

# PHIL 3590 / BIOL 3000: Philosophy of Biology

Dr. Trevor Pearce ([tpearce6@uncc.edu](mailto:tpearce6@uncc.edu))

Fall 2022 — MWF 1:25–2:15pm — Colvard 5091

## 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, reading some nineteenth-century accounts of the biological world and its organization as well as several chapters from Darwin's *On the Origin of Species* (1859). Next, we will examine a set of philosophical questions about the process of evolution: e.g., the level at which selection occurs, the role of chance and contingency, the notion of adaptation, the importance of development, etc. We will then turn to conceptual questions in biology more generally: e.g., the nature of functional organization and the use of model organisms in research. Finally, we will explore the connections between biology, psychology, society, and ethics.

## Required Texts

All texts will be PDFs linked from the course website on [Canvas](#).

## Evaluation

15%	Attendance and Participation	
20%	Summaries	
20%	Take-Home Exam	<b>Oct 3–5</b>
20%	Presentation	<b>Nov 28/30 or Dec 2/5/7</b>
25%	Final Paper (1200 ± 200 words)	<b>Due on Dec 14</b>

Your attendance grade (10%) is calculated by dividing attended classes by total classes. **I automatically excuse three absences.** Requests for additional excused absences due to illness, medical emergencies, personal or family emergencies, military orders, or court orders should be made to [Student Assistance and Support Services](#) and not to me directly.

‘Participation’ (5%) means making comments and asking questions that reflect your having read and thought about the text under discussion. **You must bring a copy of the relevant text to each class, or you will not be able to participate effectively.**

For the summaries, at the beginning of each class you will spend five minutes writing a paragraph that includes (a) the main claim or thesis of the reading for that day and (b) the arguments or evidence the author gives to support this claim or thesis. You may use books and notes. I will collect and grade these summaries throughout the semester, though not every class. If you arrive late, you must still hand in your summary at the same time as everyone else. **Late summaries will not be accepted.** Summaries submitted via e-mail will not be accepted. Absence from class is not a valid excuse for not turning in a summary unless you receive accommodation from [Student Assistance and Support Services](#). **The lowest two summary grades will be dropped.**

The take-home exam, which will consist of short- and long-answer questions, will cover the first six weeks of course material. **The exam will be circulated on October 3 and is due on October 5.**

In the last two weeks of the semester (after Thanksgiving break), each student will give a **five-minute “lightning talk” related to their final paper**, with five more minutes for questions afterwards. The last five class sessions will be devoted to these presentations.

Topics for the Final Paper will be circulated by e-mail on November 14. You can also write on a course-relevant topic of your choosing, as long as you clear the topic with me before starting to work on it. I am happy to provide feedback on introductions or outlines if you allow me enough time. **The paper must be submitted via [Canvas](#) by 11:59pm on December 14.** Papers that are too long or too short will be penalized a minimum of half a grade point. Late papers will be penalized half a grade point per day. Papers will be graded anonymously when possible.

## **Class Policies**

The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by announcement in class or by e-mail notice.

All students are required to read and abide by the [Code of Student Academic Integrity](#). Violations of the Code, including plagiarism, will result in disciplinary action as provided in the Code. Definitions and examples of plagiarism are set forth in the Code.

As a condition of taking this course, all required papers may be subject to submission for textual similarity review to SimCheck for the detection of plagiarism. All submitted papers

will be included as source documents in the SimCheck reference database solely for the purpose of detecting plagiarism of such papers. No student papers will be submitted to SimCheck without a student's written consent and permission. If a student does not provide such written consent and permission, the instructor may: (i) require a short reflection paper on research methodology; (ii) require a draft bibliography prior to submission of the final paper; or (iii) require the cover page and first cited page of each reference source to be photocopied and submitted with the final paper.

I will conduct this class in an atmosphere of mutual respect. I encourage your active participation in class discussions. Each of us may have strongly differing opinions on the various topics of class discussions. The conflict of ideas is encouraged and welcome. The orderly questioning of the ideas of others, including mine, is similarly welcome. However, I will exercise my responsibility to manage the discussions so that ideas and argument can proceed in an orderly fashion. You should expect that if your conduct during class discussions seriously disrupts the atmosphere of mutual respect I expect in this class, you will not be permitted to participate further.

All students and the instructor are expected to engage with each other respectfully. Unwelcome conduct directed toward another person based upon that person's actual or perceived race, actual or perceived gender, color, religion, age, national origin, ethnicity, disability, or veteran status, or for any other reason, may constitute a violation of University Policy 406, the [Code of Student Responsibility](#). Any student suspected of engaging in such conduct will be referred to the Office of Student Conduct.

UNC Charlotte is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking. Please be aware that all faculty members are required to relay any information or reports of sexual misconduct they receive. This means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking, I must report the information to the university Title IX Coordinator. If you wish to speak to someone confidentially, there are several on-campus resources that are not subject to this mandatory reporting requirement, e.g., the [Center for Counseling and Psychological Services](#).

This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is indicated on the class roster, please let me know. Feel free to correct me on your preferred gender pronoun. If you have any questions or concerns, please do not hesitate to contact me.

Students who miss classes, examinations or other assignments because of a religious practice or belief must provide reasonable notice of the dates of religious observances on which they will be absent by submitting a [Request for Religious Accommodation Form](#) to the instructor

prior to September 2, 2022.

Students in this course seeking accommodations to disabilities must first consult with the [Office of Disability Services](#) and follow the instructions of that office.

## Reading Schedule

### Early Philosophy of Biology

**Aug 22** No reading

**Aug 24** Comte, “General View of Biology,” pp. 356–365 of *The Positive Philosophy of Auguste Comte* (London: John Chapman, 1853), vol. 1. [1838]

**Aug 26** Comte, “[Research Methods in Biology],” pp. 366–378 of *The Positive Philosophy of Auguste Comte* (London: John Chapman, 1853), vol. 1. [1838]

### Lyell’s *Principles*

**Aug 29** Lyell, “[Transmutation of Species],” pp. 1–18 of *Principles of Geology*, vol. 2 (London: John Murray, 1832).

**Aug 31** Lyell, “[Species and Stations],” pp. 123–140 of *Principles of Geology*, vol. 2 (London: John Murray, 1832).

**Sep 2** Lyell, “[Changing Circumstances],” pp. 141–157 of *Principles of Geology*, vol. 2 (London: John Murray, 1832).

### Darwin’s *Origin*

**Sep 7** Darwin, “[Artificial Selection],” pp. 29–43 of *On the Origin of Species* (London: John Murray, 1859).

**Sep 9** Darwin, “The Struggle for Existence,” pp. 60–79 of *On the Origin of Species* (London: John Murray, 1859).

**Sep 12** Darwin, “Natural Selection,” pp. 80–130 of *On the Origin of Species* (London: John Murray, 1859).

**Sep 14** Darwin, “Natural Selection” [continued]

## **Fitness and Selection**

- Sep 16** Mills & Beatty, “The Propensity Interpretation of Fitness,” *Philosophy of Science* 46 (1979): 263–286.
- Sep 19** Millstein, “Are Random Drift and Natural Selection Conceptually Distinct?” *Biology and Philosophy* 17 (2002): 33–53.
- Sep 21** Okasha, “Multilevel Selection and the Major Transitions in Evolution,” *Philosophy of Science* 72 (2005): 1013–1025.
- Sep 23** Birch, “Are Kin and Group Selection Rivals or Friends?” *Current Biology* 29 (2019): R433–R438.
- Sep 26** NO CLASS [Rosh Hashanah]

## **Adaptation and Evolution**

- Sep 28** Gould & Lewontin, “The Spandrels of San Marco and the Panglossian Paradigm,” *Proceedings of the Royal Society B* 205 (1979): 581–598.
- Sep 30** Barker, “Biological Levers and Extended Adaptationism,” *Biology and Philosophy* 23 (2008): 1–25.
- Oct 3** NO CLASS [Dr. Pearce away at a conference]
- Oct 5** NO CLASS [Yom Kippur]
- Oct 7** Brakefield, “Evo-Devo and Constraints on Selection,” *Trends in Ecology and Evolution* 21 (2006): 362–368.
- Oct 10** NO CLASS [Student Recess]
- Oct 12** Kovaka, “Underdetermination and Evidence in the Developmental Plasticity Debate,” *British Journal for the Philosophy of Science* 70 (2019): 127–152.
- Oct 14** Blount et al., “Contingency and Determinism in Evolution,” *Science* 362 (2018): 1–10.

## **Organisms**

- Oct 17** Wimsatt, “Complexity and Organization,” in Kenneth F. Schaffner and Robert S. Cohen (eds.), *PSA 1972: Proceedings of the 1972 Biennial Meeting of the*

*Philosophy of Science Association* (Dordrecht: D. Reidel, 1972), pp. 67-86.

- Oct 19** Millikan, "In Defense of Proper Functions," *Philosophy of Science* 56 (1989): 288–302.
- Oct 21** Amundson & Lauder, "Function Without Purpose," *Biology and Philosophy* 9 (1994): 443–469.
- Oct 24** Bolker, "Exemplary and Surrogate Models," *Perspectives in Biology and Medicine* 52 (2009): 485–499.
- Oct 26** Clarke, "The Multiple Realizability of Biological Individuals," *Journal of Philosophy* 110 (2013): 413–435.

### **Mind and Behavior**

- Oct 28** Hrdy, "Empathy, Polyandry, and the Myth of the Coy Female," in Ruth Bleier (ed.), *Feminist Approaches to Science* (New York: Pergamon, 1986), pp. 119–146.
- Oct 31** Turkheimer, "Heritability and Biological Explanation," *Psychological Review* 105 (1998): 782–791.
- Nov 2** Longino, "What We Could Know," in *Studying Human Behavior* (Chicago: University of Chicago Press, 2013), pp. 125–150.
- Nov 4** Clatterbuck, "Chimpanzee Mindreading and the Value of Parsimonious Mental Models," *Mind & Language* 30 (2015): 414–436.
- Nov 7** Godfrey-Smith, "Animal Evolution and the Origins of Experience," in David Livingstone Smith (ed.), *How Biology Shapes Philosophy* (Cambridge: Cambridge University Press, 2017), pp. 51–71.

### **Biology and Society**

- Nov 9** Hull, "On Human Nature," in Arthur Fine and Peter Machamer (eds.), *PSA 1986: Proceedings of the 1986 Biennial Meeting of the Philosophy of Science Association*, vol. 2 (East Lansing, MI: Philosophy of Science Association, 1986), pp. 3–13.
- Nov 11** NO CLASS [Veteran's Day]
- Nov 14** Amundson, "Against Normal Function," *Studies in History and Philosophy of*

*Biological and Biomedical Sciences* 31 (2000): 33–53.

- Nov 16** Kitcher, “Is a Naturalized Ethics Possible?” *Behaviour* 151 (2014): 245–260.
- Nov 18** Valles, “Race in Medicine,” in Miriam Solomon, Jeremy R. Simon, and Harold Kincaid (eds.), *The Routledge Companion to Philosophy of Medicine* (New York: Routledge, 2016).
- Nov 21** Richardson, “Sex Contextualism,” *Philosophy, Theory, and Practice in Biology* 14 (2022): 1–17.

### **Presentations**

- Nov 23** NO CLASS [Thanksgiving Break]
- Nov 25** NO CLASS [Thanksgiving Break]
- Nov 28** Student presentations x 4
- Nov 30** Student presentations x 4
- Dec 2** Student presentations x 4
- Dec 5** Student presentations x 4
- Dec 7** Student presentations x 4