

# Genes and Determinism (BIOL89)

## Fall 2020

### **Instructors:**

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### **Office Hours:**

We are available on Wednesday from 4 – 5pm each week to meet via Zoom. If you would like to meet outside of this time please email either of us to arrange a meeting (you can meet with either of us individually, too). Office hours and meetings will be held at our class link: <https://unc.zoom.us/j/98952763238>.

### **Course Description:**

There is a long history of debate about the relative contributions of nature and nurture to determinations of who we are. To what extent are we defined by our genes versus our experiences? We will discuss philosophical and biological approaches to this question. In the past quarter of a century scientific advances have made possible analysis of individual genetic sequence data. However ethical discussions of how to manage these data are in their infancy. A wealth of sequence data has led to questions such as: How do our genetic makeup and our environmental experiences interact with each other? Should genetic predispositions reduce personal ethical responsibility? Can genes predict aggressive behavior and future criminals? This course will review some of the history of the nature/nurture debate and provide a framework to address questions of free will and determinism in light of modern biology.

### **Hybrid Course Format:**

This course will be a hybrid of in person and online meetings. Depending on the content of the class, and the status of COVID-19 throughout the semester we will transition as fluidly as possible between these two modes. We will give you as much notice as possible about when a class meeting will be online or in person. Face to face meetings will be in room 213 of Wilson Hall. Online classes will be held via Zoom at the following link: <https://unc.zoom.us/j/98952763238>.

*This fall semester, while we are in the midst of a global pandemic, all enrolled students are required to wear a mask covering your mouth and nose at all times in our classroom. This requirement is to protect our educational community — your classmates and us – as we learn together. If you choose not to wear a mask, or wear it improperly, we will ask you to leave immediately, and we will submit a report to the [Office of Student Conduct](#). At that point you will be disenrolled from this course for the protection of our educational community. Students who have an authorized accommodation from Accessibility Resources and Service have an exception. For additional information, see [Carolina Together](#).*

### **Our Commitment to You:**

Each of us have different goals and different backgrounds coming into this course. However, these differences are what will make our discussions more engaging as we can learn from one another and explore different perspectives. We want to make our time together in this course

one where you are safe to investigate new ideas, share personal beliefs, and feel respected as a person. We also recognize that we have our own blind spots and implicit biases and would love to hear from you about ways to make our course more inclusive.

We want each of you to be successful. If you feel as though you are struggling please reach out and talk to one or both of us. *We are here to help you!*

### **Learning Objectives:**

1. Explain the problem of free will and the different responses to this problem.
2. Describe relevant biological topics underlying heritability, including classical genetics and epigenetic regulation.
3. Synthesize material from across scientific and philosophical disciplines to analyze current issues in science and society.
4. Organize your thoughts in clear writing. You should grow as both a writer and an editor through peer review sessions.

### **Grading Breakdown:**

Paper #1	20%
Paper #2	20%
Final paper	30%
Reading Checks	20%
Participation	10%

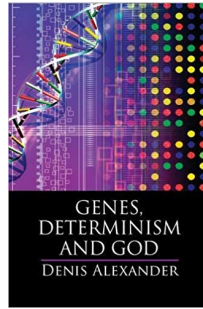
In this course you will be evaluated on two papers and a final paper. Some basic expectations for these papers are listed below. However, you will have the opportunity to tailor the content of these papers based on the concepts that are most interesting to you. We will discuss this process together more during class. You are also expected to come to class having completed the assigned readings, and you should be prepared to participate in discussions. The quality of our time in class depends on this, and it will be reflected in your overall grade. Reading checks will be given to ensure that you read the material. Either homework will be due by the start of class or a quiz will take place at the beginning of class and will last no more than five minutes. The two lowest quiz/homework grades will be dropped when determining final grades.

Papers 1 and 2 should be 3 pages double-spaced (minimum of 1" margins, 12pt Times New Roman or 11pt Arial). Your final paper should be no more than 5 pages double-spaced (minimum of 1" margins, 12pt Times New Roman or 11pt Arial). More details about the paper assignment will be given out later in the semester.

All papers must be handed in on time. There is a 10% penalty for each day a paper is late. Rare exceptions will be made for emergencies or unanticipated circumstances. Anticipated events are not a valid excuse for missing deadlines.

All assignments (reading checks and papers) will be submitted by email to [Bio189genesanddeterminism@gmail.com](mailto:Bio189genesanddeterminism@gmail.com).

## **Required Texts:**



*Free Will*, 2<sup>nd</sup> ed., ed. Gary Watson (Oxford: Oxford University Press, 2005).  
*Genes, Determinism and God*, Denis Alexander (Cambridge University Press, 2017)

## **Other Available Resources:**

The Writing Center at UNC (<https://writingcenter.unc.edu/>)

Whether you think of yourself as an experienced writer or a beginner, The Writing Center offers feedback and coaching on your writing. There is also English Language Support available. We encourage you to take advantage of these resources!

There are many personal factors outside of this course that can affect your ability to perform well. If you are struggling, please come and talk to one of us. We are happy to listen to what is going on and work towards a solution together. You can always stay after class or come during office hours to talk. We are also available via email and can set up another time to meet.

Here are a few resources available to you on campus:

- Accessibility Resources and Services (<https://ars.unc.edu/>)
- Campus Health (<https://campushealth.unc.edu/>)
- Carolina Cupboard (<http://carolinacupboard.web.unc.edu/>)
- Counseling and Psychological Services (<https://caps.unc.edu/>)
- Public Safety (<https://police.unc.edu/>)
- Student Wellness (<https://studentwellness.unc.edu/>)
- And many more! (<https://studentsuccess.unc.edu/campus-resources/>)

## **Course Outline:**

\*Any readings not in the required texts will be made available online at least one week prior to the assigned class. Throughout the semester we may change the schedule and assignments. We will give as much notice as possible about any changes.

Week 1 – Nature and/or Nurture

August 11 – Introduction to the class

August 13 – Nature vs. Nurture

Assigned Reading: Chapter 1 of *Genes, Determinism, and God* (GDG)

Week 2 – The Conceptual Landscape of the Free Will debate: Incompatibilism

August 18 – Older arguments for incompatibilism

Assigned Reading: Chisholm, “Human Freedom and the Self” (W 26-37)

August 20 – The Consequence Argument

Assigned Reading: van Inwagen, “An Argument for Incompatibilism” (W 38-57)

- Week 3 – The Conceptual Landscape: Compatibilism  
 August 25 – Frankfurt on Coercion and the Will  
 Assigned Reading: Frankfurt, “Alternate Possibilities and Moral Responsibility” (W 167-76)  
 August 27 – Structural Theories of Free Will  
 Assigned Reading: Susan Wolf, “Sanity and the Metaphysics of Responsibility” (W 372-87)
- Week 4 – The Conceptual Landscape: Skepticism  
 September 1 – The Luck and Coincidence Argument against Incompatibilism  
 Assigned Reading: Pereboom, “Determinism *Al Dente*”  
 September 3 – Free Will as Conceptually Incoherent  
 Assigned Reading: Strawson, “The Impossibility of Responsibility” (W 212-28)
- Week 5 – Introduction to Genetics  
 September 8 – Paper #1 Peer Review  
 Assignment: Bring a draft of Paper #1 to class  
 Assigned Reading: UNC Writing Center tips for Editing and Proofreading (<https://writingcenter.unc.edu/tips-and-tools/editing-and-proofreading/>)  
 September 10 – Introduction to Classical Genetics  
 Assigned Reading: Watson & Crick, “Molecular Structure of Nucleic Acids: A Structure for Deoxyribose Nucleic Acid”
- Week 6 – The Dark Side of Genetics  
 September 15 – Eugenics  
 Assignment: **PAPER #1 DUE**  
 Assigned Reading: Chapter 2 of *GDG*  
 September 17 – Designer babies  
 Assigned Reading: “Prenatal and pre-implantation genetic diagnosis”  
 “Designer babies aren’t futuristic. They’re already here.”  
 “China’s Push for Better Babies”
- Week 7 – Determinism in Development and Evolution  
 September 22 – Development: cellular determinism?  
 Assigned Reading: “Development: Differentiation and Determination”  
 September 24 – Determinism in evolution  
 Assigned Reading: “Contingency and Determinism in Evolution: Replaying Life’s Tape”
- Week 8 – Genetic Complexities  
 September 29 – Introduction to Epigenetics and Genomics  
 Assigned Reading: Chapter 3 of *GDG*  
 October 1 – Gene by environment interactions  
 Assignment: Group presentations on assigned GxE examples
- Week 9 – Are animals free?  
 October 6 – Can animals choose?  
 Assigned Reading: Chapter 5 of *GDG*  
 October 8 – Paper #2 Peer Review  
 Assignment: Bring a Draft of Paper #2 to class
- Week 10 – Metaphysical Problems

October 13 – The Problems of Mental Causation

Assignment: **PAPER #2 DUE**

Assigned Reading: Kim, “Mental Causation and Consciousness”

October 15 – The Problems of Emergence

Assigned Reading: Kim, “Making Sense of Emergence”

Week 11 – Metaphysical Solutions

October 27 – Causation

Assigned Reading: Tse, “Mental Causation as an Instance of Criterial Causation”

October 29 – Emergence

Assigned Reading: O’Connor & Wong, “The Metaphysics of Emergence”

Assignment: **Schedule paper meetings**

Week 12 – Character Formation

October 13 - Distinctions

Assigned Reading: Audi, “Responsible Action and Virtuous Character”

October 15 - Character Improvement

Assigned Reading: selections from Aristotle, *Nicomachean Ethics*  
di Muzio, “Aristotle on Improving One’s Character”

Week 13 – Genetics of Aggression: A Case Study

November 3 – MAOA and Aggression

Assigned Reading: Chapter 7 of *GDG*

Optional Reading: Caspi *et al.* 2002

November 5 – Legal liability and genetics

Assigned Reading: Chapter 10 of *GDG*

Wasserman, D. (2004). Is There Value in Identifying Individual Genetic Predispositions to Violence? *Journal of Law, Medicine, and Ethics*, pp. 24-33.

Week 14 – Applications (and misuses) of Genetics

November 10 – Genetics & Intelligence

Assigned Reading: p. 188-201 of *GDG*

Krapohl *et al* “The high heritability of educational achievement reflects many genetically influenced traits, not just intelligence”

November 12 – Genetics & Society

Assigned Reading: “What Genetics is Teaching us about Sexuality”

“Researchers Want to Link Your Genes and Income – Should They?”

“What Twins Reveal About the Science of Faith”

“Your Political Beliefs are Partly Shaped by Genetics”

Assignment: **Final Paper Rough Draft due**

Week 15 – Finale

November 17 – In light of modern biology, do we have free will?

Assignment: Ask three people how they would answer this question

**FINAL PAPER DUE**

**November 20**