PHIL 5200 – Philosophical Applications of Symbolic Logic

3014 Moore Hall

Tues. & Thurs., 12:30-1:45

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Required Texts: The primary text for the course will be the set of notes available at the site below.

   http://homepages.wmich.edu/~jnk5408.

   Any other readings will be made available there as well.

Other Resources: See the references at the end of the course notes. These can all be recommended for additional exposition and as a source of additional exercises.

Course Description: My plan is to have the course mostly focus on presenting the technical material with me just pointing you towards the places where the key ideas and techniques we learn about have been applied to philosophical questions. It seems to me generally that the application of the methods of logic to philosophical problems is pretty straightforward once the obstacle of understanding the methods themselves is overcome, so it's my view that familiarity with more techniques will be of more use to you than going into detail about any particular application. The schedule below is tentative and we'll only get as far as we're able to go. It's more important to have a fuller understanding of what we cover than to make it to all the proposed topics.

Schedule and Readings:

		BACKGROUND MATERIAL[1]
Week 1	Jan. 10	Basic set theory
		— Notes, §1
	Jan. 12	Functions
		— Notes, §2
Week 2	Jan. 17	Enumerations and diagonalization
		— Notes, §§2-3
	Jan. 19	Mathematical induction
		— Notes, §4
		PROPOSITIONAL LOGIC[2]
Week 3	Jan. 24	Propositional syntax
		— Notes, §§5-6
	Jan. 26	Assignments and validity
		— Notes, §7

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[1] See also (Boolos, Burgess, and Jeffrey 2007) and (Hrbáček and Jech 1999).

[2] See also (Barwise and Etchemendy 2003), (Troelstra and Schwichtenberg 2000), and (Hedman 2004).

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[3] See also (Boolos, Burgess, and Jeffrey 2007), (Shoenfield 1967), or (Hedman 2004).
[4] See also (Cutland 1980) and (Soare 1987).
[5] See also (Smith 2013), (Smullyan 1992), (Boolos, Burgess, and Jeffrey 2007), or (Hájek and Pudlák 1993).

Week 11	Mar. 28	Gödel's β and the arithmetical hierarchy
		— Notes, §§35-36
	Mar. 30	Robinson arithmetic
		— Notes, §37

Week 12	Apr. 4	Robinson arithmetic is Σ_1-complete
		— Notes, §38
	Apr. 6	Representing computable functions and relations in Q
		— Notes, §39-40

Week 13	Apr. 11	Arithmetization, diagonalization, and Gödel's theorem
		— Notes, §§41-42
		MODAL LOGIC[6]
	Apr. 13	Basic modal languages and frames
		— Notes, §43

Week 14	Apr. 18	Normal modal logics and **GL** (FINAL OUT)
		— Notes, §44
	Apr. 20	Soundness and completeness with respect to frames (FINAL DUE APRIL 25)
		— Notes, §§45-46

Assignments:

Weekly Homeworks	50%	Due at the beginning of class.[7]
Take-home Midterm	15%	Due: Feb. 21
Take-home Final	25%	Due: Apr. 25
Homework-problem Presentations	10%	I'll ask you to present at least 2 problems/exercises.

Accommodations: Any student with a documented disability who needs to arrange reasonable accommodations must contact me and the appropriate Disability Services office at the beginning of the semester. The two disability service offices on campus are: Disabled Student Resources and Services (269) 387-2116 and the Office of Services for Students with Learning Disabilities (269) 387-4411.

Academic Honesty: You are responsible for making yourself aware of and understanding the university's policies and procedures that pertain to Academic Honesty. If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with me if you are uncertain about an issue of academic honesty prior to the submission of an assignment.

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[6] See also (Blackburn, Maarten, and Venema 2001) and (Boolos 1993).

[7] I'll drop your lowest grade.

Grading: The grading for this course will be based on the following scale.

A	$[92.5, 100]$
BA	$[87.5, 92.5)$
B	$[82.5, 87.5)$
CB	$[77.5, 82.5)$
C	$[72.5, 77.5)$
DC	$[67.5, 72.5)$
D	$[60, 67.5)$
E	$[0, 60)$