

# HPS 1620: Philosophy of Biology

Fall 2019

Thursday 6-8:30 PM

Cathedral of Learning 208B

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Office Hours: 1:30-2:30PM Tues. and by appointment

- 1. Course Description.** Biology—the study of life—takes living organisms as its subject matter. Philosophy of biology, in similar fashion, takes the science of biology as its subject matter. As part of philosophy of science, philosophy of biology aims to understand the ways in which biological knowledge is produced. Methodologically, there are at least two different ways to do philosophy of biology. First, philosophy of biology can bring philosophical tools and analysis to bear on conceptual puzzles in biology. For instance, philosophers of biology have devoted considerable attention to analyzing various concepts of evolutionary theory, such as ‘fitness’ and ‘function’. Second, philosophy of biology can explore various topics of general philosophy of science within the context of biology. In this second vein, philosophers of biology have considered questions about the status of laws in biology and the relationship between successive theories of genetics. In this introductory course, we will consider some of the core issues in philosophy of biology from both perspectives. There are no prerequisites, and no background knowledge in either philosophy or biology is required. The course is designed for students interested in philosophy, biology, or science more generally.
- 2. Course Learning Objectives.** This introductory philosophy of biology course aims for students to develop certain skills and dispositions that are important for both philosophical engagement with the biological sciences as well as more general critical engagement with arguments from other academic and non-academic fields. The table below lists the primary course objectives along with the assessments that will be used to measure student mastery.

<b>By the end of this course, you will be able to do the following:</b>	<b>Assessments</b>
1. Recognize and summarize arguments from philosophical and biological texts.	Active Reading Assignment, Argument Reconstructions, Mini Paper, Term Paper
2. Critically evaluate these arguments, identifying their strengths and weaknesses.	Argument Reconstructions, Mini Paper, Term Paper
3. Develop and defend a philosophical position or scientific thesis in a clear, well-structured argumentative essay.	Argument Reconstructions, Mini Paper, Term Paper
4. Apply philosophical and analytical tools to novel problems and context that are important and relevant to your interests.	Term Paper, Final Creative Project
5. Become a more curious and self-reflective learner, better able to identify what you need to do in order to achieve your own learning goals.	End-of-Class Reflections, Participation Paper, Final Creative Project

3. **Texts.** All readings for the course will be available on CourseWeb. You should bring copies of all the weekly texts to each class meeting. Additional resources and recommended texts can be found on CourseWeb.

4. **Graded Assessments.**

Please see CourseWeb for further instructions, submission information, and rubrics for these assignments.

*Reading (10%)*

- Active Reading Assignment (2 x 5%)

*Writing (50%)*

- Argument Reconstruction (2 x 5%)
- Mini Paper (10%)
- Term Paper (30%)

*Participation & Metacognition (25%)*

- End-of-Class Reflections (10%)
- Midterm Participation Paper (5%)
- Pick & Choose Participation (4 x 2.5%)

*Final Creative Project (15%)*

Further instructions and rubrics will be provided on CourseWeb.

*Active Reading Assignment (2 x 5%):* Using the method outlined in David Concepción's (2004), "Reading Philosophy with Background Knowledge and Metacognition," you will mark up and hand in your copy of selected readings. Through this exercise, you will learn to identify various features of philosophy papers (e.g., thesis, arguments, definitions, distinctions, etc.) and begin the process of mastering effective notetaking.

*Argument Reconstructions (2 x 5%):* Twice during the term, you will be asked to reconstruct the main argument from one of the philosophy papers we read for class. Your summary should be 300-500 words and should present that argument in your own words without any critical evaluation. You will be assessed on the content—i.e., your correct identification of the argument—as well as your writing.

*Mini Paper (10%):* The mini paper serves as a bridge between the argument reconstructions and the term paper. In this paper, you will be tasked with reconstructing the argument from one of the papers we read in class, as before, but you will then need to provide a critical evaluation and assessment of the argument. Your evaluation should include a defense of your own thesis regarding the author's argument. The mini paper should be 600-900 words in length.

*Term Paper (30%):* You will write a 1,400- to 1,800-word essay addressing an important philosophical issue relevant to philosophy of biology, on a topic of your choosing. You will be graded both on the final essay (20%) and at various stages during the essay drafting process (10%). Everyone will have the opportunity to revise and resubmit their final essay to receive up to half of the points lost.

*End-of-Class Reflections (10%):* At the end of most class sessions you will have the opportunity to reflect on your learning during that session. You will be asked to address something you learned and to identify questions raised by our discussion and learning activities. There will be 12 weeks in which you can submit a reflection, but only 10 will be counted toward your final grade. You must be present for the entire class session in order to submit a reflection.

*Midterm Participation Paper (5%):* You will produce a 2 to 3-page paper reflecting on your participation during the course. This paper will provide a self-evaluation that identifies your modes of participation and shows how your participation has helped you and your classmates achieve the learning objectives for the course.

*Pick & Choose Participation (10%):* The remainder of the participation grade provides flexibility for you to choose how you can best demonstrate your preparation for and active participation in the course. You should choose four from among the following list. All of the options are equally weighted and will be graded out of a possible 2.5%. Certain options can be chosen more than once, as indicated. Although these will not be graded solely on completion, a good faith attempt will guarantee a minimum grade of 2/2.5%.

- Meeting with professor to discuss paper, project, or other course topics (max 1)
- Final participation paper (max 1)
- In-class presentation of creative project (max 1)
- Contributions to discussion board (max 2)
- Additional active reading assignment (max 1)
- Reading reflection papers (max 2)

*Final Creative Project (15%):* The final creative project serves as a way for you to apply the philosophical and analytical skills you have acquired from the course to other topics you find interesting and relevant, using a novel format. It is an opportunity for you to integrate philosophy with your other academic and non-academic interests. The format of the project is open. For instance, you may choose to create a podcast or blog post, write a short play or dialogue, construct a video or board game, or write and illustrate a children's book. Your grade will be based on the project itself, as well as your proposal and a short author's statement and reflection paper. You may choose to present your final project in class to fulfill part of your participation grade.

## 5. Grading Policies.

*Late Work.* All work is due by the specified date and time. If work is submitted late, it will be penalized by 5% for each 24h period it is late. Active reading assignments and argument reconstructions submitted after the beginning of class will not be accepted. Exceptions may be provided for health, familial, or religious obligations on a case-by-case basis.

*Anonymous Grading.* I practice anonymous grading for all written work in order to eliminate the effects of implicit bias, which have been shown to affect even those who do not hold explicitly prejudiced beliefs (<http://plato.stanford.edu/entries/implicit-bias/>). We will discuss in class how to anonymize your submissions to Turnitin.com.

## 6. Inclusivity Statement. I am firmly committed to diversity and equality in all areas of academic life. In this class I will work to promote an anti-discriminatory environment where everyone

feels safe and welcome. I further believe that our ability to understand and grapple with potentially challenging topics is improved by respectfully engaging with a variety of diverse viewpoints and perspectives. Each of us brings a unique set of experiences and knowledge into the classroom. One of the pleasures of the study of philosophy is the ability for each of us to learn from the experience and knowledge of others. I believe the responsibility for learning is distributed among all of us, so your preparation and participation in the class will be a key factor in your success and mine. I value and encourage each of your contributions, and I hope that you will always feel comfortable offering opinions, asking questions, and helping everyone get the most out of the course. To further promote inclusion and civility, I will make every attempt to acknowledge student contributions by name, and I encourage you to learn your classmates' names and pronouns so that you can do the same.

7. **Plagiarism.** Plagiarism, as well as cheating of any kind, will not be tolerated. Please refer to the University of Pittsburgh's policies on academic integrity for details on this subject (<http://www.cfo.pitt.edu/policies/policy/02/02-03-02.html>). We will discuss proper academic citations before any papers are due to help you avoid inadvertent plagiarism. All graded assignments are expected to be new for this course. Students agree that by taking this course all written assignments may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com page service is subject to the Usage and Privacy Policies on the Turnitin.com site.
8. **Writing Center.** Effective written communication is critical to philosophy and to academic discourse. You are strongly encouraged to trade drafts of your writing assignments with your classmates for editing and to make use of the Writing Center at 317B O'Hara Student Center ([www.writingcenter.pitt.edu](http://www.writingcenter.pitt.edu)).
9. **Disability Services and Accommodations.** Your success in this course is important to me, as I believe that every student is entitled to a meaningful and stimulating learning experience. If there are any circumstances that may affect your performance in this class, please let me know as soon as possible so that we can work together to develop strategies for adapting activities and assignments to meet both your needs and the requirements of the course. Additionally, if you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact me and Disability Resources and Services, 140 William Pitt Union, 412-648-7890 as early as possible in the term. For further information on University policy, please visit <https://www.studentaffairs.pitt.edu/drs/>.
10. **Non-discrimination Policy.** The University of Pittsburgh, as an educational institution and as an employer, values equality of opportunity, human dignity, and racial/ethnic and cultural diversity. Accordingly, the University prohibits and will not engage in discrimination or harassment on the basis of race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity and expression, genetic information, disability, or status as a veteran. The University also prohibits and will not engage in retaliation against any person who makes a claim of discrimination or harassment or who provides information in such an investigation. Further, the University will continue to take affirmative steps to support these values consistent with the University's mission.

# SCHEDULE OF READINGS & ASSIGNMENTS

## UNIT 1: PHILOSOPHY OF BIOLOGY & EVOLUTIONARY THEORY

<b>Week 1</b> Aug 29 <sup>th</sup>	Introduction to Philosophy of Biology	<ol style="list-style-type: none"> <li>1. Concepción (2004), Reading Philosophy (17 pgs)</li> <li>2. Griffiths (2008), Philosophy of Biology in <i>Stanford Encyclopedia of Philosophy (SEP)</i> (11 pgs)</li> </ol>
<b>Week 2</b> Sept. 5 <sup>th</sup>	Basics of Evolutionary Theory	<ol style="list-style-type: none"> <li>1. Sober (2000), “Ch. 1: What is Evolutionary Theory” in <i>Philosophy of Biology</i>, 2<sup>nd</sup> ed. (26 pgs)</li> <li>2. Darwin (1859), “Ch. 4: Natural Selection” in <i>On the Origin of Species</i>, pp. 80-87, 90-91, 111-114 (14 pgs)</li> </ol>
Sept. 5 <sup>th</sup>	<b>1<sup>st</sup> Active Reading Assignment</b> on Darwin (1859), selection from the <i>Origin</i> due in class	
<b>Week 3</b> Sept. 12 <sup>th</sup>	Adaptation & Adaptationism	<ol style="list-style-type: none"> <li>1. Pigliucci &amp; Kaplan (2000), “Rise and Fall of Dr. Pangloss” (4 pgs)</li> <li>2. Gould &amp; Lewontin (1979), “Spandrels of San Marco” (18 pgs)</li> <li>3. Godfrey-Smith &amp; Wilkins (2008), “Adaptationism” in <i>A Companion to Philosophy of Biology</i> (14 pgs)</li> </ol>
<b>Week 4</b> Sept. 19 <sup>th</sup>	Systematics	<ol style="list-style-type: none"> <li>1. Velasco (2013), “Philosophy and Phylogenetics” (7 pgs)</li> <li>2. O’Malley (2013), “Prokaryote Phylogeny and the Tree of Life” (9 pgs)*</li> <li>3. Sterelny &amp; Griffiths (1999), “Ch 12: Life on Earth”, Sec. 12.1-12.2 in <i>Sex and Death</i> (11 pgs)</li> </ol>
Sept. 20 <sup>th</sup>	<b>1<sup>st</sup> Argument Reconstruction</b> on Gould & Lewontin (1979) due by 5PM, online submission	
<b>Week 5</b> Sept. 26 <sup>th</sup>	Historical Reasoning & Evolutionary Controversies	<ol style="list-style-type: none"> <li>1. Brusatte et al. (2015), “The Origin and Diversification of Birds” (8 pgs)</li> <li>2. Cleland (2002), “Methodological and Epistemic Differences between Historical Science and Experimental Science” (22 pgs)*</li> </ol>
Sept. 26 <sup>th</sup>	<b>Fieldtrip to Carnegie Museum of Natural History</b> during regular class time Guest lecturer, Dr. Matt Lammana, paleontologist and principal dinosaur researcher at CMNH Topic: Evolutionary Origin of Modern Birds Details: TBA	

## UNIT 2: GROUP SELECTION & CULTURAL EVOLUTION

<b>Week 6</b> Oct. 3 <sup>rd</sup>	Levels of Selection & Group Selection Controversy	<ol style="list-style-type: none"> <li>1. Wilson &amp; Wilson (2008), “Evolution ‘for the Good of the Group’”(10 pgs)*</li> <li>2. Sober (2000), “Ch. 4: The Units of Selection Problem”, Sec. 4.1-4.3 (14 pgs)</li> <li>3. Lloyd (2017), “Units and Levels of Selection,” Sec. 3.1 “Group Selection”, pp. 19-31 in <i>SEP</i> (13 pgs)</li> </ol>
<b>Week 7</b> Oct. 10 <sup>th</sup>	Cultural Group Selection & the Evolution of Cooperation	<ol style="list-style-type: none"> <li>1. Boyd &amp; Richerson (2009), “Culture and the Evolution of Human Cooperation” (7 pgs)</li> <li>2. Caldwell &amp; Millen (2008), “Studying Cumulative Cultural Evolution in the Lab” (9 pgs)*</li> <li>3. Richerson &amp; Boyd (2005), “Ch. 3: Culture Evolves”, pp. 58-79, in <i>Not by Genes Alone</i> (21 pgs)*</li> </ol>
Oct. 10 <sup>th</sup>	<b>2<sup>nd</sup> Argument Reconstruction</b> on Boyd & Richerson (2009), due by 5PM, online submission	
Oct. 11 <sup>th</sup>	<b>Mid-term Participation Paper</b> due by 5PM, online submission	

<b>Week 8</b> Oct. 17 <sup>th</sup>	Evolution of Cognition	<ol style="list-style-type: none"> <li>Heyes (2012), “New Thinking: The Evolution of Human Cognition” (5 pgs)</li> <li>Heyes (2018), “Ch. 1: A Question and Many Answers” in <i>Cognitive Gadgets</i> (17 pgs)*</li> <li>Heyes (2016), “Born Pupils? Natural Pedagogy and Cultural Pedagogy” (13 pgs)*</li> </ol>
Oct. 18 <sup>th</sup>	<b>Creative Project Proposal</b> due by 5PM, online submission <b>Thesis</b> for term paper due by 5PM, online submission	

### UNIT 3: GENES & REDUCTIONISM

<b>Week 9</b> Oct. 24 <sup>th</sup>	Reductionism in Biology	<ol style="list-style-type: none"> <li>Kaiser (2015), “Ch 3. Third Lesson: Tell Apart Different Types of Reduction,” Sec. 3.1-3.3 in <i>Reductive Explanation in the Biological Sciences</i>, pp. 66-81 (15 pgs)</li> <li>Sterelny &amp; Griffiths (1999), “How Theories Relate”, Sec. 6.1 (9 pgs)</li> </ol>
Oct. 24 <sup>th</sup>	<b>5-Sentence Paper</b> due in class	
<b>Week 10</b> Oct. 31 <sup>st</sup>	Reductionism in Genetics	<ol style="list-style-type: none"> <li>Sterelny &amp; Griffiths (1999), “Ch. 7: Reduction: For and Against” (11 pgs)</li> <li>Waters (1990), “Why the Anti-Reductionist Consensus Won’t Survive” (13 pgs)</li> <li>Dupre (1993), “Ch. 6: Reductionism in Biology: Genetics” in <i>The Disorder of Things</i>, pp. 121-131 (11 pgs)</li> </ol>
Oct. 31 <sup>st</sup>	<b>Mini Paper</b> on either Waters (1990) or Dupre (1993), due by 5PM, online submission	
<b>Week 11</b> Nov. 7 <sup>th</sup>	Developmental Systems Theory	<ol style="list-style-type: none"> <li>Oyama et al. (2001), “Ch. 1: Introduction: What is Developmental Systems Theory?” in <i>Cycles of Contingency</i> (9 pgs)*</li> <li>Sterelny &amp; Griffiths (1999), “Ch. 5: Developmental Systems Alternative” (17 pgs)</li> </ol>

### UNIT 4: STUDENT CHOICE

<b>Week 12</b> Nov. 14 <sup>th</sup>	Student Choice #1: Hot or Classic Topics in Philosophy of Biology Possible topics: sex testing and the Olympics, antibiotic resistance, philosophy of cancer, origin of life, individuality/biological individuals, species problem, or other student-suggested topics	
Nov. 14 <sup>th</sup>	<b>Complete Draft of Term Paper</b> due in class Peer Paper Workshop in class	
<b>Week 13</b> Nov. 21 <sup>st</sup>	Student Choice #2: Hot or Classic Topics in Philosophy of Biology	
Nov. 21 <sup>st</sup>	Deadline to sign-up to present Creative Project in class on Dec. 5 <sup>th</sup>	
Nov. 22 <sup>nd</sup>	<b>Term Paper</b> due by 5PM, online submission	
Nov. 28 <sup>th</sup>	Thanksgiving – No class	
<b>Week 14</b> Dec. 5 <sup>th</sup>	<b>Creative Project Presentations</b>	
Dec. 5 <sup>th</sup>	<b>Creative Project</b> due in class	
Dec. 6 <sup>th</sup>	Optional <b>Final Participation Paper</b> due 5PM, online submission	
<b>Week 15</b> Dec. 12 <sup>th</sup>	Exam Week – No Class and No Exam	
Dec. 13 <sup>th</sup>	Optional <b>Term Paper Revisions</b> due 5PM, online submission	

\* Reading eligible for use as reading reflection or additional active reading assignment for Pick and Choose participation credit.