Philosophy 474/574

Philosophy of Biology

-Sample Syllabus-

Course Description: Evolutionary biology stands as one of the most important and successful sciences today. It explains the diversity of life and the sometimes astonishing apparent 'fit' between organisms and their environments. It provides the theoretical underpinnings for such diverse fields as contemporary genetics, molecular biology, and systematics. It is perhaps even responsible for fundamentally altering the way people conceive of (for example) their place in the world and their relationship to other animals. In this course, we will explore some of more conceptually challenging elements of evolutionary biology, and some of the interesting questions that have arisen regarding how to interpret particular aspects of the field. What, for example, does it mean for one organism to be *fitter* than another, and what is *fitness*? What is *natural selection*, and what is it that is selected – genes? organisms? groups of organisms or populations? What does it mean for a trait of an organism to be an *adaptation* and how is that different from what it means for a trait to be *adaptive*? Do traits have *functions*? If so, what does it mean to say that a trait has such-and-such a function and how can we find that out? What are *species*, and how is our definition of 'species' related to questions regarding what *speciation* is, how it occurs, and how we can identify it? How (if at all) does the historical nature of research in evolutionary biology make it different from other scientific disciplines? Etc.

Prerequisites: Previous course work in *either* philosophy or in biology. While the class does not require previous course-work in evolutionary biology or the biological sciences more generally, and does not presuppose any particular knowledge of biology or related skills, it does presuppose an *interest* in evolutionary biology and the living world more generally.

Required Reading Materials:

Required Book: *Sex and Death: An Introduction to Philosophy of Biology* by K. Sterelny and P.E. Griffiths (Available at the bookstore)

Required Course Reader / Class Notes Pack: Available at the bookstore.

Required On-Line Readings: Available through the course's 'Blackboard' website

Required Work:

The course is cross listed as 474/574. Students taking the class as 474 have a different set of requirements than those taking it as 574. The requirements for 474 and 574, respectively, are listed below.

Philosophy 474:

Participation:	10%
Two (2) Sets of 'Midterm' Short-Essays (25% each):	50%
One Longer Paper:	40%
Total:	*100%*

Philosophy 574:

Participation:	10%
In-Class Presentation of Final Paper Draft:	20%
Final Paper:	70%
Total:	*100%*

Sample Topics & Readings

Week 1: Introduction to Course & to Evolutionary Biology
Sterelny and Griffiths (S&G) Chapters 1-2
Darwin *Origin* Chapters 3-4 (online)

Week 2: The Nature of Natural Selection and Adaptation
Futuyma *Evolutionary Biology* Chapters 12 and 13 (reader)

Week 3: Adaptation versus *Adaptationism*
Lewontin "Adaptation" (reader)
S&G Chapter 10
Gould and Lewontin "Spandrels" (reader)

Week 4: Optimization, Adaptation and the Environment
Seger & Stubblefield "Optimization.." (reader)
S&G Chapter 11
Lewontin "Organism as Subject..." (reader)

Week 6: What gets selected? *Part I: The Organism Versus the Gene*
S&G Chapter 3
S&G Chapter 4
Sober & Lewontin "Artifact..." (reader)

Week 7: What gets selected? *Part II: Developmental Systems and Epigenetics*
S&G Chapter 5
Cycles of Contingency Introduction and Chapters 9 and 10 (reader)
Moss *What Genes Can't Do* Chapter 3

Week 8: Species and Speciation
S&G Chapter 9 "Species"
Darwin, *Origin* Chapter 1 (online)
Hull "A matter of individuality" (reader)
Mayr "Typological versus Population Thinking" (reader)

Week 9: The Human Case: Behavior & Evolution
S&G Chapter 13
Kaplan "Historical Evidence and Human Adaptation" (reader)

Week 10: Reserved for presentations and discussion