

Philosophical Logic I - 2021

Course description

February 18, 2021

Valentin Goranko

Introduction

This 7.5 hp course is mainly intended for students in philosophy and is generally accessible to a broad audience with basic background on formal classical logic and general appreciation of philosophical aspects of logic.

Practical information

The course will be given in English. It will comprise 13 three-hour long sessions combining lectures and exercises, scheduled during March 29 - May 30, 2021, as per timetable on SU TimeEdit.

The course will begin on Monday, March 29, 2020 at 13.00, on Zoom.

Further instructions will be posted on Athena in due time.

Course webpage: http://www2.philosophy.su.se/goranko/Courses2021/PhilLogic_I-2021.html

Lecturer's info:

Name: Valentin Goranko

Email: valentin.goranko@philosophy.su.se

Homepage: <http://www2.philosophy.su.se/goranko>

Prerequisites

The course will be accessible to a broad audience with introductory background on classical (propositional and predicate) logic. Some basic knowledge of modal logics would be an advantage but not a prerequisite.

Brief description

Philosophical logic studies a variety of non-classical logical systems intended to formalise and reason about various philosophical concepts and ideas. They include a broad family of *modal logics*, as well as *many-valued*, *intuitionistic*, *relevant*, *conditional*, *non-monotonic*, *para-consistent*, etc. logics. Modal logics extend classical logic with additional intensional logical operators, reflecting different *modes of truth*, including *alethic*, *epistemic*, *doxastic*, *temporal*, *deontic*, *agentive*, etc. Many-valued logics extend classical logic semantically, by admitting more truth values, in addition to the classical *true* and *false*, which can have various interpretations, e.g. degrees of truth, probability, or uncertainty. On the other hand, intuitionistic logic restricts classical logic by rejecting some non-constructive principles and laws of reasoning, such as the law of excluded middle. Relevant and conditional logics endeavour to capture the notions of relevant implication and conditional (incl. counterfactual) reasoning, whereas non-monotonic and para-consistent logics purport to formalise reasoning with defeasible knowledge and possibly contradictory information.

This course is an introduction to Philosophical logics. It will begin with brief historical overview followed by basic technical background on syntax and possible worlds semantics, and will present some important axiomatic principles and systems of generic propositional modal logic. Then it will offer an introduction and discussion of philosophical aspects of some of the most important and popular families of modal logics, including alethic, epistemic, doxastic, temporal, and deontic propositional modal logics. The course will end with a brief introduction to intuitionistic and many-valued logics, as well as logics of conditionals and relevance logics.

The emphasis of the course will be mainly on conceptual issues and philosophical applications, whereas technical aspects and methods will play auxiliary role.

This course will be followed by an advanced course Philosophical logics II, which will develop in more depth and detail some of the topics covered here and will expand on deductive systems and first-order extensions for some more important philosophical logics.

Tentative course outline per lectures:

Lecture 1: Introduction. Brief historical overview and origins of philosophical logic. An overview of the spectrum of philosophical logics. Modes of truth, modalities and a spectrum of modal logics. Necessary and possible truths. Alethic modal logics. Informal introduction to the possible worlds semantics.

Lecture 2: Modal logics: technical introduction to the possible worlds semantics.

Lecture 3: Modal logics: introduction to modal deductive systems.

Lecture 4: Reasoning about knowledge. Epistemic modal logics.

Some epistemic puzzles and paradoxes of knowledge and knowability.

Multi-agent epistemic reasoning and logics. Group, distributed, and common knowledge.

Lecture 5: Multi-agent epistemic reasoning and logics: formal Hintikka-Kripke semantics.

On deduction in multi-agent epistemic logics

Lecture 6: Public and private announcements. Introduction to dynamic epistemic logic.

Applications to solving some epistemic problems and puzzles.

Lecture 7: Reasoning about beliefs and doxastic modal logics.

Lecture 8: Reasoning about time. Tense and modality. Historical necessity and Diodorus' master argument. Formal models of time. Variety of temporal logics.

Lecture 9: Linear time temporal logics. The linear time temporal logic LTL.

Lecture 10: Derivation of Diodorus' Master Argument. Possible solutions.

Models of branching time and historical necessity.

Ockhamist and Peircean branching time temporal logics.

Lecture 11: Introduction to deontic logics. Deontic paradoxes.

Lectures 12: Introduction to intuitionistic and multi-valued logics.

Lectures 13: Introduction to logics of conditionals and relevance logics.

Lectures 14: Conclusion of the course.

Course literature

The course literature will consist of a selection of readings from chapters of books and handbooks and some papers. All these are available online or will be provided electronically. In addition, some summary slides will be provided after each lecture.

Listed below are a few indicative (*not prescribed*) general references.

1. Johan van Benthem, *Modal Logic for Open Minds*, CSLI publ., 2010.
2. John Burgess, *Philosophical Logic*, Princeton University Press, 2009.
3. Rod Girle, *Modal Logics and Philosophy*, McGill-Queen's UP, 2nd ed., 2010.
4. Lou Goble, *The Blackwell Guide to Philosophical Logic*, Wiley, 2001.
5. Lloyd Humberstone, *Philosophical Applications of Modal Logic*, College Publications, 2016.
6. Graham Priest, *An Introduction to Non-Classical Logic*, Cambridge University Press, 2008 (2nd Edition).
7. Ted Sider, *Logic for Philosophy*, OUP, 2010.
8. Tim Williamson, *Modal Logic as Metaphysics*, OUP, 2013.
9. Stanford Encyclopaedia of Philosophy, <http://plato.stanford.edu>
10. Internet Encyclopaedia of Philosophy, <https://www.iep.utm.edu>

Assessment

3 mandatory written individual assignments, due in weeks 16, 18, and 20.

The assignments will be posted at least 2 weeks before the submission deadline.