PHIL 7: INTRODUCTION TO SYMBOLIC LOGIC

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2025
Units:	5
Hours:	5 lecture per week (60 total per quarter)
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Area 1B: Oral Communication & Critical Thinking
Transferable:	CSU/UC
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- Evaluate persuasive text or speech through the identification of common logical fallacies.
- Determine whether a deductive argument is valid or invalid.
- Successfully translate real language arguments into symbolic form.
- Identify and distinguish the constituent parts of an argument (premises and conclusion) within a persuasive text or speech.

Description

The use of logic as a tool for constructing, analyzing and evaluating arguments. Topics to be covered will be the basic construction of premises and conclusion to form arguments, common formal and informal fallacies, categorical propositions and syllogisms, propositional logic, natural deduction and predicate logic.

Course Objectives

The student will be able to:

1. Construct, analyze and evaluate arguments.
2. Identify formal and informal fallacies.
3. Translate real language arguments into symbolic form.
4. Evaluate symbolic statements and arguments with direct and indirect truth tables.
5. Use rules of replacement and implication to construct symbolic proofs for the evaluation of arguments.

Course Content

1. Subject matter of logic
    a. Components of an argument: premises and conclusions
    b. Induction versus deduction
    c. Strength and validity
    d. Advantages of symbolism in logic
2. Formal and informal fallacies
3. Categorical propositions
    a. Quantity, quality and distribution
    b. Aristotle and the traditional square of opposition
    c. Boole and the modern square of opposition
    d. Using Venn diagrams for evaluation of categorical propositions and arguments
    e. Translation of ordinary language arguments into categorical syllogisms
    f. Sorities
4. Propositional logic
    a. Symbols and translation
    b. Truth functions
    c. Truth tables for arguments and propositions
    d. Indirect truth tables
    e. Argument forms and formal fallacies
        i. Modus ponens
        ii. Modus tollens
        iii. Hypothetical syllogism
        iv. Disjunctive syllogism
        v. Constructive dilemma
        vi. Destructive dilemma
        vii. Affirming the consequent
        viii. Denying the antecedent
5. Natural deduction
    a. Using rules of implication in proofs
    b. Using rules of replacement in proofs
    c. Conditional and indirect proofs
6. Predicate logic
    a. Symbols and translation for predicate logic
    b. Using the rules of inference in predicate logic
    c. Change in quantifier rule
    d. Conditional and indirect proofs for predicate logic
    e. Proving invalidity
    f. Relational predicates and overlapping quantifiers
    g. Identity

Lab Content

Not applicable.

Special Facilities and/or Equipment

When taught via Foothill Global Access: on-going access to computer with JavaScript-enabled internet browsing software, media plug-ins, and relevant computer applications.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Participation in class discussions
Regular homework that provides opportunity to construct, evaluate and analyze arguments using techniques under discussion
Examinations

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture

Discussion

Representative Text(s) and Other Materials

Hurley, Patrick. A Concise Introduction to Logic, 13th ed.. 2018.

Copi, Irving M., and Carl Cohen. Introduction to Logic, 15th ed.. 2019.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

Daily assignments will take a variety of forms. Examples include argument reconstruction, fallacy identification, evaluation of arguments using Venn diagrams, truth tables and proofs.

Discipline(s)

Philosophy