

# 305 Lecture 01 - Getting Started

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## Aim of Course

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

# Three Sections

1. Propositional Logic

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2. Probability and Statistical Reasoning

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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.



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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.  $(F(c_1,c_1) \leftrightarrow \neg F(c_1,c_1))$  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.