

## Philosophy 523: Philosophical Problems of the Biological Sciences

University of Wisconsin-Madison, Spring 2013

M/W 2:30-3:45pm, Helen C. White 4275

**Instructor:** Trevor Pearce                      Office Hours: Tue / Wed / Thu 10am  
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### Description

Why does evolution happen? How do genes and environments shape organisms? What is the relationship between evolution and culture? This class—an introduction to the philosophy of biology—will examine these questions and more. We will begin with a historical introduction to evolution, reading several chapters of Darwin's *On the Origin of Species*. Next, we will examine a set of philosophical questions about the process of evolution: e.g., the level (or levels) at which selection occurs, the role of chance and contingency, the notion of adaptation, etc. We will then investigate some conceptual questions in biology more generally, from the reality of species to genetic reductionism. Finally, in the last part of the course, we will explore the connections between biology, psychology, culture, and ethics.

### Required Texts

Okasha, *Evolution and the Levels of Selection* (Oxford University Press)

This book will be available for purchase at the university bookstore. All other texts will be available online at Learn@UW.

### Evaluation

20%: Attendance / Participation / Discussion Questions  
25%: First paper (1500 words) [on Darwin]  
20%: Take-home exam [on Okasha]  
35%: Second paper (2000 words)

**THROUGHOUT**  
**FEBRUARY 22**  
**MARCH 15**  
**MAY 17**

## Schedule

### BACKGROUND

January 23 (no reading)  
Introduction

January 28 – **Origin of Species I** (43 pp.)  
Darwin, *Origin of Species*, pp. 1-43 (“Introduction” & “Variation under Domestication”)

January 30 – **Origin of Species II** (36 pp.)  
Darwin, *Origin of Species*, pp. 44-79 (“Variation under Nature” & “Struggle for Existence”)

February 4 – **Origin of Species III** (51 pp.)  
Darwin, *Origin of Species*, pp. 80-130 (“Natural Selection”)

February 6 – **Origin of Species IV** (36 pp.)  
Darwin, *Origin of Species*, pp. 171-206 (“Difficulties on Theory”)

February 11 – **Origin of Species V** (33 pp.)  
Darwin, *Origin of Species*, pp. 279-311 (“On the Imperfection of the Geological Record”)

### EVOLUTIONARY THEORY

February 13 – **The Price Equation** (40 pp.)  
Okasha, *Evolution and the Levels of Selection*, Introduction & Chapter 1

February 18 – **Multiple Levels** (37 pp.)  
Okasha, *Evolution and the Levels of Selection*, Chapter 2

February 20 – **Causality** (37 pp.)  
Okasha, *Evolution and the Levels of Selection*, Chapter 3

### FEBRUARY 22: FIRST PAPER DUE

February 25 – **Philosophical Debates** (32 pp.)  
Okasha, *Evolution and the Levels of Selection*, Chapter 4

February 27 – **The ‘Gene’s Eye View’** (31 pp.)  
Okasha, *Evolution and the Levels of Selection*, Chapter 5

March 4 – **Group Selection** (31 pp.)  
Okasha, *Evolution and the Levels of Selection*, Chapter 6

March 6 – **Species Selection** (39 pp.)  
Okasha, *Evolution and the Levels of Selection*, Chapter 7  
Jablonski, “Species Selection: Theory and Data”

March 11 – **Major Transitions** (25 pp.)  
Okasha, *Evolution and the Levels of Selection*, Chapter 8

March 13 – **Contingency** (22 pp.)  
Gould, “The Burgess Shale and the Nature of History”  
Blount et al., “Historical Contingency and the Evolution of a Key Innovation...”

### **MARCH 15 – TAKE-HOME EXAM DUE**

March 18 – **Adaptation** (41 pp.)  
Lewontin, “Adaptation”  
Gould & Lewontin, “The Spandrels of San Marco and the Panglossian Paradigm”

March 20 – **Optimality** (20 pp.)  
Orzack & Sober, “Optimality Models and the Test of Adaptationism”

### CONCEPTUAL ISSUES IN BIOLOGY

April 1 – **Model Organisms** (16 pp.)  
Bolker, “Model Systems in Developmental Biology”  
Ankeny & Leonelli, “What’s So Special about Model Organisms?”

April 3 – **Species** (23 pp.)  
Mallet, “Concepts of Species”  
De Queiroz, “Species Concepts and Species Delimitation”

April 8 – **Reductionism** (33 pp.)  
Sarkar, *Genetics and Reductionism*, pp. 39-70 (“Types of Reduction: Substantive Issues”)

April 10 – **Genes & Traits** (10 pp.)  
Turkheimer, “Heritability and Biological Explanation”

April 15 – **Functions** (30 pp.)  
Wright, “Functions”

### BIOLOGY, PSYCHOLOGY, CULTURE, ETHICS

April 17 – **Evolution & Ethics** (37 pp.)  
Darwin, *Descent of Man*, pp. 70-106 (“Comparison of Man and the Lower Animals,” Part 2)

April 22 – **Evolution & Meta-ethics** (58 pp.)  
Street, “A Darwinian Dilemma for Realist Theories of Value”

April 24 – **Nature/Nurture** (58 pp.)

Prinz, *Beyond Human Nature*, pp. 83-114 (“What Babies Know”)

Prinz, *Beyond Human Nature*, pp. 241-266 (“Fear and Loathing in Micronesia”)

April 29 – **Sex & Gender** (29 pp.)

Lloyd, “Pre-Theoretical Assumptions in Evolutionary Explanations of Female Sexuality”

Barash, “Let a Thousand Orgasms Bloom!”

Lloyd, “Response to David Barash’s Review of *The Case of the Female Orgasm*,” pp. 1-6

May 1 – **Genes & Behavior** (30 pp.)

Longino, “Theoretical Pluralism and the Scientific Study of Behavior”

May 6 – **Race & Biology** (32 pp)

Glasgow, “On the New Biology of Race”

Andreasen, “The Meaning of ‘Race’”

May 8 – **Is Evolution Still Happening?** (31 pp.)

Powell, “The Future of Human Evolution”

**MAY 17 – FINAL PAPER DUE**