PHIL/MATH 111: Introduction to Logic – Critical Reasoning

*Satisfies both QL-A and GER-Humanities requirements*

**Course Description**

Students learn a broad variety of fundamental logical methods—techniques used to identify, analyze, model, evaluate, and criticize different types of real-world reasoning. Jointly offered w/Math 111; they count as repeats of one another. Prerequisite: ACT math subscore of 18 or higher, or Math Placement Level C.

**Course Objectives**

This is a general introductory course in logic—the study of what distinguishes correct from incorrect reasoning. We will survey a wide variety of reasoning types, and a correspondingly wide variety of principles and techniques for evaluating them. In so doing, we will aim to develop the following skills:

a) Recognizing arguments and analyzing their structure
b) Identifying common logical fallacies
c) Applying formal techniques to evaluate deductive reasoning
d) Using abstract formal schemata to represent common inductive reasoning patterns
e) Employing quantitative tools to evaluate probabilistic reasoning and statistical reasoning

**Course Content**

*The textbook, written by the instructor, is free here: [https://dc.uwm.edu/phil_facbooks/1/]*

Chapter 1: Basic notions and techniques (validity, soundness, deduction/induction, diagramming)
Chapter 2: Informal fallacies (*ad hominem*, *post hoc*, straw man, red herring, etc., etc.)
Chapter 3: Aristotelian logic (Venn diagrams and such)
Chapter 4: Sentential logic (Truth tables and such)
Chapter 5: Analogical and causal arguments (arguments from analogy, scientific reasoning, correlation vs. causation, controlled studies, etc.)
Chapter 6: Probability and statistics (calculating probability, belief revision and evidence, basic statistical notions and reasoning patterns, “How to Lie with Statistics”)

**Evaluation**

Weekly homework graded on effort (20%), weekly quizzes (20%), three exams (20% each)

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1 Excellent preparation for QL-B course PHIL 211
2 Excellent preparation for a variety of QL-B statistics courses