

**Philosophy of Biology**  
**Philosophy 4306/ Biology 4306**  
**Sam Houston State University**  
**Spring 2018**

**Instructor:**

Charles Royal Carlson, PhD  
Office: CHSS 340  
Office Hours: Tuesdays 12:00-2:00pm and by appointment  
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Course Location: Lee Drain Building Room 220  
Course Time: 2:00-4:50pm Tuesdays

**Course Description:**

Evolutionary Biology stands as one of the most influential and successful branches of sciences. It is also a field well suited for philosophical inquiry. In this course we investigate both the big picture questions such as how does the entirety of nature hang together, and also seek to help clarify the meanings of terms we use to talk about nature. Along the way we will look at questions about how to define the fundamental units of biology such as genes and species, as well as look at natural selection, sexual selection and genetic drift. We will also look at the origins of curious behaviors such as altruism, cooperation, mate choice, the diversity of life and the apparent 'fit' of organisms to their environment. The philosophical implications of recent work on topics such as hybridization, epigenetics, and tropic ecology will also be discussed.

**Required Reading Materials:**

Philosophy of Biology: A Contemporary Introduction  
Alex Rosenberg and Daniel W. McShea  
Routledge, 2012

Other reading selections will be made available through our course page.

**Office Hours and Appointments**

It is important that you feel comfortable to meet with me outside of class time about any issue pertaining to the course. The easiest way to arrange a meeting is to let me know that you are coming by either by speaking to me after class or by sending an email. You may, of course, just stop by my office hours. If my posted office hours conflict with your availability we can always arrange to meet at a time that works for you. Should you choose to contact me by e-mail, please remember to use appropriate etiquette.

**Grading:**

Short Explanation Papers: 30%  
Exam #1: 20%  
Exam #2: 20%  
Research Paper: 30%

**Grading Policy**

It is important that you feel comfortable asking questions about the grades I assign to your work. You should feel free to discuss any issues you have about graded materials, but are encouraged to first take the assignments home, look at the comments, and reread what you

wrote. If you would like to discuss your grade you are encouraged to arrange a meeting with me to do so.

### **Writing Enhanced:**

This is a “W” course, which means that a minimum of 50 percent of your course grade must derive from writing activities designed to help you master course objectives. This class meets this requirement as the short explanation papers account for 30% of your grade and the Research Paper also accounts for 30% of your grade. There is also writing required for the short answer and essay portions of the exams. Some writing activities will require you to draft and revise your work, with or without instructor feedback. You should approach writing in this course as a tool to use as part of your learning as well as a tool your instructor will use to assess your level of learning. This course satisfies the requirements for being listed as “writing enhanced” by providing all students with the opportunity to receive feedback on drafts of the Research Paper and because the Explanation Papers provide students an ongoing place to practice clarifying and making good written arguments as well as to receive low-stakes feedback from their peers - to which they may respond. The writing skills that are developed on the Explanation Papers, along with the opportunity to incorporate feedback from the instructor and from fellow students, are then deployed in the creation of the Research Paper for the course.

### **Assignments and Expectations**

#### ***The Two Exams***

The content of the two exams will be derived from both the lectures and the assigned readings. They will be take-home exams. Potential essay topics will be distributed a few days before the exam is distributed. Study groups are encouraged for collaboration on the study guide, but no collaboration is allowed after the exams are distributed. (20% of final grade for each)

#### ***Explanation Papers***

At six times throughout the course you will submit a short explanation of one of the papers under discussion for that day, you will then do a little philosophy of your own and make an argument defending a specific thesis related to the questions raised in the reading. 400 word minimum. Explanation papers are due before the start of class on that day. (5% each for 30% of final grade)

#### ***Research Paper***

The research paper should be seen as a culmination of your work in the course and a chance to do serious research on a topic of great interest to you. The crafting of the structure of the paper as well as the gathering of the research will be a semester long project. I will gladly look at drafts as they are ready. Papers will be uploaded to turnitin.com. More details will be provided in class. (30% of the final grade)

#### ***Attendance and Participation***

Students are expected to prepare for each meeting of class and contribute thoughtful and reasoned questions and comments to class discussion. Please read all materials before coming to class. It helps to mark up the readings and jot down ideas and sources of confusion while you read. Please bring your books and any assigned articles to class and feel free to share any ideas or confusions during class time. Thoughtful and reasoned questions and comments are crucial to class discussions. This is a seminar-like class where the discussion among the class is

important to the value of the class itself. Think about ways to apply the ideas that we discuss to what you already know to test them, and think about comparisons and contrasts with other thinkers we look at. As a general rule, you should come to every class every day with something to say, even if it is never said. Avoid missing class. Much of the material for the exams will be covered in class and it will be difficult to succeed without superb attendance. This is particularly important as we only meet once a week and every absence is the equivalent of missing three MWF classes.

### ***Extra Credit***

There are two opportunities for extra credit. The first involves replying to the arguments made in the Explanation papers of other students and the second is by taking in-class notes and posting them on the Discussion Board. More explanation of these two opportunities will be provided in class.

### **Schedule for Readings and Assignment Due Dates**

Readings listed on a given day are to be read before class on that day. Readings from the textbook are marked (PB) and those that are available online through the SHSU Library are marked (CP). Please keep in mind this is not a final reading schedule; changes may be incorporated during the semester and will be announced in class and on the course page.

#### **Week One: Introduction to Course**

January 23rd

#### **Week Two: Darwin Makes a Science Part 1**

January 30th

PB Introduction and Chapter 1

#### **Week Three: Darwin Makes a Science Part 2**

February 6th

Darwin *On The Origin of Species: By Means of Natural Selection* – Chapters 1, 3 and 4  
(ebook of Darwin available for free download from library)

Ernst Mayr - “Typological versus Population Thinking” (CP)

*Explanation Paper #1 Due February 5th*

#### **Week Four: Biological Laws and Theories Part 1**

February 13th

PB Chapter 2

#### **Week Five: Biological Laws and Theories Part 2**

February 20th

Nancy Cartwright: “Do the Laws of Physics State the Facts?” (CP)

Ernst Mayr – “Species Concepts and Their Application” (CP)

David Hull - “A matter of individuality” (CP)

*Explanation Paper #2 Due February 19th*

#### **Week Six: Constraint, Drift, Function Part 1**

February 27<sup>th</sup>  
PB Chapter 3

*Exam #1 Distributed Feb 27<sup>th</sup> Due March 4<sup>th</sup>*

**Week Seven: Constraint, Drift, Function Part 2**

March 6<sup>th</sup>

Gould and Lewontin “The Spandrels of San Marcos” (CP)  
Shanahan – “Why don’t zebras have machine guns? Adaptation, selection, and constraints in evolutionary theory.” (CP)  
Kokko and Heubel, “Condition-dependence, genotype-by-environment interactions and the lek paradox” (CP)

*Explanation Paper #3 Due March 5<sup>th</sup>*

**Week Eight:**

No class March 13<sup>th</sup> (Spring Break)

**Week Nine: Reductionism and Emergence Part 1**

March 20<sup>th</sup>

PB Chapter 4

**Week Ten: Reductionism and Emergence Part 2**

March 27<sup>th</sup>

Eliot Sober – “The Multiple Realizability Argument Against Reductionism” (CP)  
W.C. Wimsatt, “Aggregativity: Reductive Heuristics for Finding Emergence.”(CP)  
Martin Nowak – “Evolution of Cooperation” (CP)

*Explanation Paper #4 Due March 26<sup>th</sup>*

**Week Eleven: Complexity, Directionality, and Progress Part 1**

April 3<sup>rd</sup>

PB Chapter 5

**Week Twelve: Complexity, Directionality, and Progress Part 2**

April 10<sup>th</sup>

Robert Richards – “The Moral Foundations of the Idea of Evolutionary Progress: Darwin, Spencer, and the Neo-Darwinisms”(CP)  
Stephen Jay Gould – “On Replacing the Idea of Progress with an Operational Notion of Directionality”(CP)  
David Sloan Wilson – “On the Relationship between Evolutionary and Psychological Definitions of Altruism and Selfishness.” (CP)  
Gilbert et al – “High relatedness maintains multicellular cooperation in a social amoeba by controlling cheater mutants” (CP)

*Explanation Paper #5 Due April 9<sup>th</sup>*

**Week Thirteen: Units of Selection and Geneocentrism Part 1**

April 17<sup>th</sup>

PB Chapter 6

**Week Fourteen: Units of Selection and Geneocentrism Part 2**

April 24<sup>st</sup>

Stephen Jay Gould – “The evolutionary definition of selective agency, validation of the theory of hierarchical selection, and fallacy of the selfish gene.” (CP)

Sterelny, Smith and Dickison – “The Extended Replicator” (CP)

Gould and Vrba – “Exaptation – A Missing Term in the Science of Form” (CP)

*Explanation Paper #6 Due April 23rd*

*Research Paper Due: April 25th*

**Week Fifteen: Biology, Human Behavior, Social Science and Moral Philosophy**

May 1st (last class day)

PB Chapter 7

Michael Ruse and E.O. Wilson – “The Evolution of Ethics” (CP)

*Exam #2 Distributed May 1<sup>st</sup> Due May 7th*

**May 7<sup>th</sup> at 3:30pm - Exam #2 Due**

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Institutional policies and requirements regarding Q-drops, dates of religious observance, academic dishonesty, disabilities accommodations, etc., may be found at the following link: <http://www.shsu.edu/syllabus/> Please familiarize yourself with the policies.

STANDARD POLICIES: I have extracted from the full statement a key element as a reminder of the policy in its entirety, but the student must download the posting on SHSU Online to have the full policy statement. Here are the four points of particular note:

- (1) NOTICE TO PERSONS WITH A DISABILITY: No accommodation can be made until you register with the Counseling Center. There will be no retroactive accommodations.
- (2) ACADEMIC DISHONESTY: Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action.
- (3) CLASSROOM RULES OF CONDUCT: Students are expected to assist in maintaining a classroom environment that is conducive to learning.
- (4) COURSE EVALUATIONS: In accordance with University policy, students will have an opportunity near the end of the semester on a set day and time to complete a course evaluation.