Modal Logic (G4424) Achille C. Varzi

Fall 2006 • T 2:10pm–4:00pm • 511 Hamilton Hall
Office Hours T 4:30pm–6:30pm • 702 Philosophy Hall • tel. 4-3531 • email: av72 • url: ~av72

Course website: http://www.columbia.edu/~av72/modallogic

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, *Introduction to Symbolic/Formal Logic*, or G4801, *Mathematical Logic I*) and a willingness to master technicalities and to work at a certain level of abstraction.

Requirements

There will be two take-home assignments and a final take-home 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 weekly home assignments; these will be optional and will not count for the final grade, but everybody is encouraged to do them on a regular basis and to hand them in for correction.

Texts

The main text for the course is B. Chellas' *Modal Logic. An Introduction* (Cambridge University Press, 1980, available at Labyrinth Books). This is a rather technical, dense book, and some of you might want to integrate it with J. Melia's *Modality* (McGill-Queen's University Press, 2003, also available at Labyrinth Books). Further suggested readings will be indicated as the course develops. In addition, lecture notes will be distributed (or made available on the web). These notes will be necessary especially for the last last part of the course (on modal predicate logic).

Further references (to technical or philosophical literature) will be given as the need arises.

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Tentative schedule

Week	*Date*	*Topic*
1.	Sep 5	Introduction
2.	Sep 12	Sentential ML 1: Truth, modality, and possible worlds
3.	Sep 19	Sentential ML 2: Leibnizian, standard, and minimal models
4.	Sep 26	Sentential ML 3: Standard models (principles; generalizations; characterizability)
	⇒	*Take home test #1*
5.	Oct 3	Sentential ML 4: Normal systems – basic notions and principles
6.	Oct 10	Sentential ML 5: Normal systems – reduction laws and soundness therems
7.	Oct 17	Sentential ML 6: Normal systems – completeness & determination theorems
8.	Oct 24	Non-alethic interpretations of ML 1: Deontic Logics
9.	Oct 31	Non-alethic interpretations of ML 2: Epistemic Logics
	⇒	*Take home test #2*
10.	Nov 14	Non-alethic interpretations of ML 3: Temporal Logics
11.	Nov 21	Quantified ML 1: Basic ideas; the fixed-domain approach
12.	Nov 28	Quantified ML 2: The world-relative approach
13.	Dec 5	Quantified ML 3: Counterpart theory and beyond
	⇒	*Final take home examination*

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