Modal Logic (G4455) Achille C. Varzi

Fall 2015 • W 2:10pm–4:00pm • 716 Philosophy Hall
Office Hours T 11:00am–1:00pm • 713 Philosophy Hall • tel. 4-3531 • email: av72 • url: ~av72

General Outline

This course has two main aims. One is to explain what modal logic is, and how it is done. The other is to give a detailed survey of the large variety of modal logic systems found in the literature, with an eye to both their formal properties (consistency, completeness) and their philosophical significance.

The focus will be on modal sentential logic, i.e., the modal logic of a language whose atomic constituents are either unanalyzed sentences or logical connectives. A brief outline of modal predicate logic (whether, how far, and in what ways various properties of sentential modal logics carry over to their predicate logic counterparts) will be given in the final lectures.

Prerequisites

One term of formal logic (V3411/G4415, *Symbolic Logic*, or G4801, *Mathematical Logic I*) and a willingness to master technicalities and to work at a considerable level of abstraction.

Requirements

There will be two take-home assignments and a final examination. Each take-home assignment will count 25% of the final grade; the final examination will account for the remaining 50% of the grade. There will also be some home assignments; these are optional and will not count for the final grade.

Texts

The main text for the course is Brian Chellas' *Modal Logic. An Introduction* (Cambridge University Press, 1980), which is entirely available in PDF form on *CourseWorks* (section Class Files, folder Shared Files). This is a rather technical, dense book, and deals exclusively with sentential modal logic. Further readings will be assigned as the course develops. In addition, all lecture notes will be posted on *CourseWorks*, too. These notes will be necessary especially for the last last part of the course (on modal predicate logic).

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Tentative schedule

Week	*Date*	*Topic*
1.	Sept 9	Introduction
2.	Sept 16	Sentential ML 1: Truth, modality, and possible worlds
3.	Sept 23	Sentential ML 2: Leibnizian, standard, and minimal models
4.	Sept 30	Sentential ML 3: Standard models (principles; generalizations; characterizability)
	⇒	*Take home test #1*
5.	Oct 7	Sentential ML 4: Normal systems – basic notions and principles
6.	Oct 14	Sentential ML 5: Normal systems – reduction laws and soundness therems
7.	Oct 21	Sentential ML 6: Normal systems – completeness & determination theorems
8.	Oct 28	Non-alethic interpretations of ML 1: Deontic Logics
9.	Nov 4	Non-alethic interpretations of ML 2: Epistemic Logics
	⇒	*Take home test #2*
10.	Nov 11	Non-alethic interpretations of ML 3: Temporal Logics
11.	Nov 18	Quantified ML 1: Basic ideas; the fixed-domain approach
12.	Nov 25	Quantified ML 2: The world-relative approach
13.	Dec 2	Quantified ML 3: Counterpart theory
14.	Dec 9	Quantified ML 4: Other theories; conclusions
	⇒	*Final examination*

Note: All lecture notes will be posted on *CourseWorks*. For the first part (up to week 8), the notes will include pointers to the relevant sections in Chellas's book.