

Syllabus
Philosophical Logic
Spring Quarter, 2010-2011
Professor John Martin

Textbook *Introduction to Metalogic*

http://homepages.uc.edu/~martinj/Symbolic_Logic/342%20Syllabus,%20Textbook,%20Handouts,%20Notes/

Chapter 3. Topics and Reading. March 27 - April 24

Topics and Reading

Effective Process and Undecidability	146
I. Calculation, Algorithms and Decidable Sets	146
A. Introduction	146
B. The Concept of Calculation.....	147
C. Logic and Artificial Intelligence	157
D. Systems in the Language <i>Prolog</i>	162
i. Programs as Axioms	163
ii. The Resolution Inference Rule.....	164
iii. Running a Prolog Program: Deduction within an Axiom System....	166
iv. Expert Systems in Prolog.....	170
II. Decidability and Expert Systems	179
A. Conceptual Introduction	179
B. Normal Forms and Skolemization.....	180
C. Herbrand Models	183

Chapter 2. Exercise Assignments.

III. Exercises	190
A. Skills	190
B. Ideas	190
i. Effective Processes.....	190

Due April 10

ii. Herbrand Models and Soklemizations.....	191
C. Theory	191

Due April 26

Chapter 4. Topics and Reading. April 29 - May 31

Many-Valued and Intensional Logic	192
I. Abstract Structures	192
A. Structure	192
B. Sentential Syntax	193
C. Partial Orderings.....	194
D. Standard Abstract Structures	195
E. Sameness of Structure	197
F. Sentential Semantics	198
G. Sameness of Kind	200
H. Identity of Structure	201
I. Congruence and Substitution.....	202
J. Applications in Logic	203
II. Matrix Semantics	203
A. Language and Entailment in the Abstract Structures	203
i. Syntax	203
ii. Semantics.....	205
iii. Proof Theory.....	206
iv. Provability	207
v. Inductive Systems	208
vi. Axiom Systems	209
vii. Natural Deduction Systems	209
B. Logical Matrices for Sentential Logic.	212
i. Examples of Traditional Matrix Logics.....	215
ii. Lindenbaum Algebras	217
III. Boolean Algebras and Classical Logic	221
A. Boolean Algebras.....	221
B. Filters, Ideals and the Binary Representation Theorem	223
C. Boolean Interpretations of Classical Logic.....	225
IV. Frege's Intensional Semantics.....	227
V. Intensional Logic.....	233
A. The Idea of Intension in the History of Philosophy and Logic	233
B. Modal Operators and Cross-World Structure.....	236

Chapter 4. Exercise Assignments.

VI.	Exercises.....	243
A.	Skills and Ideas.....	243
B.	Theory.....	244
i.	Evaluating Many-Valued and Modal Theories.....	244

Due May 17

ii.	Extensionality and Intensionality.	244
-----	---	-----

Due May 5

Course grading will be based on exercises and quizzes as necessary.

The instructor reserves the right to alter the syllabus as necessary.