Philosophy 226: Formal Logic
Colorado College
Ben Bayer
Fall 2009, Block 4

Course description
Logic is the systematic study of basic patterns of inference. This course will survey traditional and modern systems of formal inference, with an eye towards developing the student's skills at manipulating symbolic representations of both propositions and arguments. We will learn a variety of methods, from pictorial diagrams to algebraic-style notation, which have been used by philosophers to translate ordinary thoughts into rigorous formulations which can then be tested for their intrinsic logical merit and argumentative relevance. We will stick close to Hurley's *Concise Introduction to Logic* text, and make use of its online "ILrn Logic" software for our homework assignments.

Texts
- Patrick Hurley, *A Concise Introduction to Logic* (shortened version, available in CC bookstore only)

Lecture and reading schedule

Introduction

Monday, November 23, 2009
Introductory concepts
Recognizing arguments
Deductive vs. inductive arguments

Tuesday, November 24, 2009
Validity and soundness
Proving invalidity and the counterexample method
- Hurley 1.1, 1.2, 1.3 (material covered Monday)
- Hurley 1.4, 1.5

Categorical logic

Wednesday, November 25, 2009 **– HOMEWORK 1 DUE** (on introductory concepts)
Homework review/test prep session
Categorical propositions: quality and quantity
The meaning of categorical propositions
Diagramming categorical propositions
- Hurley 4.1, 4.2, 4.3 ("Aristotle and Boole," "Venn Diagrams"), 4.7

Thursday, November 26, 2009—Sunday, November 29, 2008: NO CLASS, THANKSGIVING BREAK

Monday, November 30, 2009 – **EXAM 1** (covering introductory material in homework 1)

Tuesday, December 1, 2009
The squares of opposition
Immediate inference
Categorical syllogisms
- Hurley 4.3, 4.4, 4.5, 4.6

Wednesday, December 2, 2009 -- **HOMEWORK 2 DUE** (on categorical diagramming and immediate inference)
Homework review
Diagramming and testing categorical syllogisms
Categorical syllogisms in everyday language and reasoning
- Hurley 5.1, 5.2, 5.4, 5.5, 5.6

Propositional logic

Thursday, December 3, 2009
Propositional symbolization
Truth functions

- Hurley 6.1, 6.2

Friday, December 4, 2009 -- **HOMEWORK 3 DUE** (on categorical syllogisms and propositional symbolization)
Homework review/test prep session
Truth tables
Identifying logical status and relationships using truth tables

- Hurley 6.3

Monday, December 7, 2009 – **EXAM 2** (covering categorical logic material in homework 2 and 3)

Tuesday, December 8, 2009
Testing validity of arguments with truth tables
Testing validity of arguments with indirect truth tables
Common deductive forms and fallacies

- Hurley 6.4, 6.5, 6.6

Wednesday, December 9, 2009 – **HOMEWORK 4 DUE** (on truth tables, logical status, testing validity with truth tables)
Homework review
Using common deductive forms as rules of implication in natural deduction

- Hurley 7.1, 7.2

Thursday, December 10, 2009
Rules of replacement in natural deduction
Conditional proof in natural deduction
Indirect proof in natural deduction

- Hurley, 7.3, 7.4, 7.5, 7.6

Friday, December 11, 2009 – **HOMEWORK 5 DUE** (on rules of implication, replacement)
Homework review/test prep session

Monday, December 14, 2009 – **EXAM 3** (covering propositional logic material in homework 4 and 5)

Modern predicate logic with quantifiers, and alternatives to the modern view

Tuesday, December 15, 2009
Predicate/quantifier symbolization
Basic rules of inference concerning quantifiers

- Hurley 8.1, 8.2, 8.3

Wednesday, December 16, 2009– **HOMEWORK 6 DUE** (on conditional/indirect proof, predicate/quantifier symbolization, basic rules of inference)
Homework review/test prep session
Relational predicates and overlapping quantifiers
Identity

- Hurley 8.6, 8.7

Thursday, December 17, 2009
Neo-Aristotelian Term logic
More test prep session…

- David Kelley, Course pack (if available)
- Fred Sommers, Course pack (if available)