PHIL 220: Introduction to Symbolic Logic

Course Meetings: MWF, 10–11am, 2021W1 (Sept–Dec 2021), location TBA
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This course is an introduction to formal logic.

Formal logic is in significant respects unlike other philosophy courses you may have taken. We will learn a formal system that has definite rules; the rhetorical skills that are important in other philosophical study will be less applicable here. (You will construct proofs, not essays, in this course.) In many respects, this course will be more similar to a mathematics course than to a prototypical philosophy course.

Topics covered will include:

- Propositions, arguments, argument forms, and validity
- Propositional connectives: conjunction, disjunction, conditionals, biconditionals, negation
- Recursion
- Truth tables, entailment, and proof
- Trees ("analytic tableaux")
- Soundness and completeness for sentential logic trees
- Natural deduction for sentential logic
- Names, predicates, quantifiers, and identity
- Models for quantifier (first-order) logic
- Trees for quantifier logic
- Soundness and completeness for quantifier logic trees
- Natural deduction for quantifier logic

Textbook:
Our main text for this term will be the UBC edition of *forall x*, an open-access logic textbook prepared by Jonathan Ichikawa, based on an earlier version originally developed by P.D. Magnus. This is an open-access, freely downloadable textbook. You can download a pdf version of it for free here:
https://philpapers.org/rec/MAGFXU
(There will be a newer free version available for the start of term.)

Optional Texts:
If you'd like something else to read, here are two introductory logic texts I like, which will fit reasonably well with our main text:

- Paul Herrick, *Introduction to Logic*. Does a nice job explaining some key concepts more slowly and in more detail. Emphasizes natural deduction over trees.
- Greg Restall, *Logic: An Introduction*. More closely related to the way this course will be structured. Emphasizes trees over natural deduction. (Uses a different natural deduction system than the one we'll learn.)

Expectations:
High academic standards are expected at UBC in general and in this course in particular. Students are expected to attend all lectures, and to read all the relevant readings. (Some students will find they get the most out of reading if they read before the corresponding lecture; others will get the most value out of letting the lecture introduce the material, then reading afterward. Doing both is highly encouraged!)

Learning Catalytics:
This course will use Learning Catalytics, an interactive system that allows me to gauge student comprehension during the lectures. You will receive credit for participation, unless you opt out. Consequently, you should consider regular attendance for this course to be mandatory. Students will need to purchase a license to use Learning Catalytics; 6 months' access costs $12 USD.
Using Learning Catalytics in class requires a device with a web browser—typically a smartphone, tablet, or laptop. If you don't have regular access to such a device, or if you don't want to pay to subscribe, you can opt out of the Learning Catalytics participation component without penalty. But participation via Learning Catalytics is strongly encouraged.

In-Person Classes:
The current plan is for this class, like most UBC courses, to meet in person. Students are responsible for attending; lectures will not be recorded. I may replace a small number of in-person lectures with online lectures, due to scheduling constraints.

Homework:
I will assign weekly exercises for you to practice at home. These are useful both for developing the skills introduced in lecture, and for indicating what sorts of questions to expect on exams. *Students will choose at the start of the semester whether they will have homework assessed for a grade*. Even for those who elect not to be assessed on homework, homework assignments are *very* strongly recommended.

Exams:
There will be three in-class midterm exams, and a cumulative final exam during the December examination period.