

PHI4101 Modal Logic

Fall 2018

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Course Times: Tuesday and Thursday, 1:30pm – 3:00pm

Office: HSH224

Office Hours: Tuesday and Thursday, 11:30am – 1:30pm

Brief Course Description

This course introduces students to modal logic, the branch of modern logic that studies the logic of modal operators such as necessity and possibility. The first part of the course covers propositional modal logic, with an emphasis on the basic ideas and techniques of possible worlds semantics and on the relationship between a number of formal systems studied in the literature. We will consider some applications of these formal systems, in particular examining the logic of metaphysical possibility/necessity, deontic logic, epistemic logic, and temporal logic. The second part of the course deals with quantification in modal logic, in which some related philosophical issues, concerning identity, de re modality, descriptions, and variable/constant domains will be discussed. Time permitting, the course will also include some material on the logic of counterfactual conditionals.

Class Materials

The main text is Theodore Sider, *Logic for Philosophy* (OUP). In addition, the Moodle page will contain other course materials (e.g. syllabus, class handouts, assignments, assignment solutions, important dates). Please check it regularly.

Other helpful secondary texts:

1. Lecture notes by Jiji Zhang written for a previous version of this course. These notes contain excellent exercises, some of which we'll cover in class.
2. Brian Chellas, *An Introduction to Modal Logic* (CUP). This book is fairly mathematical, but may be helpful regarding the formal aspects of the systems we cover.
3. Rod Girle, *Modal Logics and Philosophy* (McGill). This book has a very clear treatment of quantification in modal logic. The second half also contains helpful discussions of applications.

Schedule of Topics

Here is a rough overview of the topics we will cover. Please note that this schedule may – in fact, probably will – change depending on our progress. The exact dates of the assignments will be provided in due course.

#	Week beginning	Topic	Chapter(s) of Sider
1	Sep 3	Introduction & review of (non-modal) propositional logic	1.8, 2
2	Sep 10	Propositional modal logic: language & possible-worlds semantics	6.1 – 6.3.1
3	Sep 17	Propositional modal logic: validity & countermodels	6.3.2, 6.3.3
4	Sep 24	Propositional modal logic: some systems (K, T, D, B, S4 and S5)	6.4
		ASSIGNMENT 1	
5	Oct 1	Applications of modal logic: deontic & epistemic	7.1, 7.2
6	Oct 8	Applications of modal logic: temporal	7.3
7	Oct 15	Counterfactuals: natural language	8.1
8	Oct 22	Counterfactuals: Lewis and Stalnaker semantics	8.2, 8.3
		ASSIGNMENT 2	
9	Oct 29	Review of (non-modal) predicate logic	4
10	Nov 5	Predicate modal logic: language & possible-worlds semantics	9.1 – 9.3
11	Nov 12	Predicate modal logic: validity & countermodels	9.4
12	Nov 19	Predicate modal logic: variable domains, identity & descriptions	9.5, 9.6
		ASSIGNMENT 3	
13	Nov 26	Review & exam preparation, FINAL EXAM	

Assessment

There will be three homework assignments and a final exam. The final exam will be **take home** – more details to follow in due course. Your grade will be calculated as follows:

Assessment	% of final grade
Assignments	60%
Final Exam	40%
Total	100%

Course Aims

1. Reinforce students' understanding and appreciation of formal logic.
2. Expose students to the rich field of modal logic (and philosophical logic in general).
3. Improve students' ability to recognize the presence of various kinds of modal operators, and their ability to analyze and criticize arguments involving necessity and possibility.
4. Familiarize students with useful formal methods and important philosophical problems related to modal logic.

Learning Outcomes

1. Students should be familiar with several well-known formal systems in modal propositional logic, and understand how they are related to one another.
2. Students should grasp the central ideas of possible worlds semantics and the use of semantic diagrams and related methods to analyze modal arguments and construct countermodels.
3. Students should understand the basic systems of modal predicate logic and be able to elaborate various philosophical issues arising within them.

Important Notes

1. Students are expected to spend a total of 9 hours (i.e. 3 hours of class contact and 6 hours of personal study) per week to achieve the course learning outcomes.
2. Students shall be aware of the University regulations about dishonest practice in course work, tests and examinations, and the possible consequences as stipulated in the Regulations Governing University Examinations. In particular, plagiarism, being a kind of dishonest practice, is “the presentation of another person’s work without proper acknowledgement of the source, including exact phrases, or summarised ideas, or even footnotes/citations, whether protected by copyright or not, as the student’s own work”. Students are required to strictly follow university regulations governing academic integrity and honesty.
3. Students are required to submit writing assignment(s) using Turnitin.
4. To enhance students’ understanding of plagiarism, a mini-course “Online Tutorial on Plagiarism Awareness” is available on <https://pla.ln.edu.hk/>