

**Exploring Science and Religion**  
Phil 213 / Neurosci 233 / Ethics 213  
Duke University | Fall 2023  
M/W: 10:05AM – 11:20 AM (Old Chem 101)  
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**Office Hours:**

**Monday:** 9am-10am (Allen 233 and Zoom [\[link\]](#))

**Wednesday:** 4pm-5pm (Perkins coffee shop)

**Friday:** 10am-11am (Allen 233)

(Also very happy to meet by appointment!)

**Course Description:** This [Transformative Ideas \(TI\)](#) course, geared to sophomore STEM majors, introduces the most important questions about science and religion. Core topics will include faith and reason; the development of physics and cosmology; origins of the universe; the existence of fine-tuning; evolution, randomness and design; the neuroscience of free will; the science of the soul; science and morality; and religion and technology. Other possible topics may include: recent theories of consciousness in psychology; the relationship between God and time; God and the epistemology of mathematics; religion and advances in AI; the neuroscience of religious experience; the possibility of miracles; and historical episodes in the development of science vis-a-vis religion. No prereqs.

**Course Goals and Objects:**

- Students will acquire an up-to-date overview of the contemporary scientific evidence and models in cosmology, biology, and neuroscience that are relevant to core philosophical and religious questions.
- Students be able to apply philosophical reasoning to scientific and religious questions, learning to distinguish between hard scientific evidence, plausible philosophical conjectures, and interpretations of that evidence.
- Students will hear from scientific practitioners in physics, biology, and neuroscience from within and outside Duke on the religious and philosophical implications of their work.
- Students will learn about the evidence from physics, cosmology, and biology relevant to the origins of the universe and the purpose and origins of life.
- Students will learn about data from neuroscience related to problems of consciousness, the relationship between mind and body, and free will and moral responsibility.

**General Course Requirements and Grading:**

Students will write 3 short response papers (4-5 pages) on a question related to each section of the course: physics/cosmology; biology; and neuroscience. They will also turn in 1 final longer term paper (6+ pages) on a topic of their choosing. They will be expected to attend all class sessions (except for an excused absence) and to participate regularly in class discussion.

Finally, there will be 15 very short essays on the assigned readings/videos (1-2 pp double-spaced), usually about 1 per week, which are grade as either a 100 or a 0. These are very straightforward, and easy! They are mostly intended as an opportunity to express your thoughts on the readings and discuss any ideas you thought of, questions you had, points you found interesting, etc.

Here's the total grade breakdown:

3 Short Papers – 15% each

1 Final Term Paper – 25%

Short responses – 15% total (1% each x 15)

Participation – 15%

**Participation:** Since a large goal of this course is to consider our topics from multiple points of view, it is crucial that you participate regularly. Technically, I have a rubric for participation, broken down by how many class sessions you participated in. However, I rarely have to actually use this. As long as every 2-3 sessions you ask a question, share your thoughts, respond to an idea, etc. **and have no unexcused absences** you will get full participation.

**Attendance:** While this course will not be especially reading or writing-intensive, class discussion is crucial, and therefore **it is expected that you will attend all class sessions unless there is some valid excuse which you discuss with me.** (I am happy to be accommodating for reasonable exceptions, but you need to talk to me about it.) You have one (1) free unexcused absence that I will overlook. After that, **you will lose 1 of the 15 participation points for every unexcused absence.**

### **Classroom Expectations:**

This seminar will rely heavily on discussion, and depends on the active input of all participants. For that reason, it cannot be stressed enough how important respectful and open dialogue is for this class. Therefore, a few simple rules will be in effect:

(1) **Charitable disagreement:** All opinions and perspectives on the issues we discuss are welcome, and civil disagreement is encouraged. No one should feel compelled to agree or disagree with the authors we are reading, but I do ask that you honestly and charitably engage with the arguments we discuss and with your peers, and that you back up your views with reasoning.

(2) **Raise your hands:** Please refrain from interrupting others. Many of the topics we'll discuss are exciting and you may want to respond immediately to a point someone brings up. That is quite understandable, but please raise your hand and I promise you'll be called on. We want to give everybody a chance to speak and express their thoughts.

(3) **No phones:** Laptops and tablets are permitted, but no cell phones are allowed in the classroom. Put them away, so that others aren't distracted.

## Topics and Reading List

(**Note:** Syllabus is tentative and may be changed)

### Introduction

**Day 1** (Mon. 08/28) – What is Science?; Perspectives on Religion and Science

Readings:

1. Videos on the History of Astronomy
  - a. How Can Planets be in Retrograde? (12 mins, [video](#))
  - b. **Optional:** Ancient Greek Astronomy (16 mins, [video](#))
  - c. **Optional:** Copernicus, Galileo, and the Birth of Modern Astronomy ([video](#))
2. Videos on the Nature of Science: Scientific Practice and Scientific Revolutions
  - a. How does Science Work? (15 mins, [video](#))
  - b. Thomas Kuhn on Normal Science (20 mins, [video](#))

### Part I: Physics and Cosmology

**Day 2** (Wed. 08/30) – Early Physics and Cosmology: Motion and the Unmoved Mover

Readings:

1. Videos on Aristotle's Metaphysics
  - a. Aristotle on Metaphysics (14 mins, [link](#))
  - b. Aristotle on Causality (16 mins, [link](#))
  - c. Aristotle on God (12 mins, [link](#))
2. Lucretius *On the Nature of Things* (pp. 2-17)

Topics We'll Cover in Class (so pay attention to these in the videos!)

- Aristotle on Actuality and Potentiality
- Aristotle on Substance and Accidents
- Aristotle on Matter and Form (Hylomorphism)
- Aristotle's Four Causes
- Ancient Geocentric Cosmology
- The Four Elements
- Aristotle's dynamics
- Aristotle's God: The Unmoved Mover

### [NO CLASS Mon 09/04 (Labor Day)]

**Day 3** (Wed. 09/06) – The Demiurge, the Atoms, the Void: Plato, Lucretius and Early Atomism

Readings:

1. Selections from Plato's *Timaeus* (5 pp.)
2. Selections from Lucretius (pp. 34-50, 62-65, 66-72)

**Day 4** (Mon. 09/11) – Atomism, Meaning and the Gods

**Guest Lecture:** Jed Atkins, Professor of Classical Studies and Philosophy, Duke University

Readings:

- 1. Lucretius pp. 88-98, 135-143

**Day 5** (Wed. 09/13) – From Aristotle to Galileo: Cosmology, Physics, and Mechanism

- 1. Video: Aristotle, Galileo and Newton on Motion (5 mins, [link](#))
- 2. Video: Copernicus, Galileo and the Birth of Modern Astronomy (9 mins, [link](#))
- 3. Video: “Why Copernicus was Unconvincing” (7 mins, [link](#))
- 4. Video: Peter Millican: “Science from Aristotle to Galileo” (20 mins, [link](#))
- 5. Aquinas’ Five Ways (3 pp)
- 6. Optional: Selections from Edward Grant: *Physical Science in the Middle Ages* (13 pp)
- 7. Optional: Kepler’s Laws of Planetary Motion (11 mins, [link](#))

**Day 6** (Mon. 09/18) – Classical Mechanics, Determinism and the Divine Watchmaker

- Leibniz on Mechanism
- Newton’s *Principia* (selection)
- “Laplace’s Demon”: Selection from *A Philosophical Essay on Probabilities*
- William Paley, *Natural Theology* (selection)

**Day 7** (Wed. 09/20) – Hume Against Natural Theology: Creation and Design

- Dialogues Concerning Natural Religion

**Day 8** (Mon. 09/25) – Hume Against Miracles: The Problem of Induction and the Laws of Nature

- Dialogues Concerning Natural Religion

**Day 9** (Wed. 09/27) – God and Dice: Einstein and Heisenberg

- Ether Theory and Michelson-Morley
- The Development of Special and General Relativity
- Indeterminism, Hidden Variables, and Divine Knowledge

## Part II: Biology and Evolutionary Theory

**Day 10** (Mon. 10/02) – What is Evolution?: Chance, Randomness, and Selection

- **(Possible Guest lecture:** Dan McShea, Professor of Biology, Duke University)
- Ernst Mayr: *What is Evolution?* (selection)
- Elliott Sober: *The Nature of Selection* (selection)
- Elliot Sober: “Darwin’s Universal Impact” (video, link)

**Day 11** (Wed. 10/04) – Contemporary Cosmology and Fine-Tuning for Life

**Guest Lecture:** Paul Davies, Professor of Physics, University of Arizona

**Day 12** (Mon 10/09) – Biological Complexity and Arguments for Design  
Readings TBD

**Day 13** (Wed 10/11) – Evolution, Landscapes and Purpose  
Readings: Simon Conway-Morris: *Life's Solution: Inevitable Humans in a Lonely Universe*

[NO CLASS Mon 10/16 (Fall Break 10/14-10/17)]

**Day 14** (Wed 10/18) – Convergent Evolution and Signals  
**Guest Speaker:** Simon Conway-Morris, Professor of Biology, University of Cambridge

**Day 15** (Mon 10/23) – Teleology and Reductionism; The Problem of Intentionality  
(**Possible guest lecture:** Gunnar Babcock, Postdoctoral Fellow, Duke Dept. of Biology)

- *Nature's Purposes: Analyses of Function and Design in Biology*
- Edward Feser: "Intentionality" (*Philosophy of Mind*, Ch. 7)

**Day 16** (Wed 10/25) – Religion and the Evolution of the Human Species

**Day 17** (Mon 10/30) – Theological Problems of Evolution: Texts, Tradition, and Truth

**Day 18** (Wed 11/01) – Religion, Morality and Evolutionary Ethics  
**Guest lecture:** Daniel McShea, Depts. of Biology and Philosophy, Duke University

### Part III: Mind, Brain and Soul: Psychology, Neuroscience and Technology

**Day 19** (Mon 11/06) – Physicalism, Consciousness and the Brain: the "Hard Problem"

- Daniel Dennett: "A Visit to the Phenomenal Garden" (*Explaining Consciousness*, Ch. 2)
- David Chalmers: "The Hard Problem of Consciousness" ([link](#))
- Edward Feser: "Consciousness" (*Philosophy of Mind*)
- Thomas Nagel: *Mind and Cosmos* (precis)

**Day 20** (Wed 11/08) – Models of Mind and Brain: Dualism, Functionalism, and Physicalism

- Jaegwon Kim: *Philosophy of Mind* (selections)

**Day 21** (Mon 11/13) – Computational Theories of the Mind, AI, and the Godelian Argument

- John Von Neumann: *The Computer and the Brain*
- J.R. Lucas: "Minds, Machines and Godel" ([link](#))
- Roger Penrose: The Emperor's New Mind (documentary, [link](#))

**Day 22** (Wed 11/15) – The Neuroscience of Consciousness and the Soul

- **Guest lecture:** Len White, Dept. of Neurology, Duke University
- Readings TBD

**Day 23** (Mon 11/20) – A Defense of Naturalism, Physicalism and Scientism

- **(Possible guest lecture:** Alex Rosenberg, Department of Philosophy, Duke University)
- Video: Richard Dawkins: “What if Scientists Worked like Religions?” (4 mins, [link](#))
- Alex Rosenberg: “The Nature of Reality: The Physical Facts Fix all the Facts” from

**Day 24** (Mon 11/27) – The Psychiatry and Neuroscience of Religious Belief

- **(Possible guest lecture:** Nima Bassiri, Literature, Duke University)
- “Near Death Experiences: Fact or Fantasy?” (Medical News Today, [link](#))
- “What Near Death Experiences Reveal About the Brain” (Scientific American, [link](#))

**Day 25** (Wed 11/29) – Neuroscience, Free Will and Responsibility

- “Neuroscience and Free Will: Libet’s Experiment” (video, [link](#))
- Nancey Murphey and Warren S. Brown: *Did My Neurons Make Me Do It?: Philosophical and Neurobiological Perspectives on Moral Responsibility and Free Will* (selection)
- Walter Glannon: “Free Will in Light of Neuroscience” (in *Free Will and the Brain: Neuroscientific, Philosophical, and Legal Perspectives*)

**Day 26** (Mon 12/04) – Technology and Religion: Friends or Foes?

**Day 27** (Wed 12/06) – Religion and the Scientific Future