



Time and Time Travel

2:20-3:35 MW

Professor: Sara Bernstein

This course will cover topics on time travel ranging from the classic to the cutting edge, including the possibility and coherence of time travel, metaphysical models of time travel, closed time-like curves, causal loops, the paradoxes of time travel, practical problems with time travel, and requirements for the survival of time travelers. Readings will be primarily in philosophy, though time travel in literature and in movies will be frequently examined. The course will also include general topics in the metaphysics of time related to time travel, including the ontology of time, the nature of temporal passage, the direction of time, the existence and nature of the objective present, and temporal/ modal analogies.

This class will be conducted on Zoom.

Required Text: *Einstein's Dreams*, by Alan Lightman. All other readings will be posted on Sakai. Starred readings are required; others are recommended.

Assessment:

- 30% in-class participation*
- 10% in-class presentation on a reading or a topic related to the class (sign up for topics and dates by Feb 15)
- 30% short paper (due March 15)
- 30% final paper (due May 18)

Extra credit opportunities will be available.

Schedule

Wednesday, February 3: Introduction to the Metaphysics of Time and Time Travel

* "Back to the Future Gets Time Travel Wrong. The Terminator Gets It Right. Here's the difference." (video)

Monday, Feb 8: Analogies between Space and Time

- * "26 April 1905" and "14 May 1905" in *Einstein's Dreams*
- * "Spatial and Temporal Analogies and the Concept of Identity", Richard Taylor

Wednesday, Feb 10: The Metaphysics of Time: A-Theory and B-Theory

- * "Time" (excerpt from *Introduction to Metaphysics*), Alyssa Ney

Optional, but recommended: "Time" (sections 4-7 of SEP entry), Ned Markosian

Monday, Feb 15: The Directionality of Time

- * "C Theories of Time: on the Adirectionality of Time" (pp. 1-5, 17-24), Matt Farr
- * "3 May 1905", and "11 May 1905" in *Einstein's Dreams*

Wednesday, Feb 17: Ontology of Time I: Eternalism

- * "Four Dimensionalism" (excerpt), Ted Sider
- * "Slaughterhouse Five" (excerpt), Kurt Vonnegut
- * "22 June 1905" in *Einstein's Dreams*

Monday, Feb 22: Ontology of Time II: Presentism

- * Sections 14a and 14b from "Time," Bradley Dowden (Internet Encyclopedia of Philosophy)

Optional: "Presentism, Eternalism, and the Growing Block," Kristie Miller

Wednesday, Feb 24: Ontology of Time III: Growing Block

- * "Goodbye Growing Block", Trenton Merricks
- * "10 May 1905" in *Einstein's Dreams*

Recommended movie: *The Langoliers* (1995)

Monday, March 1: The Rate of Time's Passage

- * "How Fast Does Time Pass?," Ned Markosian
- * "16 April 1905" in *Einstein's Dreams*

Recommended movie: *Interstellar* (2014)

Wednesday, March 3: Introduction to Time Travel; What Counts as Time Travel?

- * "Modes of Time Travel" (excerpt from *Time Travel: Probability and Impossibility*, Nikk Effingham)
- * "Introduction" (pp 2-13) (excerpt from *Paradoxes of Time Travel*, Ryan Wasserman)

Monday, March 8: Time Travel in an Eternalist Universe

- * "The Paradoxes of Time Travel," David Lewis

Optional: "Traveling in A and B Time", Ted Sider

Wednesday, March 10: Time Travel in a Growing Block Universe

- * "Changing the Past," Peter van Inwagen

Monday, March 15: Time Travel in a Presentist Universe

- * "Time Travel and the Movable Present," Sara Bernstein

Recommended TV: *Doctor Who and the Invasion of Dinosaurs* (1974)

Wednesday, March 17: Time Travel in a Branching Universe

- * "A Branching, Growing-Block Model of Time Travel (with Hypertime)," Mathura Samaram
- * "19 April 1905" from *Einstein's Dreams*
- * Short story: "Anxiety is the Dizziness of Freedom," Ted Chiang

Monday, March 22: Review and Catch-up.

Wednesday, March 24: Time Travel to the Future

- * "Paradoxes of Time Travel to the Future," Sara Bernstein

Recommended movie: *The Time Machine* (1960)

Monday, March 29: Time Travel and Causal Loops ***Special Guest: Alasdair Richmond***

- * "Causal Paradoxes" (excerpt from *Paradoxes of Time Travel*, Ryan Wasserman)
- * "Causal Loops" from <http://timetravelphilosophy.net/topics/causal-loops/>, John Carroll
- * Video: Alasdair Richmond, "7.4. INTROPHIL Time Travel 4: Causal Loops"

Recommended TV episode: *Doctor Who*, "Blink" (2007)

Wednesday, March 31: The Bootstrapping Problem

- * "The Bootstrap Paradox" (excerpt from *Time Travel: Probability and Impossibility*, Nikk Effingham)
- * Short story: Robert Heinlein, --*All you Zombies*--

Monday, April 5: Time Travel and Coincidence

- * "Time Travel, Coincidences and Counterfactuals," Ted Sider

Wednesday, April 7: Spacetime Wormholes and Closed Time-Like Curves

- * "Time Travel: Double your Fun," Frank Arntzenius

Monday, April 12: Practical Problems of Time Travel

- * "Nowhere Man: Time Travel and Spatial Location," Sara Bernstein
- * *Time Machines*, Paul Nahin, pp. 13-30, 40-43

Optional: "Time Travel, Double Occupancy, and The Cheshire Cat," Carroll, Ellis, and Moore

Wednesday, April 14: Time Travel and Object Paradoxes

- * "A Mereological Challenge to Endurantism," Nikk Effingham
- * "Yet Another Confusion About Time Travel," Guiliano Torrenco

Optional: "Time Travel, Parahistory and the Past Artefact Dilemma," Alasdair Richmond

Monday, April 19: Time Travel and Death

- * "The Cheated God: Death and Personal Time," Roy Sorensen

Monday, April 26: Time Travel and the Meaning of Life ***Special Guest: Ted Chiang***

- * "How would time travel affect life as we know it?," Chelsea Hedquist
- * Short story: "The Merchant and the Alchemist's Gate," Ted Chiang

Wednesday, April 28: Time Travel and Free Will ***Special Guest: Steph Rennick***

- * "Free Will and Time Travel," Neal Tognazzini
- * "Things mere mortals can do that philosophers can't," Steph Rennick
- * Short story: "What's Expected of Us," Ted Chiang

Monday, May 3: Eternal Recurrence

- * "14 April 1905" in *Einstein's Dreams*
- * "Death and eternal recurrence," Lars Bergström
- * Short story: "A Little Something for Us Tempunauts," Philip K. Dick

- Recommended show: *Russian Doll*
- Recommended movie: *Groundhog Day*

Wednesday, May 5: Ethics of Time Travel

- * "Ethical Puzzles of Time Travel," Sara Bernstein
- * "The Ethics of Killing Baby Hitler," Matt Ford

- Optional: “*Heroes* and the Ethics of Time Travel: Does the Present Matter?,”
David Faraci

Recommended TV: *Misfits*, Season Three, Episode Four

Monday, May 10: Review.

A few notes concerning...

Plagiarism

Plagiarism is representing another person’s work as one’s own. Outside works must be clearly cited or placed in quotes. Any cheating will be handled according to the university’s policy on academic dishonesty. Please see the Honor Code for more information.

Extensions

Everyone is permitted one 24-hour paper extension, no questions asked. Extensions should be requested at least 48 hours in advance.

Extra Credit

There will be several extra credit assignments involving outside reading and movies related to the topics discussed in class.

Extra credit will be due at the midpoint of the course (to be announced), and at the end of the course. Up to five percentage points may be earned on the extra credit.

*Class Participation

Philosophical skill is best acquired by *doing* philosophy rather than passively learning about it. Active participation in class, which includes asking questions, coming up with cool and/ or silly examples, asking for clarification on confusing concepts, and/ or presenting an informed opinion about the reading, is central to learning to do philosophy. Talking once a week in class will be enough to do well in class participation.

Syllabus Changes

It is possible that topics will be added, removed, or changed on the syllabus. If this happens, it will be announced in class and over email.

Ways to Reach Sara, or her Indistinguishable Robot Clone

Email: sbernste@nd.edu

Office Hours: on Zoom, by appointment.

