

PHILOSOPHY OF BIOLOGY

Class time: MWF, 11am – 11.50am
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A. GENERAL INTRODUCTION TO THE COURSE

This is a new course at the University of Alberta that draws on courses that I have taught previously over the past 10 years. While most of the topics that we will cover are standard topics in the field, I will be using different course materials and organizing those topics differently than I have in the past, as well as covering a few brand new topics. Your feedback on the course, critical or otherwise, is most welcome as we go.

The course sits in the middle of a sequence of courses in the general area (PHIL 217-317-415), all of which can be taken for credit towards the newly established major in the Interdisciplinary Program in Science, Technology and Society. For more on this program, including requirements for both the major and minor, see <http://www.uofaweb.ualberta.ca/sts>.

Phil 317 focuses on philosophical issues in evolutionary biology but will also raise such issues about biology generally. The “Thematic Overview” in **C** and the “Tentative Schedule” in **F** provide detailed information about the course. The following types of questions should, however, give you a general idea of the content and orientation of the course; I have indicated the sections of the course in which each of these types of questions will arise most frequently.

Questions from the general philosophy of science: In what ways is biology distinctive amongst the sciences? Can we reduce some areas of biology to others, or biology to physical science? Are there limits to biological explanations and the domains to which they can be applied? (Sections I, II, VI)

Questions about fundamental concepts in evolutionary biology: Can natural selection act at levels other than that of the organism (e.g., the gene 'below' or the group 'above')? What are genes and what is their role in evolution? What role do appeals to fitness and adaptation play in evolutionary biology? What problem does altruism pose for evolutionary theory? (Sections II, III, V)

Questions with a methodological slant: What is the adaptationist paradigm? Does the focus on genes in various areas of biology clarify central biological processes, such as natural selection and inheritance, or represent a distortion of biological reality in some way? Is pluralism about species concepts the view that best reflects the reality of biological taxonomic practice? (Sections II, IV, V)

B. BACKGROUND FOR THE COURSE

The course has no specific pre-requisites in either Philosophy or Biological Sciences, but the ideal student for the course would have interests in either or (even better) both. Although the course will not concentrate on technical matters, understanding most of the issues that we will discuss requires *bioliteracy*, i.e., a grasp of the fundamental biological details of the relevant process or phenomenon we are studying. Students interested in taking the course but concerned about their background preparation for the course should come and talk to me as early as possible; I may be able to recommend some additional, introductory readings that are of use (see also **G** below). The week-by-week readings in **F** below include further readings for each topic we will cover, which should allow you to tailor the course to suit your own particular strengths and interests.

C. THEMATIC OVERVIEW

The topics we will cover are divided into six thematic sections. Here are the titles of each section, together with those for the weeks of the course that fall under them; this should provide you with a quick and dirty way to eyeball the course content as a whole. For more details, see **F**.

I. Between Science and Philosophy

1. Why the Philosophy of Biology?
2. The Standard View

II. Genes, Genetics, Development, and Inheritance

3. Challenging the Standard View from the Gene's Eye Perspective
4. How Developmental Systems Matter
5. Molecular and Mendelian Views of the Gene

III. Levels of Selection and the Problem of Altruism

6. The Units of Selection: Organisms and Groups
7. The Problem of Altruism

IV. The Species Problem

8. Species Essentialism and Individuality
9. The Nature of Species: Contemporary Views

V. Adaptation and Ecology

10. Adaptation and Adaptationism
11. Conceptualizing Ecology

VI. Human Nature, Sociobiology, and Evolutionary Psychology

12. Is There a Human Nature?
13. Darwinian Views

D. COURSE MATERIALS

Required Books

Kim Sterelny and Paul E. Griffiths, Sex and Death: An Introduction to Philosophy of Biology. University of Chicago Press, 1999, 440 pp.

David Hull and Michael Ruse (editors), The Philosophy of Biology. Oxford University Press, 1998, 772 pages.

The book by Sterelny and Griffiths is a textbook, and it will constitute the chief reading for the course. We will read nearly all of it through the semester—12 of the 15 chapters, or around 300 pages. It offers broad coverage of all of the topics that we will discuss, and is written in the opinionated and engaging style that has come to typify texts written by its first author.

The Hull and Ruse anthology contains original papers that have been especially important for many of the topics we will discuss, as well as some relatively, short, clear overview essays on a smaller number of those topics. Each section also contains a useful, brief introduction to papers in that section, and many of you will find these of use. We will read a smaller percentage of this book, but about the same amount as from the Sterelny and Griffiths (half required, half optional).

These are books that I considered using last time I taught the material in this course (in Fall 2001), but I opted then to stick with the introductory text by Elliott Sober, as well as his complementary anthology. This time I'm ready to take the plunge.

Both books are available from the university bookstore in Sub; please let me know if you have difficulty buying them. Both books will also be placed on reserve in Rutherford Library. In addition, the book by Hull and Ruse is available as an **e-book** from the library.

Further Readings

A list of books of further interest is provided in **G**. To further pique your interest in these books, note that there is a *minor assignment* based on your explorations here; see **E** and **G** below.

E. WORKLOAD AND COURSE REQUIREMENTS

The reading load for the course is moderate in quantity and moderate-difficult in level: it is about 35 pages of required reading per week, spread fairly evenly through the semester. The writing load for the course is moderate. Assessment will be determined as follows:

- (a) a short (1-2 page) report on your investigation of one or more of the books listed under “Other Books of Interest” in **G**, due at the beginning of Week 3 (10%);
- (b) a mid-term examination based on material covered in weeks 1-7, to be held in Week 8 or so (30%);
- (c) a term paper of 2500-3000 words (30%), due at the end of classes;
- (d) a final examination, covering material from the whole course (30%).

This assessment scheme is designed with two chief goals in mind: to encourage you to keep up with the work for the course on a week-by-week basis, and to do what is possible to minimize that end-of-term crunch that is so unpleasant for everyone. Achieving the second of these goals depends, to a large extent, on your striving to achieve the first: that way you can have the substantive work on (c) done prior to the last few weeks of class. It should also provide you with some early and intermittent feedback about how you are doing in the course, and help you to identify both strengths and weaknesses that you can work on as the course develops. Those who put in a steady effort through the semester should (i) accumulate an impressive % of their total grade well before the end of classes, (ii) be well-placed to write a strong term paper and whip through the final, and, most importantly, (iii) learn a lot.

I will distribute a list of topics for the term paper just after the mid-term. You should plan (NOW) to work on it through Weeks 9-12 of the semester, and strive to complete it in advance of the formal deadline. I would be happy to discuss a draft of the term paper with those who have drafts ready within this time frame.

Late papers and assignments are not particularly welcome, and you should talk to me in advance about a paper which will not be submitted by the due date, and expect to be penalized for a late paper that does not have a written extension from me. In general, I penalize at a grade a day for late papers and assignments; in extreme cases, a late paper will receive a grade of *zero*. Please take this general policy seriously.

PLAGIARISM PLAGIARISM PLAGIARISM PLAGIARISM

Finally, what I hope is a reminder for most of you: that **plagiarism** is a seriously academic offense that is grounds for disciplinary action. The first item under “Inappropriate Academic Behaviour” in the University of Alberta’s Code of Student Behaviour reads:

30.3.2(1) Plagiarism

No Student shall submit the words, ideas, images or data of another person as the Student’s own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

This document can be found at:

<http://www.ualberta.ca/%7Eunisect/policy/sec30.html>

The University also maintains a more general website on plagiarism:

<http://www.library.ualberta.ca/guides/plagiarism/>

that includes much useful information, especially in the section (sidebar, right) on “Avoiding Plagiarism”. I would encourage you to consult both early in the course if you are unfamiliar with their contents and, more generally, **not to risk the consequences of plagiarizing** in this course.

F. A TENTATIVE SCHEDULE

The following schedule will give you some idea of the week-by-week content of the course. Although the schedule is complete in the sense of suggesting topics and readings throughout the entire semester, the “tentative” in “tentative schedule” should be taken seriously and we will adjust the schedule as we go. Sometimes this will be because of how interests in the class are shaping up, sometimes because I have second (or third) thoughts about particular readings as we get closer to the topic they cover, and sometimes for no apparent reason at all. (Just kidding on that last one.) I will try to monitor how you find the topics and readings as we go, and you can help here by letting me know directly when you love or hate a given topic or reading, or find some topic that you would really like to cover but that seems to have been omitted.

The textbook chapters ("Sterelny and Griffiths" below) should provide you with a basic introduction to each topic that we cover. The anthology readings (listed by author, followed by “H+R” together with chapter number) will supplement this basic reading, and will sometimes be discussed in class. These readings will introduce you to original ideas and thinkers, as well as provide you with some resources for further study. They may also need to be read several times. Optional readings (denoted by a "+") will allow you to pursue a topic in more detail than we will have time to cover in class. If you feel that the core readings only scratch the surface of a topic that you have further interest in exploring or have a solid background in, then go to these additional readings as a follow up. I should emphasize that I would expect you to use these readings selectively; read extra when you’re especially interested in the topic and you have time.

I am open to suggestions about what to leave out and what to add, or any other changes that you would like to see in the course. Minimally, you should cast your eye over **C** above and **F** below and think about what you want out of the course. I will give you further directions regarding and suggestions about the readings for a particular class in the preceding class. The brief comments for each section below should serve collectively to give you a more concrete idea of the contents of the course; individually, they provide minimal guidance to the reading(s) for each section and might help to orient you on a weekly basis.

+ = *further reading (optional)*

Section I. Between Science and Philosophy

1. Why the Philosophy of Biology?

<p>Rob Wilson Sterelny and Griffiths +Rob Wilson</p>	<p>Course Outline for Phil 415 [i.e., THIS document in full!] ch.1, "Theory Really Matters: Philosophy of Biology and Social Issues" Critical review of Philip Kitcher’s <i>In Mendel’s Mirror</i> (Oxford University Press, 2003), Human Nature Review, 4 (1 January 2004), pp.1-13. http://human-nature.com/nibbs/04/rawilson.html or see the instructor’s website for a pdf version. [This is the only reading for the course that is in neither of the required books.]</p>
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Philosophy of biology has developed over the past 30 years to be one of the most dynamic and lively areas within the philosophy of science. Here we will try to get a sense of why this is, and what it is that philosophers of biology DO, using the five issues that Sterelny and Griffiths introduce as a guide. In what ways is the philosophy of biology related to biology itself? What can you think of beyond this syllabus that forms part of this area of study?

2. The Standard View

Sterelny and Griffiths ch.2, “The Received View of Evolution”

Charles Darwin was not the first person to develop an evolutionary view of the nature of living things, but his name has become almost inextricably bound up with the theory of evolution. The standard view of evolution traces its roots to Darwin’s *On the Origin of Species* (1859), and is typically viewed as having been articulated through “The Modern Synthesis” in the 1930s and ‘40s. The standard view of evolution is expressed in terms of concepts such as fitness, adaptation, natural selection, and gene pools. Just what was the Modern Synthesis (and what did it synthesize)? What are the distinctive parts of the standard or received view of evolution that crystallized from the Synthesis?

- **First assignment due after this week, in class September 19th, 2005.**

Section II. Genes, Genetics, Development, and Inheritance

3. Challenging the Standard View from the Gene’s Eye Perspective

Sterelny and Griffiths ch.3, “The Gene’s Eye View of Evolution”
 ch.4, “The Organism Strikes Back”
 +Sterelny and Kitcher “The Return of the Gene, H+R, ch.8

A fairly typical view of evolution by natural selection is that the fitter traits of organisms are selected for, and that this process of selection governs the direction of evolution. This view appears to take the unit of selection to be the individual organism, since the benefits of having a particular trait are conferred on organisms. But could there be other units of selection, such as the group "above" or the gene "below"? Here we will begin to examine some of the basic claims and counter-claims in this debate, starting with the gene as a unit of selection. Is the gene’s eye view more parsimonious than other views of natural selection? Why worry about what "the" unit of selection is? In what sense is the gene's-eye view a *reductionist* view?

4. How Developmental Systems Matter

Sterelny and Griffiths ch.5, “The Developmental Systems Alternative”
 Griffiths and Gray “Developmental Systems and Evolutionary Explanation”, H+R, ch.7

+Amundson “Two Concepts of Constraint: Adaptationism and the Challenge from Developmental Biology”, H+R, ch.6

The gene’s eye view has been challenged not only in terms of its view of the level of selection but also on the grounds that it simplifies our view of development. Developmental systems theory (DST) has challenged a number of dominant perspectives on evolution and biology over the last 10 years or so, including the gene’s eye view. In this section we will discuss the basic ideas of DST, and some of their implications. Does DST require overthrowing any dogmas of the "Modern Synthesis"? Are there ways in which DST is anti-evolutionary? Why or why not?

5. Molecular and Mendelian Views of the Gene

Sterelny and Griffiths ch.6, “Mendel and Molecules”
Sterelny and Griffiths ch.7, “Reduction: For and Against”

However we characterize evolution (see week 1), gene pools--their stability, isolation, and modification--are central to the processes leading to evolutionary changes. Genetics provides us with at least two understandings of heredity, classical genetics, which developed from Mendelian genetics through T.H. Morgan, and molecular genetics, a descendant of the perhaps more famous work of Francis Crick and James Watson. Two sets of related, interesting questions arise here. The first concerns the relationship between classical and molecular genetics; the second concerns conceptions of the gene itself. Can the “gene of Mendel” be reduced to a molecular conception of the gene? How are genes themselves best conceptualized? In answering these questions we will discuss the general issue of reductionism in the philosophy of science, as well as consider the kinds of description, metaphoric or otherwise, that are given to the activities of genes (e.g., coding, translation, blueprinting).

Section III. Levels of Selection and the Problem of Altruism

6. The Units of Selection: Organisms and Groups

Sterelny and Griffiths ch.8, “Organisms, Groups, and Superorganisms”
Brandon “The Levels of Selection: A Hierarchy of Interactors”, H+R, ch.9
+Sober and Wilson “A Critical Review of Philosophical Work on the Units of Selection Problem, H+R, ch.10

Group selection is thought by many to have been buried by the work of George Williams and William Hamilton in the 1960s. The biologist David Sloan Wilson and the philosopher Elliott Sober, individually and collectively, have mounted a spirited campaign of resurrection. They defend group selection as part of a "multilevel theory of selection", and have appealed to group selection in more recent work on altruism, group minds, and superorganisms. Here we will focus on filling out the understanding of the levels of selection problem that we have already met in discussing genic selection, and positioning views of group selection among other views. What is the multilevel view of selection that Sober and Wilson adopt, and how is it related to pluralism

and reductionism about the levels of selection? Is there something puzzling about the idea of group selection? Why or why not?

7. The Problem of Altruism

Rosenberg	“Altruism: Theoretical Contexts”, H+R, ch.22
Sober	“What is Evolutionary Altruism”, H+R, ch.23
+Wilson	“On the Relationship between Evolutionary and Psychological Definitions of Altruism and Selfishness”, H+R, ch.24

The phenomenon of *altruism* is typically presented as a problem for standard, individual- or gene-centered views of evolution. After explaining why, we will examine some of the differences between evolutionary and psychological views of altruism, and address the issue of how both forms of altruism might evolve. Why is altruism a prima facie problem for some views of evolution? How could altruism evolve?

- **Mid-term exam coming up around here (30%)**

Section IV. The Species Problem

8. Species Essentialism and Individuality

Sterelny and Griffiths	ch.9, “Species”
Mishler and Brandon	“Individuality, Pluralism, and the Phylogenetic Species Concept”, H+R, ch.14

Systematics concerns the taxonomy of organisms into species, the relationships between species kinds, and the bases for phylogenetic inferences about these relationships. We will be focusing here on the first of these issues. As the title of a 1965 paper by David Hull--"The effect of essentialism on taxonomy--2000 years of stasis"--suggests, some philosophers and biologists have thought that a traditional way of thinking of species membership--as involving essential properties that all members in a species share--has been stifling. Essentialist styles of thought have been contrasted with what, following Ernst Mayr, many call “population thinking”, and the rejection of essentialism about species has been thought to support the idea that species are *individuals*, rather than natural kinds. Phylogeny is widely viewed as being part of what individuates species taxa from one another. Here we will be concerned to unpack each of these views, and try to figure out their relationship to one another. What is *essentialism* in biology, and is it misleading in the ways claimed? What does the species-as-individuals thesis say, and are there good reasons to think it is true?

9. The Nature of Species: Contemporary Views

Sterelny and Griffiths	ch.9, “Species” (again)
De Queiroz & Donoghue	“Phylogenetic Systematics and the Species Problem”, H+R, ch.15
+Ereshefsky	“Eliminative Pluralism”, H+R, ch.16

Here we turn to concentrate on phylogenetic views of species, and some of the radical implications that they have been claimed to have for our system of taxonomy. Amongst these is the idea that we ought to replace the standard system of taxonomic nomenclature that derives from Linnaeus with another system, the Phylocode (see <http://www.ohiou.edu/phylocode/>). We will also investigate the various competing conceptions of species, and ask some general, philosophical questions about the significance of these diverse views. In what ways is the existing Linnaean system of classification problematic or outdated? Are there good reasons for thinking that some sort of pluralist view of species is plausible?

Section V. Adaptation and Ecology

10. Adaptation and Adaptationism

Sterelny and Griffiths	ch.10, “Adaptation, Perfection, Function”
West-Eberhard	“Adaptation: Current Usages”, H+R, ch.1
Dennett	“The Leibnizian Paradigm”, H+R, ch.3
+Gould and Vrba	“Exaptation—A Missing Term in the Science of Form”, H+R, ch.4

To say that organisms are adapted to their current environments and that many traits they possess are present because they are adaptations may sound like saying the same thing twice. But the second introduces an idea not present in the first, a claim about the history of an organism's present traits. Loosely put, adaptationism is the idea that models of evolution that represent natural selection as the primary or sole force of evolutionary change can adequately explain the existence of most (all?) phenotypic traits. As a research program, adaptationism has been attacked by Stephen Jay Gould and Richard Lewontin as "Panglossian" in its character, and as representing a restrictive perspective on evolutionary thought. Dennett argues, in response, that such views seriously misrepresent the role that adaptationism plays in structuring evolutionary biology. What are adaptations, and how should they be thought of? Should adaptationism be rejected? Why or why not?

11. Conceptualizing Ecology

Sterelny and Griffiths	ch.11, “Adaptation, Ecology, and the Environment”
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“Ecology” was coined by the 19th-century German biologist Ernst Haeckel to refer to the science that studies the “struggle for existence”. So conceived, ecology has a close relationship to evolution, but this relationship has shifted as ecology itself has changed over the 20th-century. In

this section of the course we will discuss some of the contours of these changes, and the core concepts that have driven them: the ecological niche, the balance of nature, and ecological succession. Which conceptions of ecology are adaptationist, and why? How should we think about the different levels at which biological entities are organized—organisms, populations, communities, ecosystems—and how they are related?

Section VI. Human Nature, Sociobiology & Evolutionary Psychology

12. Is There a Human Nature?

Hull	“On Human Nature”, H+R, ch.18
Keller	“Gender and Science: Origin, History, and Politics”, H+R, ch.19
+Maynard Smith	“Science and Myth”, H+R, ch.17

Appeals to human nature have structured ethical and political views at least since Plato’s *Republic*. Here we will concentrate on issues that arise in approaching the topic of human nature from a biological perspective. Social constructivists are typically critical of the very idea of human nature—human nature is something that we make, through our individual and collective social activities, not something that we discover, say, through science. But one might well be skeptical about appeals to human nature without accepting this constructivist view. Apart from making some opening moves in this debate, here we will also attend to gender and its study in science. What might the biological sciences tell us about human nature? Are there historical reasons to be cautious about appeals to human nature?

13. Darwinian Views

Sterelny and Griffiths	ch.13, “From Sociobiology to Evolutionary Psychology”
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Sociobiology caused a storm when it emerged in the 1970s, as epitomized in E.O. Wilson’s *Sociobiology: The New Synthesis* (1975), in part because it was thought to misrepresent human nature. Contemporary evolutionary psychology has been viewed as an extension of sociobiology by some, and as subject to the same charge. Evolutionary psychology has several distinct sources and modes. One central paradigm within evolutionary psychology has been that developed by the anthropologist John Tooby and the psychologist Leda Cosmides, who view evolutionary psychology as blending the computational paradigm within cognitive science with Darwinian biology and advocate its revolutionary implications for thinking about the mind. After getting a sense of the diversity of work in evolutionary psychology, we will focus on the criticisms that Sterelny and Griffiths offer. What is the place of evolutionary psychology in the study of the mind? To what extent do the examples of evolutionary psychology incorporate or avoid questionable social assumptions?

- **Term paper due shortly after the end of classes (30%)**

G. THE BAKER'S DOZEN and your FIRST ASSIGNMENT

Here is a briefly annotated, short list of other books that may be of interest to you, either as general background or further reading, that correspond to the topics covered throughout this course. Some of these books are fairly introductory and easy to read, others fairly sophisticated and more difficult. About half the authors are philosophers, one-third biologists (with a sprinkling of others thrown in for good measure). The chief topics in the course outline that these books discuss are denoted by [Week] at the end of each entry.

Peter Beurton, Raphael Falk, and Hans-Jorg Rheinberger (editors), *The Concept of the Gene in Development and Evolution: Historical and Epistemological Perspectives*. Cambridge, 2000. A collection of essays by philosophers, historians, and biologists on classical and molecular views of the gene in different explanatory contexts. [Week 5]

David J. Buller, *Adapting Minds: Evolutionary Psychology and the Persistent Quest for Human Nature*. MIT Press, 2005. A sustained exploration and critique of evolutionary psychology modeled on Philip Kitcher's classic attack on sociobiology. [Weeks 1-2, 12-13]

Gregory Cooper, *The Science of the Struggle for Existence: On the Foundations of Ecology*. Cambridge, 2004. One of the first book-length, philosophical treatments of the foundations of ecology that takes up central ideas, such as the balance of nature and the nature of niches. [Weeks 10-11]

Richard Dawkins, *The Selfish Gene*, Oxford, 1989. The 2nd edition of Dawkins' 1976 popular classic that champions the idea that the gene is *the* unit of selection. Contains several interesting additional chapters (chh.12-13) to those in the 1st edition. [Weeks 2-3]

Richard Dawkins, *The Extended Phenotype*. Oxford, 1982. A sophisticated development of many of the ideas in *The Selfish Gene*, written primarily for his biological colleagues but still quite accessible. [Weeks 2-3]

David Depew and Bruce Weber, *Darwinism Evolving: Systems Dynamics and the Genealogy of Natural Selection*. MIT, 1995. A wide-ranging, historical overview of the Darwinian paradigm, with some guesses about its future.

Marc Ereshefsky, *The Poverty of the Linnaean Hierarchy*. Cambridge, 2001. A critique of the dominant taxonomic system that defends a pluralist view of biological taxonomy and proposes a system to replace the Linnaean hierarchy. [Weeks 8-9]

Eva Jablonka and Marion Lamb, *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life*. MIT Press, 2005. An introduction to and overview of the authors' view of the three inheritance systems beyond the gene that is written for a general audience. [Weeks 3-4]

Ernst Mayr, *The Growth of Biological Knowledge*. Harvard, 1982. An accessible history of thinking in evolutionary biology by one of the major 20th-century figures in that history.

Oyama, S., Paul Griffiths, and Russell Gray (eds.), *Cycles of Contingency*. MIT Press, 2001. Mostly new essays on developmental systems theory and its implications both biological and philosophical. [Weeks 3-4]

Elliott Sober and David Sloan Wilson, *Unto Others: The Evolution and Psychology of Unselfish Behavior*. Harvard, 1998. A much-discussed book that focuses on evolutionary altruism and its relationship to both group selection and psychological altruism. [Weeks 6-7]

Robert A. Wilson (ed.), *Species: New Interdisciplinary Essays*. MIT Press, 1999. A collection that focuses on pluralism and unity in the species debate, with contributions from philosophers, biologists, psychologists, and anthropologists. [Weeks 8-9]

Robert A. Wilson, *Genes and the Agents of Life*. Cambridge, 2005. Focus on the question of what the agents of life are in various areas of biological inquiry, with discussions of genes, organisms and groups. [Weeks 4, 6, 9]

To encourage you to stretch your curiosity about the course, here is your first assignment.

First Assignment:

Write a short report (i.e., 300-600 words for undergraduates) on your reading of at least one chapter of one of the books above. Choose a book that interests you in some way, and explain what your interest is and what you found on that interest in the book you chose. Here I will not be looking for anything too deep, but evidence that you have taken the time to think about your own interests in the course and an ability to do some basic research.

10% of your final grade; due in class on Monday, 19th September.

H. ABOUT THE INSTRUCTOR

Rob Wilson has been a professor at the University of Alberta since 2000, having taught previously at Queen's University (1992-1996) and the University of Illinois, Urbana-Champaign (1996-2001). He took his doctorate in Philosophy at Cornell University from 1987 to 1992, where he also minored in Cognitive Studies. His chief research interests are in the philosophy of mind and cognitive science, and the philosophy of biology. He is honoured to be a member of the Luxuriant Flowing Hair Club (<http://www.improb.com/projects/hair/hair-club-top.html>), and is author or editor of six books, the most recent of which are *Boundaries of the Mind* (2004) and *Genes and the Agents of Life* (2005).

Appendix

The Dean of the Faculty of Arts, in a memorandum circulated after this course outline was completed, provided the following information, some of which is REQUIRED to be included in every course outline. So, here it is:

“(iii) *Course Requirement, Examinations, Evaluation Procedures and Grading* ... □

- a. At the beginning of each course, instructors are required by GFC to provide a course outline which must include the following:
 - i. a statement of the course objectives and general content.
 - ii. a list of the required textbooks and other major course materials.
 - iii. an indication of how and when students have access to the instructor.
 - iv. the distribution of weight between term work and final examination.
 - v. identification of all course activities worth 10% or more of the overall course mark.
 - vi. whether marks are given for class participation and other in-class activities as well as the weight of such participation.
 - vii. dates of any examination and course assignments with a weight of 10% or more of the overall course mark.
 - viii. the manner in which the official University grading system is to be implemented in that particular course or section, i.e., whether a particular distribution is to be used to determine grades, or whether there are absolute measures or marks which will determine them, or whether a combination of the two will be used. (GFC 29 SEP 2003)

- b. Every course outline should contain the following statement:

‘Policy about course outlines can be found in ' 23.4(2) of the University *Calendar*.’ (GFC 29 SEP 2003).

- c. Every course outline should contain the following statement:

‘The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.ualberta.ca/secretariat/appeals.htm) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.’ (GFC 29 SEP 2003)’

In accordance with [(iii) a vii] above, the date for the mid-term examination for Phil 317 is **Friday, October 21st, 2005**. This date will be confirmed in class by the beginning of October, and the instructor reserves the right to modify it in light of his best judgment as to the progress of the class. In accordance with [(iii) a viii] above, this is to inform you that individual grades will be determined by the quality of the individual work submitted in accordance with individual class assignments, with borderline cases resolved at the discretion of the instructor.