

Phil 210/510: Formal Philosophical Methods

Yale, Spring 2025

Contact	<p>Instructor: Dr Calum McNamara Email: calum.mcnamara@yale.edu Office Hours: Mondays, 10:30–11:30am; Wednesdays 1pm–2pm Office: 313 in the Philosophy Department, 451 College St</p>
Course Meetings	<p>Mondays and Wednesdays, 11:35–12:50pm, 407 Phelps Hall</p>
Course Description	<p>This course is a fast-paced survey of formal methods that are used in contemporary philosophy. In the course, you'll be introduced to topics like set theory, the mathematics of infinity, possible worlds, modal logic, probability theory and formal epistemology, and decision and game theory—all things that come up frequently in contemporary philosophy. In addition to learning basic concepts and results in each of the areas listed, you'll get instruction on how to write formal, mathematical proofs. You'll also gain mastery of the formal methods mentioned by working with other students on collaborative problem sets.</p>
Objectives	<p>By the end of the course you should (i): be proficient with the technical ideas we've discussed, from each of the areas we've covered, and (ii) be able to apply these ideas in simple ways to your own philosophical projects and writing.</p>
Prerequisites	<p>Satisfaction of the basic quantitative reasoning requirement. A basic course in logic (like Yale's course, Phil 115) would be especially helpful.</p>
Materials	<p>Many of our readings will be drawn from the following books:</p> <ul style="list-style-type: none">• Sider, <i>Logic for Philosophy</i> (2010)• Heim and Kratzer, <i>Semantics in Generative Grammar</i> (1998)• Titelbaum, <i>Fundamentals of Bayesian Epistemology</i>, Volumes I and II (2022) <p>You may want to pick yourself up physical copies of some, or all, of these books. (Note that a quick Google search reveals that at least one of them is available freely online, as a PDF...)</p> <p>In addition to these books, I <i>may</i> sometimes provide chapters from a textbook that I'm working on. (Since this textbook is work-in-progress, I'd be especially grateful for your feedback.) Finally, we will also read a number of classic philosophical papers, to supplement our core readings, and to see the ideas we're discussing in class used "out in the wild".</p>

Grading	<p>Problem Sets: 50%</p> <p>Final Exam: 40% (in class, on 04/23)</p> <p>Class Participation: 10%</p>
Problem Sets	<p>There will five problem sets assigned in this course—one for each of our five units. You <i>must</i> collaborate with other students on the answers. Specifically, you’re expected to work with other students in groups of 3-5, and submit a single set of solutions together as a group. Each student in a group <i>must</i> participate in the generation of each solution in order to receive credit. In other words, it’s not permissible to (e.g.) split up a problem set into portions that individual members complete. At the top of each problem set, please list the names of the members of your group.</p> <p>Secondly, each problem set will consist of 15 questions: 5 “warm-up” questions, and 10 more challenging questions. Undergraduates taking the course will be able to submit any 10 of the 15 questions for credit. Graduate students, however, cannot submit warm-up questions for credit. (For this reason, if any undergraduates work together with graduate students, they’ll have to submit only the more challenging questions.)</p>
Honor Code	<p>Although it should go without saying: don’t cheat on the problem sets. Minor infractions will result in you failing the relevant assignment. Major infractions will be kicked up to the university. And punishments in that case can be severe.</p>
Technology	<p>With two exceptions, laptops, phones, and other electronic devices are not permitted to be used in class. Multiple studies have shown that students using laptops, etc., do significantly worse on exams that test their comprehension than students who do not use these things. This is true even when students are not multitasking. Typing shifts you into “transcription mode”, whereas writing by hand requires you to actively process material.</p> <p>The first exception to the technology rule is if you’re going to take notes <i>by hand</i> on a device like an iPad or a reMarkable. That’s allowed. The other exception is if you have a disability that necessitates using a computer, or some other electronic device. If that’s the case, then I’m happy to accommodate you. But if this is so, please speak to me about it as early as you can.</p>
Disabilities	<p>The Americans with Disabilities Act is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Students who require academic accommodations can work with Student Accommodations Services (SAS) to arrange for (among other things) assistive technology or academic coaching. Many students don’t receive adequate diagnoses, or discover only late in their academic careers that they have access to academic accommodations. Thus, if you even <i>suspect</i> that you might need such accommodations, it’s worth reaching out early on.</p> <p>For reasons of privacy and consistency, I ask that you start with SAS; in particular, see here for their Accommodations Request Form. However, please know that</p>

whether or not you are able to arrange formal accommodations, I am committed to working with you to ensure that you are able to participate fully in this course. Just speak to me about your needs, as soon as you can.

Tentative Schedule **Unit 1: Prerequisites and Preliminaries**

01/13 **Sets, Relations, and Functions**

Reading:

Sider (2010), *Logic for Philosophy*, Chapter 1, Section 8

01/15 **Propositional and Predicate Logic**

Reading:

Sider (2010), *Logic for Philosophy*, Chapter 1, Sections 1-7; Chapters 2 and 4

01/20 **No class!! Martin Luther King Day!! (Meet on Friday instead)**

01/22 **Infinity**

Reading:

Russell (MS), *The Limits of Logic*, Chapters 2 and 4

01/24 **Proof, and Some Other Bits and Pieces**

Reading:

Russell (MS), *The Limits of Logic*, Chapter 0 (“Strategies for Proving Things”)

MacFarlane (MS), “Substitutional Quantifiers”, pp. 1–5

Quine (1981), *Mathematical Logic*, Chapter 1, Section 6: “Quasi-quotation”

Papineau (2012), *Philosophical Devices*, Chapter 5: “Possible Worlds”

Unit 2: Formal Semantics and Philosophy of Language

01/27 **Formal Syntax; Extensional Semantics: Part I**

Reading:

Carnie (2002), *Syntax: A Generative Introduction*, Chapter 3

Heim and Kratzer (1998), *Semantics in Generative Grammar*, Chapters 1 and 2

01/29 **No Class—Calum away!!**

No Reading

02/03 **Extensional Semantics: Part II**

Reading:

Heim and Kratzer (1998), *Semantics in Generative Grammar*, Chapters 3 and 4

02/05 **Intensional Semantics**

Reading:

Heim and von Stechow (MS), *Intensional Semantics*, Chapter 1

02/10 **The Semantics of Conditionals**

Reading:

Von Fintel (MS), “Conditionals”, Sections 1–4

Stalnaker (1968), “A Theory of Conditionals”

Lewis (1979), “Counterfactual Dependence and Time’s Arrow”

02/12 **Guest Lecture: Guillermo Del Pinal (UMass Amherst)**

No Reading

Unit 3: Beyond Propositional and Predicate Logic

02/17 **Modal Logic: Part I**

Reading:

Sider (2010), *Logic for Philosophy*, Chapter 6, Sections 6.1–6.4.1

02/19 **Modal Logic: Part II**

Reading:

Sider (2010), *Logic for Philosophy*, Chapter 6, Section 6.4.2–6.4.4

02/24 **Modal Logic: Part III**

Reading:

Sider (2010), *Logic for Philosophy*, Chapter 6, 6.4.5–6.4.6

02/26 **Conditional Logics**

Reading:

Egré (2021), “The Logic of Conditionals”, in *The Stanford Encyclopedia of Philosophy* ([here](#))

03/03 **Higher-order Logic**

Reading:

Sider (MS), “Crash Course on Higher-order Logic”

03/05 **Review of Units 1–3**

No Reading

Unit 4: Formal Epistemology

03/24 **Probability Basics**

Reading:

Titelbaum (2022), *Fundamentals of Bayesian Epistemology*, Volume I, Chapters 1–3

03/26 **Dutch Books; Accuracy**

03/31 **Conditionalization; Chance, Credence, and Friends**

Reading:

Titelbaum (2022), *Fundamentals of Bayesian Epistemology*, Volume I, Chapters 4 and 5

04/02 **Probabilities of Conditionals: Triviality**

Reading:

Lewis (1976), “Probabilities of Conditionals and Conditional Probabilities”

Hájek (2015), “On the Plurality of Lewis’s Triviality Results”

Unit 5: Rational Choice Theory

04/07 **Expected Utility Theory**

Reading:

Titelbaum (2022), *Fundamentals of Bayesian Epistemology*, Volume II, Chapter 7

04/09 **Causal vs Evidential Decision Theory: Part I**

Reading:

Ahmed (2014), *Evidence, Decision, and Causality*, Chapter 1

Lewis (1981), “Causal Decision Theory”

04/14 **Causal vs Evidential Decision Theory: Part II**

Reading:

Egan (2007), “Some Counterexamples to Causal Decision Theory”

Spencer and Wells (2019), “Why Take Both Boxes?”

Gallow (2023), “Causal Counterfactuals Without Miracles or Backtracking”

McNamara (2024), “Causal Decision Theory, Context, and Determinism”, Sections 1–4

04/16 **Guest Lecture: Melissa Fusco (Columbia)**

No Reading

04/21 **Review of Units 1–5**

No Reading

04/23 **Final Exam (in class)!!**