INTRODUCTION TO LOGIC

$\models$ · columbia · philosophy · summer 2013

BASIC INFORMATION

Time/Location: **M, Tu, Th** 10:30AM-12:35PM (Session Q) / 716 Philosophy Hall

Instructor: Yang Liu (email: yl2435@columbia.edu)

DESCRIPTION

The course is designed as an introduction to classical sentential and predicate logic. Attention will be given to the significance of formal systems and their use for analysis of meaning and language. The course has no prerequisite. Nonetheless a willingness to work at certain level of technicality and abstraction is desired.

TEXTBOOK

The text is Professor Haim Gaifman's *A Course in Symbolic Logic*. The book will be available in electronic form through *Courseworks*.

REQUIREMENTS

There will be four in class tests and one final examination. Each test will be worth 15% of the final grade; the examination will account for 40%.

SCHEDULE

	Time	**Topic**	**Readings**
		WEEK I: SENTENTIAL LOGIC	
	1.	introduction and overview	chapter 1
	2.	negation, conjunction, truth table	2.0-2.1.3; 3.0-3.1.2
	3.	disjunction, tautologies, contradictions	2.2.0-2.2.3, 3.1.3
		WEEK II: SENTENTIAL LOGIC (CONT'D)	
	4.	equivalence laws and their uses	2.5.0-2.5.2
	5.	duality, conditional and bi-conditional	2.5.3-2.6; 3.1.4
	6.	syntactic structure, logic as an algebra; **Test 1**	2.3-2.5
		WEEK III: LOGICAL IMPLICATIONS AND SENTENTIAL CALCULUS	
	7.	logical implication, general implication laws	4.0-4.2.1
	8.	additional implication laws	4.2.2-4.2.3
	9.	the fool-proof method, proofs by contradiction; **Test 2**	4.3.2-4.4
		WEEK IV: PREDICATE LOGIC WITHOUT QUANTIFIERS	
	10.	some mathematical interlude;	5.0-5.2.4
	11.	syntax and semantics	7.1.0-7.1.1
	12.	derivations, equality, variables and predicates; **Test 3**	7.2-7.3.1
		WEEK V: FIRST-ORDER LOGIC	
	13.	preliminaries, wffs and sentences	8-8.2
	14.	bound and free variables, semantics, quantification	8.2.1-8.2.3; 8.3.3-8.3.4
	15.	models and truth; **Test 4**	9.1
		WEEK VI: FIRST-ORDER LOGIC (CONT'D)	
	16.	logical implications, equivalence laws	9.2
	17.	top-down derivations	9.3
	18.	**Final exam**	□