

COURSE OUTLINE

**Philosophy 117 (C-ID Number: PHIL 110)
Introduction to Logic (C-ID Title: Introduction to Logic)**

I. Catalog Statement

Philosophy 117 is a study of the structure and function of language, inductive and deductive forms of reasoning and argumentation. The course includes the study of formal argumentation, the predicate calculus, the methods of experimental inquiry, the nature of scientific proof, and some probability theory.

Total Lecture Units: 3.0

Total Course Units: 3.0

Total Lecture Hours: 48.0

Total Faculty Contact Hours: 48.0

Recommended preparation: Eligibility for ENGL101

II. Course Entry Expectations

Prior to enrolling in the course, the student should be able to:

1. use detailed examples, facts, logical explanations, and other appropriate support for thesis statements;
2. critically analyze selected prose works dealing with important contemporary issues;
3. summarize, analyze, and synthesize information, express and apply standards for judgment, compare and contrast, and evaluate evidence in order to form and state reasoned opinions.

III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

1. identify inductive and deductive arguments and assess their respective strengths and weaknesses;
2. identify and evaluate major fallacies of reasoning, and recognize their use in written and spoken communication;
3. apply basic techniques to translate ordinary English sentences into propositional and predicate form to evaluate the validity of arguments based on such forms;
4. identify the structure of analogical arguments and evaluate the strength of such

arguments;

5. identify the major techniques of reasoning by causal inference.

IV. Course Content

Total Faculty Contact Hours = 48

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| A. Language | 8 hours |
| 1. Introduction to the subject (i.e. the source of logic's 'oughts' and why the statue of justice is blindfolded) | |
| a. Being logical (i.e. if Clifford's maxim is true, must we carefully inspect every purported perpetual motion machine?) | |
| b. Introduction to technical terminology (i.e. why trust truth preserving inferences or deny arguments can be true or false?) | |
| c. Minimizing vague language (i.e. intellectual honesty vs. manipulation) | |
| 2. Fallacies (i.e. applying the principle of charity in attributing error) | |
| a. Informal fallacies (i.e. contextualized error) | |
| b. Formal fallacies (i.e. logical form and literal meaning) | |
| c. Avoidance of fallacies (i.e. if Clifford's maxim is false, what place does the sphere of reason have in our lives?) | |
| B. Deductive Logic (i.e. the merits of transparency and truth functionality) | |
| 1. Propositional claims (i.e. Gricean implicature, opaque contexts) | 6 hours |
| a. Disjunctions | |
| b. Conjunctions | |
| c. Conditionals | |
| d. Biconditionals | |
| 2. Propositional arguments (i.e. why care about validity in ignorance of soundness?) | 5 hours |
| a. Modus ponens | |
| b. Modus tollens | |
| c. Affirming the consequent | |
| d. Denying the antecedent | |
| e. Hypothetical syllogisms | |
| f. Disjunctive syllogisms | |
| 3. Truth Tables for propositions and arguments | 5 hours |
| 4. Categorical propositions and arguments | 20 hours |
| (i.e. translating 'only', 'none but', etc.) | |
| a. Venn Diagrams (i.e. Aristotelian and Boolean assumptions) | |
| b. Predicate Calculus (i.e. standard derivations, using rules of inference and axioms of replacement, only monadic predicates, and some models proving invalidity) | |
| C. Induction (i.e. assessing strength without determining cogency) | 4 hours |
| 1. Analogy and provable inference | |

- a. Argument by analogy (i.e. J.J. Thompson's plugged in violinist)
 - b. Appraising analogical arguments (i.e. exploring our concept of self-defense)
2. Causal connections (i.e. falsification and confirmation):
 - a. The meaning of cause and effect (i.e. necessary and sufficient conditions and some attempts at defining causality)
 - b. Conditions of plausible cause and effect (i.e. Mill's Methods)

V. Methods of Instruction

The following methods of instruction may be used in the course:

1. lecture (i.e. ongoing interactive musing about what is gained in thinking within a truth functional language in a bivalent universe, and what might be lost);
2. co-operative learning through group problem solving (i.e. discussing exactly how St. Anselm's argument is supposed to work—are there modal errors?)

VI. Out of Class Assignments

The following out of class assignments may be used in the course:

1. identify informal fallacies in advertising, political speeches, and campus lectures (e.g. identifying skillful use of straw person, red herring or ad hominem by presidential candidates);
2. diagram complex discursive essays (e.g. summarizing Orwell's essay, Politics and the English Language, in 20 claims and then diagramming their support relations);
3. construct effective formal and informal counterexamples to argumentative inferences. (e.g. clothing a truth table generated counterexample in common sense English or discussing why, if group members think happiness is more important than truth, most are reluctant to live a life connected to a pleasure-experience machine).

VII. Methods of Evaluation

The following methods of evaluation may be used in the course:

1. in-class objective and/or essay examinations;
2. homework problems and puzzles;
3. argumentative essays;
4. final examination.

VIII. Textbook(s)

Hurley, Patrick J. *Introduction to Logic*. 11th ed. Boston: Wadsworth, 2010. Print.
12th Grade Textbook Reading Level. ISBN 978-084034175.

Late, Irving M., and Carl Cohen. *Introduction to Logic*. 14th ed. New York: Pearson, 2010. Print.
12th Grade Textbook Reading Level. ISBN978-0205820375.

IX. Student Learning Outcomes

Upon successful completion of the required coursework, the student will be able to:

1. distinguish inductive from deductive arguments and to evaluate arguments in terms of logical form;
2. identify and evaluate major fallacies of reasoning, and detect their use in written and spoken communication;
3. identify key structural features of analogical and causal arguments and evaluate such arguments independently of concerns about the plausibility of their premises.