

Course discipline/number/title: PHIL 1145: Logic

A. CATALOG DESCRIPTION

1. Credits: 3
2. Hours/Week: 3
3. Prerequisites (Course discipline/number): None
4. Other requirements: None
5. MnTC Goals (if any): Goal 4/Mathematical/Logical Systems

B. COURSE DESCRIPTION: This course is an introduction to the systematic study of reasoning and argumentation. Students will learn how informal and formal logic can be used to evaluate the strength or validity of arguments, especially ones drawn from ordinary language. They will also develop the capacities to recognize common fallacies, and to apply the methods of logic to the problems of contemporary interest. While this course challenges students with abstract reasoning, the study of logic will demystify the underlying structure of language, highlight abuses of reason, teach the values of critical reading, and suggest strategies for formulation coherent, well-reasoned writing.

C. DATE LAST REVISED (Month, year): December, 2021

D. OUTLINE OF MAJOR CONTENT AREAS:

1. Informal Logic
 - a) Recognizing argument structure
 - b) Deductive and inductive arguments
 - c) Argument evaluation
 - d) Common fallacies
2. Categorical Logic
 - a) Properties of categorical propositions
 - b) Immediate inferences
3. Propositional Logic
 - a) Logical operators
 - b) Translations
 - c) Truth tables
 - d) Proof methods in propositional logic
4. Predicate Logic
 - a) Translations
 - b) Other material as appropriate
5. One or more of the following topics:
 - a) Argument diagrams
 - b) Categorical syllogisms
 - c) Proof methods in predicate logic
 - d) Inductive logic
 - e) Scientific reasoning
 - f) Causal reasoning
 - g) Moral and legal arguments
 - h) History and philosophy of logic

E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Identify and categorize arguments using the concepts of inductive and deductive logic.
2. Formulate arguments using clear, unambiguous language
3. Discriminate between fallacious and non-fallacious reasoning
4. Explain the relevance of formal methods to real-world problems
5. Represent ordinary language arguments in symbolic form.
6. Appraise the soundness or cogency of arguments.

- F. **LEARNING OUTCOMES (MNTC):**
Goal 4/Mathematics/Logical Reasoning: The student will be able to:
1. Illustrate historical and contemporary applications of mathematics/logical systems.
 2. Clearly express mathematical/logical ideas in writing.
 3. Explain what constitutes a valid mathematical/logical argument (proof).
- G. **METHODS FOR EVALUATION OF STUDENT LEARNING:** Methods may include, but are not limited to:
1. Essay exams and quizzes
 2. Objective tests and quizzes
 3. Homework problem sets
- H. **RCTC CORE OUTCOME(S).** This course contributes to meeting the following RCTC Core Outcome(s):
Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.
- I. **SPECIAL INFORMATION (if any):** None