes.html>

## SECTION II: ENTITIES

2.19 (Th) *Genes*

- Lewontin, *It Ain't Necessarily So*, Chapters 2 and 3 (2001) (Required Text)

**(Assignment #5 due)**

### Week 7

2.24 (T) *Biological Individuality*

- J. Wilson, *Biological Individuality*, Chapters 3 and 5 (1999) (Eres)

**PAPER #1 DUE**

2.26 (Th) *Species*

- Mayr, "Species Concepts and Their Applications" (1963) (Eres)
- Hull, "A Matter of Individuality" (1978) (Eres)

**(Assignment #6 due)**

### Week 8

3.3 (T) ACADEMIC HOLIDAY

3.5 (Th) ACADEMIC HOLIDAY

### Week 9

3.10 (T) *Species*

- Kitcher, "Species" (1984) (Eres)
- Van Valen, "Ecological Species, Multispecies, and Oaks" (1976) (Eres)

## SECTION III: RELATIONS

3.12 (Th) *Environments*

- Golley, *A History of the Ecosystem Concept in Ecology*, Chapter 4 (1993) (Eres)

**(Assignment #7 due)**

### Week 10

3.17 (T) *Niches*

- R.L. Day, K.N. Laland, and J. Odling-Smee, "Rethinking Adaptation: The Niche-Construction Perspective" (2003) (Moodle)

- 3.19 (Th) *Ecology and Ecologism*  
 ➤ Lovelock, *The Ages of Gaia*, Chapters 1 and 2 (1988) (Eres)  
**(Assignment #8 due)**

**Week 11**

- 3.24 (T) Recap class

**SECTION IV: IMPLICATIONS**

- 3.26 (Th) *Dolly*  
 ➤ Gould, "Dolly's Fashion and Louis's Passion" (1997) (Eres)  
 ➤ Brock, "Cloning Human Beings", (1997) (Eres)  
**(Assignment #9 due)**

**Week 12**

- 3.31 (T) *Human Genome*  
 ➤ Pinker, "My Genome, My Self":  
<http://www.nytimes.com/2009/01/11/magazine/11Genome-t.html>  
 ➤ Lewontin, *It Ain't Necessarily So*, Chapter 5 (2001) (Required Text)

- 4.2 (Th) *GM Foods*  
 ➤ Lewontin, *It Ain't Necessarily So*, Chapter 10 (2001) (Required Text)  
 ➤ *The Future of Food* directed by Deborah Koons (2004)  
**(Assignment #10 due)**

**Week 13**

- 4.7 (T) *Races (and Geniuses)*  
 ➤ Block, "How Heritability Misleads About Race" (1995) (Eres)  
 ➤ M. Shih, T.L. Pittinsky, and N. Ambady, "Stereotype Susceptibility: Identity Salience and Shift in Quantitative Performance" (1999) (Moodle)  
 ➤ Appiah, "Is Race real? How Does Identity Matter?" (2002)  
<http://chronicle.com/free/v48/i30/30a01001.htm>  
 ➤ Kitcher, "Does 'Race' Have a Future?" (2007) (Moodle)  
**PAPER #2 TOPICS DISTRIBUTED**

- 4.9 (Th) EASTER -- ACADEMIC HOLIDAY

**Week 14**

- 4.14 (T) *Health*  
 ➤ Boorse, "Health as a Theoretical Concept" (1977) (Eres)
- 4.16 (Th) *Cooperation*  
 ➤ Axelrod, *The Evolution of Cooperation*, Chapters 1-3 (1984) (Eres)  
**(Assignment #11 due)**

**Week 14**

- 4.21 (T) *Morality*
- Sober and Wilson, *Unto Others*, Chapter 5 (1998) (Eres)
  - Wilson, *Darwin's Cathedral*, Chapter 4 (2002) (Eres)
- 4.23 (Th) *Morality*
- Buss, *The Evolution of Desire*, Chapters 2 and 3 (1994) (Eres)
  - Pinker, *How The Mind Works*, Chapter 1 (1997) (Eres)

PAPER #2 DUE

**Week 15**

4.28 (T) Conclusions

TBA FINAL EXAM

## Academic Honesty

The College Catalog (2008- 2009: 13 – 14) includes the following statement:

All education is a cooperative enterprise between teachers and students. This cooperation requires trust and mutual respect, which are only possible in an environment governed by the principles of academic honesty. As an institution devoted to teaching, learning, and intellectual inquiry, Holy Cross expects all members of the College community to abide by the highest standards of academic integrity. Any violation of academic honesty undermines the student-teacher relationship, thereby wounding the whole community. The principal violations of academic honesty are plagiarism, cheating, and collusion.

**Plagiarism** is the act of taking the words, ideas, data, illustrative material, or statements of someone else, without full and proper acknowledgment, and presenting them as one's own.

**Cheating** is the use of improper means or subterfuge to gain credit or advantage. Forms of cheating include the use, attempted use, or improper possession of unauthorized aids in any examination or other academic exercise submitted for evaluation; the fabrication or falsification of data; misrepresentation of academic or extracurricular credentials; and deceitful performance on placement examinations. It is also cheating to submit the same work for credit in more than one course, except as authorized in advance by the course instructors.

**Collusion** is assisting or attempting to assist another student in an act of academic dishonesty.

At the beginning of each course the teacher should address the students on academic integrity and how it applies to the assignments for the course. The teacher should also make every effort, through vigilance and through the nature of the assignments, to discourage and prevent dishonesty in any form.

It is the responsibility of students, independent of the teacher's responsibility, to understand the proper methods of using and quoting from source materials (as explained in standard handbooks such as *The Little Brown Handbook* and the *Harbrace College Handbook*), and to take credit only for work they have completed through their own individual efforts within the guidelines established by the teacher.

We expect academic honesty in this, as in all your courses. Whatever you submit to me comes with the implicit pledge that the work is your own; any request you make for an academic exception, given illness, family issues, personal problems, conflicting obligations, and the like, I expect to be based on truth. If you have any questions at all about your responsibility, please ask me.