PHIL 3200 – Formal Logic

1111 Moore Hall
Tues. & Thurs., 2:00-3:40
james.v.martin@wmich.edu (3011 Moore Hall, by appointment)

Required Text: *Language, Proof, and Logic* (Barwise and Etchemendy)[1]

Course Description: Students completing this course will gain competence with some of the fundamental tools of scientific and philosophical reasoning. They will also learn valuable skills—including the ability to analyze and evaluate an argument's formal structure—for understanding and critiquing arguments wherever they appear. Their ability to comprehend, translate into, and calculate with symbolic languages will also be significantly strengthened. The concepts and methods learned in this course (e.g., understanding and constructing valid arguments) will, more generally, also help students engage in much finer written and oral communication, where perspicuity and logicality are so crucially important.

Schedule and Readings:

Week 1	Jan. 8	Introduction, Atomic Sentences	(Ch. 1.1-5)
	Jan. 10:	The Logic of Atomic Sentences	(Ch. 2.1-5)
Week 2	Jan. 15:	The Boolean Connectives	(Ch. 3.1-3, 5-7)
	Jan. 17:	The Logic of the Boolean Connectives	(Ch. 4)
Week 3	Jan. 22:	Informal Proof Methods	(Ch. 5)
	Jan. 24:	Formal Proofs (conjunction, disjunction, negation rules)	(Ch. 6.1-3)
Week 4	Jan. 29:	Subproofs and Proof Strategies	(Ch. 6.4-5)
	Jan. 31:	The Material Conditional	(Ch. 7.1-4)
Week 5	Feb. 5:	Formal Proofs with Conditionals	(Ch. 8.1-2)
	Feb. 7:	Discussion of Soundness and Completeness + Review	(Ch. 8.3)
Week 6	Feb. 12:	FIRST EXAM	
	Feb. 14:	Introduction to Quantification	(Ch. 9.1-7)
Week 7	Feb. 19:	The Logic of Quantifiers	(Ch. 10.1-3)
	Feb. 21:	Multiple Quantifiers	(Ch. 11.1-3)
Week 8	Feb. 26:	English Translation	(Ch. 11.3-6)
	Feb. 28:	English Translation Again + Prenex Normal Form	(Ch. 11.3-6, 7)
Week 9	Mar. 12:	Informal Proof Methods with Quantifiers	(Ch. 12)
	Mar. 14:	Formal Proofs with Quantifiers	(Ch. 13.1-3)

[1] Unfortunately, it's necessary for you to buy a *new* copy of this in order to use and register the software.

Week 10	Mar. 19:	More About Quantification + Review	(Ch. 14)
	Mar. 21:	SECOND EXAM	
Week 11	Mar. 26:	Structures, Satisfaction, and Truth	(Ch. 18.1)
	Mar. 28:	Soundness of First-Order Logic	(Ch. 18.2-3)
Week 12	Apr. 2:	Discussion of Completeness	(Ch. 13.4, 19.1)
	Apr. 4:	First-Order Set Theory	(Ch. 15.1-8)
Week 13	Apr. 9:	Mathematical Induction	(Ch. 16.1-3)
	Apr. 11	Discussion of Incompleteness	(Ch. 19.8)
Week 14	Apr. 16:	Review (Take-home FINAL EXAM Distributed)	
	Apr. 18:	(Take-home FINAL EXAM DUE)	

Assignments:

Exam 1	20%	Covering propositional logic	Feb. 12
Exam 2	20%	Covering first-order logic	Mar. 21
Final Exam	20%	Cumulative exam for the course	Due: Apr. 18
Weekly Homeworks	40%	Exercises based on class material	Due: Tuesdays by the start of class[2]

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.

[2] Late homework will not be accepted. Your lowest homework grade will be dropped.

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	$[0, 60)$