

305 Lecture 01 - Getting Started

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July 1, 2020

Aim of Course

Introductory survey of some formal methods that are of broad philosophical use.

Three Sections

1. Propositional Logic

Three Sections

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2. Probability and Statistical Reasoning

Three Sections

1. Propositional Logic
2. Probability and Statistical Reasoning
3. Modal Logic and Conditionals

Propositional Logic

- This is the logic of sentences that can be true or false, and that can combine to form longer sentences.
- So as well as looking at simple sentences, like *Nadia sings*, we will look at sentences that are built from simple sentences.
- Examples of such sentences are *Nadia doesn't sing*, *Nadia sings and Bethany dances*, and *If Nadia sings, Simone sleeps*.

- Sometimes we can't infer that a conclusion is definitely true, but we can infer that it is probably true.

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- We will look at some tools for regimenting how and when we make such inference.

This is the logic of 'must' and 'might'. It has as many applications as there are interpretations of 'must' and 'might'. The primary interpretations we'll look at are:

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- Metaphysical
- Epistemological
- Moral

Textbooks

There are three - all of them available through Canvas.

1. *The Carnap Book* by Graham Leach-Krouse
2. *Odds and Ends* by Jonathan Weisberg
3. *Boxes and Diamonds, Ann Arbor remix*

The three books are for the three parts of the course.

Welcome to Carnap.io

A formal logic framework for Haskell

Background

Carnap is a free and open software framework written in [Haskell](#) for teaching and studying formal logic.

Carnap powers the interactive online component of Kansas State University's *PHILO110: Introduction to Formal Logic* and *PHILO320: Introduction to Symbolic Logic I* and also supports logic teaching at the University of Birmingham.

If you're a student in a course that uses Carnap, please follow the links at the top of the page to log in and to access course materials.

If you're just curious about Carnap, you can find some general information on our [about](#) page. If you're interested in the project, and would like to use Carnap in a class you're teaching, or get involved in some other way, please feel free to [get in touch!](#)

```
1. Show:  $\neg\exists x\forall y(\neg F(y,y) \leftrightarrow F(x,y))$ 
2.  $\exists x\forall y(\neg F(y,y) \leftrightarrow F(x,y))$  AS
3. Show:  $\neg\exists x\forall y(\neg F(y,y) \leftrightarrow F(x,y))$ 
4.  $\forall y(\neg F(y,y) \leftrightarrow F(c_1,y))$  AS
5.  $(\neg F(c_1,c_1) \leftrightarrow F(c_1,c_1))$  UI 4
6. Show:  $\neg F(c_1,c_1)$ 
7.  $F(c_1,c_1)$  AS
8.  $(F(c_1,c_1) \rightarrow \neg F(c_1,c_1))$  BC 5
9.  $\neg F(c_1,c_1)$  MP 8, 7
10. ID 7, 9
11.  $(\neg F(c_1,c_1) \rightarrow F(c_1,c_1))$  BC 5
12.  $F(c_1,c_1)$  MP 11, 6
13. Show:  $\neg\exists x\forall y(\neg F(y,y) \leftrightarrow F(x,y))$ 
14. ID 6, 12
15. ED 13, 2, 4
16. ID 2, 3
```

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Figure 1: <https://carnap.io>

Looks Like You Need to Register

Please enter the following information

First name

Last name

enrolled in

No Course



Register

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Figure 2: One more registration step

Looks Like You Need to Register

Please enter the following information

First name

Last name

enrolled

- ✓ No Course
- PHIL 2211Q
- PHIL 005/505: Formal Logic - Spring 2020
- Logic Tutorial - BHSEC Queens Spring 2020
- HUP112 - Logic and Philosophy, Spring I 2020
- UCLA132
- PHIL 2010: Truth, Lies, and Logical Reasoning
- Philosophy 102: Introduction to Logic
- Test Course
- Formale Logik Sommersemester 2020
- UTM PHL245 Summer 2020
- Phil 122: Elementary Logic
- Test Course - Morgan Davies - Logic
- University of Michigan - S20 - PHIL305
- Phil 340 Shell

Register

An Open

ch-Krouse <gleachkr@ksu.edu> and J. Ehrlich

Figure 3: Register in the right course

Odds & Ends

Introducing Probability & Decision with a Visual Emphasis

Jonathan Weisberg

Preface

THIS textbook is for introductory philosophy courses on probability and inductive logic. It is based on a typical such course I teach at the University of Toronto, where we offer “Probability & Inductive Logic” in the second year, alongside the usual deductive logic intro.

The book assumes no deductive logic. The early chapters introduce the little that’s used. In fact almost no formal background is presumed, only very simple high school algebra.

Several well known predecessors inspired and shaped this book. Brian Skyrms’ *Choice & Chance* and Ian Hacking’s *An Introduction to Probability and Inductive Logic* were especially influential. Both texts are widely used with good reason—they are excellent. I’ve taught both myself many times, with great success. But this book blends my favourite aspects of each, organizing them in the sequence and style I prefer.

Figure 4: <https://jonathanweisberg.org/vip/>

Boxes and Diamonds

An Open Introduction to
Modal Logic



Book Cover

Figure 5: <https://bd.openlogicproject.org>

Boxes and Diamonds

An Open Introduction to Modal Logic
Ann Arbor remix



Summer 2020

Figure 6: Boxes and Diamonds - Ann Arbor

- These lectures are going to be very short.
- That's in part because it's really hard to retain focus through a long logic video, and in part because it's easier to manage uploads and downloads with smaller files.
- So we'll typically have somewhere between 6 and 10 'lectures' each week, though each will be 5 to 15 minutes.

- These slides don't have captioning.
- But the script I'm reading off is available on Canvas, and that should be more reliable than automated captions.
- The script also says where the slide jumps are, so if you don't want to listen to me, you can just read along the script plus the slides.

Assessment

- The primary assessment will be weekly assignments, which will be administered through Canvas.
- These are already all posted, and they will be due each week on Friday at 5pm.
- There will also be an end of term exam, also through Canvas.

Office Hours

- The lectures as you can tell are all going to be posted, and can be viewed at any time.
- There aren't any official discussion sections.
- But we will need to have some time where we go over stuff.
- I'm planning to have office hours twice a week: Tuesday and Thursday 10-12. But I'll also be available by appointment if those times don't work, as I'm sure they won't for some people.
- We'll start with these on Zoom, but maybe it will turn out to be more productive to use something else.

For Next Time

We'll start on saying what logic is, and why we are studying it.