PHIL210 – Introduction to Deductive Logic
(Summer 2018)

Lectures: Monday, Tuesday, Wednesday, and Thursday - 1:35-3:55PM
Location: Trottier Building 2110
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                                                   Office Hours: TBA

Course Description:

       This course is intended to serve as an introduction to modern *deductive* logic. Deductive logic is a form of reasoning where the truth of the starting points, or premises, in an argument guarantees the truth of the conclusion. In order to study the general structure of deductive reasoning, in this course we will also introduce symbolic languages (which the textbook refers to as "FOL") which can abstract away from the content of specific arguments. Moreover, with these formal symbolic languages, we will also be able to translate ordinary language, such as English, into symbolic languages (and vice versa).

       In this course we will not go beyond what is called *first-order* logic (to be explained later). In the first half of this course we will start with *propositional* logic; here our language will be grounded in atomic propositions that are symbolized by simple letters (e.g. "P", "Q") or that are expressed with predicate(s) and term(s) (e.g. "Dog(a)", "Taller(a,b)"), and in addition these atomic propositions will have connectives such as "or", "and", and "if, then" to combine propositions into complex propositions. At this level we can, for example, express a classic deductive argument such as "If P, then Q; P; therefore, Q." In the second half of this course we will expand the expressive power of our language by introducing *quantifiers* (namely, "every" and "some") and *variables* (x, y, z, etc.). At this level we can, e.g., express more than just that some object, a, is a dog; rather we can express that every object is a dog (in some universe of discourse) or just "some" object. And thus we can make arguments with this expanded scope as well; e.g. "All humans are animals; all animals are mortal; therefore, all humans are mortal".

       Overall, this course will benefit students in any discipline that uses, or purports to use, logical reasoning; you will gain the formal tools to, e.g., evaluate whether you must accept some conclusion an author draws or if this conclusion requires more argumentation. Moreover, the formal approach we take will be of particular interest to students in mathematics, computer science, philosophy, and more. In setting up our formal language we will cover tools used in computer programming and mathematical proof as well as touch on concepts such as "truth" and "meaning" of interest to many philosophers.

Course Materials:

The textbook for this class will be Barker-Plummer, Barwise, Etchemendy et al.: *Language, Proof and Logic. Second Edition.* **The textbook is essential.** Use of associated software "Tarski's World", however, will not be required.

Evaluation:
   i.   Daily* Homework Questions ……………… 20%
   ii.   Mid-term Exam (in class, May 16th)............ 30%
   iii.   Final Exam (TBA)…………………………. 50%

*Starting Wednesday May 2nd, a few key homework questions (assigned the day before) from the textbook are to be handed in at the beginning of class. These will simply be graded for completion (an honest effort should be evident though). Homework questions won't be assigned for the day of the mid-term exam (and other exemptions may occur).

The mid-term exam will cover material from, roughly, the first half of the course on propositional logic. It will consist of an in-class test for the duration of the class time. The final exam will be cumulative, covering the material on propositional logic from the first half of the course as well as the material on logic with quantifiers to be covered in the second half of the course. The date and location of the final exam will be determined by the university.

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2. Students have the right, without seeking permission, to submit work in French.