PHIL 1102: Logic

A. Course Description
   1. Number of credits: 3
   2. Lecture hours per week: 3
       Lab hours per week: 0
   3. Prerequisites: None
   4. Co-requisites: None
   5. MnTC Goals: 4

This course is the study of the deductive analysis of arguments using the tools of contemporary symbolic logic. The course includes the examination of basic logical concepts (logical form, validity, logical truth, consistency, logical equivalence, contradiction), symbolization of arguments expressed in natural language, truth tables, formal proofs or truth trees, and elementary quantification theory.

B. Date last revised: Fall 2015

C. Outline of Major Content Areas
   1. Basic Concepts, including logical form, deductive validity, logical truth, consistency, logical equivalence, contradiction.
   2. Symbolization
   3. Truth Tables
   4. Formal Proofs or Truth Trees
   5. Elementary Quantification Theory

D. Course Learning Outcomes
Upon successful completion of the course, the student will
   1. Identify and apply contemporary logical systems, including standard propositional logic and elementary quantification theory, as well as have an awareness of some of the historical antecedents (4a).
   2. Clearly define and compare logical concepts in prose (4b).
   3. Explain what constitutes a deductively valid argument; construct various forms of proof of validity (truth tables, formal proofs or truth trees) and explain why those constitute proofs of validity (4c).
   4. Use an artificial language to model the logical form of natural language sentences, use truth tables to model logical relationships amongst declarative sentences, understand and apply higher-order problem solving techniques used to construct formal proofs or truth trees (4d).
   5. Use symbolization techniques to isolate the relevant logical forms of assertions offered in argument, planning, and problem-solving contexts; identify ambiguities and potential biases in premises and conclusions (2a).
   6. Imagine alternative solutions for formal or informal proofs or truth tree problems; identify ambiguities in the logical form of assertions (2b).

7. Analyze the logical connections among premises and generate their implications; evaluate the validity of arguments (2c).
8. Recognize and articulate the properties relevant to truth-value relationships amongst assertions, distinguish truth-value relationships from other kinds of value assumptions implicit in assertions (2d)

E. Methods for Assessing Student Learning
1. Homework Problem Sets
2. Exams
3. Quizzes

Special Information: None