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PH 510 Logic

Joseph B. Onyango Okello

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PH 510: Logic

Fall 2003

Instructor: Joseph Okello

jbookello@hotmail.com or 859-858-9183

Time : 1:00 – 2:15, T, R

Campus Room: Wilmore M 304

“Some knowledge of the sciences also, is, to say the least, equally expedient. Nay, may we not say, that the knowledge of one, whether art or science, although now quite unfashionable, is even necessary next, and in order to, the knowledge of the Scripture itself? I mean logic. For what is this, if rightly understood, but the art of good sense, of apprehending things clearly, judging truly, and reasoning conclusively? What is it, viewed in another light, but the art of learning and teaching, whether by convincing or persuading? What is there, then, in the whole compass of science, to be desired in comparison to it?”

John Wesley, “Address To Clergy.”

I. Course Objectives

Upon successful completion of this course, the students will:

1. Know the inference rules for statement logic and be able to use them to solve logic problems.
2. Know the inference rules for predicate logic and be able to use them to solve logic problems.
3. Have a basic understanding of probability theory and the methods of induction and be able to employ them to solve practical problems.
4. Be able to detect informal fallacies when they appear in various kinds of literature.
5. Be able to detect weak and fallacious arguments, think more clearly and argue more rigorously.

II. Requirements.

1. We will work through the text in class and give significant attention to solving logical problems. These will be regularly assigned in class.
2. Class attendance is required. Three absences are permitted. If you are absent more than three times, it will affect your grade adversely, unless all are excused.
3. The grade will be based on two exams: a mid-term and a final.

III. Text

C. Stephen Layman, *The Power of Logic*

Course Schedule and Daily Assignments

Date	Task	Page
September 4	Introduction & Basic Concepts: Validity, Soundness, Forms &	1 – 36
9	Basic Concepts: Strength & Cogency	37 – 45
11	Identifying Arguments: Arguments, non-arguments, etc.	47 – 74
16	Identifying Arguments: Argument Diagrams	76 – 87
18	Logic and Language: Logic, meaning, emotive force, defs.	89 – 110
23	Logic and Language: Using Definitions to evaluate arguments	110 – 119
25	Informal Fallacies: Irrelevant premises and ambiguity	121 – 145
30	Informal Fallacies: Unwarranted Assumptions	145 – 161
October 2	Statement Logic: Symbolizing, Truth Tables	243 – 266
7	Truth Tables: Using them to evaluate Arguments	266 – 289
9	Statement Logic: Proofs – Rules of Inference	291 – 307
14	Exam	
15	Statement Logic: Proofs – Equivalence Rules	307 – 318
21	Statement Logic: proofs – Equivalence Rules	318 – 330
23	Conditional Proof and <i>Reductio ad Absurdum</i>	330 – 349
28	Proving Theorems	349 – 354
30	Predicate Logic: Predicates and Quantifiers	357 – 371
November 4	Predicate Logic: Demonstrating Invalidity	371 – 380
6	Constructing Proofs	380 – 400
11	Quantifier Negation, RAA & CP, Logic of Relations: Symbolizing	400 – 418
13	Logic of Relations- Proofs; Identity- Symbolizing & Proofs	418 – 438
18	Induction: Agmts from Authority, Mills Method., etc	441 – 470
20	Induction: Arguments from Analogy	470 – 479
25-28	Reading Week/ Fall Break	
2	Probability: 3 Theories of, The Rules of,	481 – 498
4	Probability: Bayes' Theorem	498 – 508
9 - 13	Exam Week	