PHIL – 103 INTRODUCTION TO FORMAL LOGIC

I. Basic course information

(A) Course Number and Title: PHIL 103 Introduction to Formal Logic

(B) Date of Proposal or revision: Spring 2007

(C) Sponsoring department: Humanities and Social Science

(D) Semester credit hours: 3 credits

(E) Weekly contact hours: 3 Classroom: 3 Laboratory: 0

(F) Prerequisites: none

(G) Laboratory fees: N/A

II. Catalog description

This course examines the structure of deductive reasoning, and the rules of valid inference that underlie our thinking in both practical and theoretical activity. It provides an introduction to contemporary formal logic, with attention to two principal systems. Emphasis will be given to both proof construction and translation from natural language to symbolic form. Time permitting, some attention may be given to “meta-logic” and the properties of formal systems.

III. Statement of course need

This course has become an increasingly important part of the curriculum in four-year colleges and universities. It provides a theoretical account of the “depth” structure of deductive reasoning, which is vital to philosophy as well as to science and mathematics.

IV. Place of course in college curriculum

A.

• Humanities
• free elective
V. Outline of course content

- the nature of reasoning; deduction and induction; validity and soundness
- propositional logic; symbolization techniques and primary system rules
- predicate logic (treated in the same manner)
- truth tables and their relationship to formal proof
- properties of formal systems (e.g., consistency and completeness)

VI. Educational goals and learning outcomes

Educational Goals

Students will:
- gain a sharpened sense of the role played by deductive reason in a wide range of human activity (GE 3, 7)
- develop skills involved in formal proof construction (GE 1, 2, 3, 4, 7)
- gain greater appreciation of the rigor of formal systems (4, 7)
- strengthen their habits of attention to detail and organization in the discipline of formal logic and academic activity in general (GE 1, 3, 7)

Learning outcomes

Students will be able to:
- construct formal proofs in propositional logic ranging from several to perhaps 15 or 20 lines
- construct proofs likewise in predicate logic
- translate complex English sentences into each system
- demonstrate competence in the understanding of relational predication with the use of multiple quantifiers
- define such terms as ‘validity’, ‘soundness’, ‘deduction’, ‘induction’, and ‘formal proof’

VII. Modes of teaching and learning

- Demonstration of proof by instructor and students on whiteboard
- Explanation of techniques of proof and translation using text problems
- Discussion of strategies involved in these problems

VIII. Papers, examinations, and other assessment instruments
• multiple in-class exams

IX. Grade determinants

• exams
• in-class performance

X. Texts and materials


(Note: Software is provided with recent editions of this set, thus the reference above to Gen Ed goal # 6. The examples taken from this text span a wide range of both practical and theoretical activity, thus the reference to Gen Ed goal # 4.)

XI. Resources

• texts
• whiteboard
• photocopy.