

General Education Course Proposal

Proposed Course: PHIL 45 Introduction to Logic Units 3
Prefix No. Title

Department: Philosophy School: Arts and Humanities

GE Category (Indicate one category only):

Foundation: A1 ___; A2 ___; A3 X; B4 ___
Breadth: B1 ___; B2 ___; C1 ___; C2 ___; D ___; E ___
Integration: B ___; C ___; D ___; International/Multicultural ___

Existing Course X; Revised Course ___; New Course ___

Course Included in Current GE Program X

New courses require the Undergraduate Course Proposal form in addition to this form.

Revised courses require the Undergraduate Course Change Request in addition to this form.

Proposed catalog description: Limit course description to 40 words using succinct phrases. Include prerequisites, limitations, lecture/lab hours. Indicate former course number, e.g., (Former Biol 105)

Basic concepts and methods of logic; development of skills in deductive and inductive reasoning, with emphasis on deduction. Elementary formal techniques for propositional logic; categorical logic, fallacies, and language. (Phil. 45 and Phil. 25 cannot both be taken for credit.)

Enrollment limit per section: 35

Expected number of sections per semester – Year 1 2; Year 3 2

Attachments:

1. A statement presenting the ways in which this course meets the Specifications provided in the appropriate section of the General Education Policy as well as in the Policies for Inclusion and Evaluation of General Education Courses.
2. A statement of elements common to all sections of this course, identifying content, objectives, required student activities, grading policy, representative texts, and an approximate schedule for the course. Required student activities include such things as papers, research projects, homework, laboratory and/or studio performance, recitations, participation, attendance, and exams.
3. A typical syllabus for a particular offering of the course.
4. Any special cost factors associated with this course.

Approval for Inclusion in General Education

Karen Bell 2/19/98
Department Chair Date

Kim Morin 2/23/98
School Curriculum Committee Date

D. Jain 2/25/98
School Dean Date

Redmond 12/15/98
General Education Subcommittee Date

Brandt Kehoe 12/22/98
Associate Provost Date

1/14/98

(cover 3 pages)

Attachment #2: Generic Elements Document

Elements Common to all sections of Phil 45 (Introduction to Logic)

Catalog description: Basic concepts and methods of logic; development of skills in deductive and inductive reasoning, with emphasis on deduction. Includes elementary formal techniques for propositional logic; also categorical logic, fallacies, and language. (Phil. 45 and Phil. 25 cannot both be taken for credit.)

3 units, no prerequisites, no special fees or other student supplied equipment and materials (apart from textbook).

General Education: This course meets General Education requirements. For students with catalogs 1997-98 or earlier, it meets the requirement for CORE, Critical Thinking. For all other students, it meets the requirement for FOUNDATION A3. A grade of C or better is required for G.E. credit.

Course goals:

1. Understanding of the basic concepts of logic and reasoning.
2. Understanding of the characteristics of good reasoning, and of principles relevant in evaluating any reasoning
3. Ability to recognize the most common mistakes in reasoning
4. Understanding of basic techniques for evaluating deductive inferences.
5. Skill in making deductive inferences
6. Understanding principles for evaluating basic types of inductive reasoning
7. Skill in making inductive inferences
8. Increased ability to think more clearly
9. Skill in handling vagueness and ambiguity in language

Course topics:

1. **Basic concepts of logic and reasoning.** (2-4 weeks) This includes at least the following:
 - a) Understanding of basic concepts: argument, premise, conclusion, inference, deductive, inductive, valid, conditional statement, antecedent, consequent.
 - b) Identification of premises and conclusion
 - c) Emphasis on the concept of validity
 - d) Proving invalidity with counterexamples
2. **Uses of language and definitions.** (1-2 weeks) This includes at least the following:
 - a) Vagueness
 - b) Ambiguity
 - c) Clarifying meaning with definitions
3. **Common fallacies.** (1-3 weeks) This includes at least the following:
 - a) Fallacies of relevance
 - b) Fallacies of induction
 - c) Fallacies of ambiguity

4. **Deductive logic.** (6-9 weeks) This includes at least the following:
- a) Propositional logic in symbolic form
 - b) Truth tables
 - c) Indirect truth table technique, or truth trees, or natural deduction for propositional logic
 - d) Venn Diagrams or some other mechanical technique for at least Aristotelian syllogisms.
5. **Inductive logic.** (2-5 weeks) This includes at least the following:
- a) Reliable generalizations
 - b) Explanations and hypothetico-deductive reasoning

The order and emphasis in coverage of these topics may vary according to discretion of instructor and in light of specific textbook used.

Assignments:

1. **Homework/classwork:** Homework and other exercises will be covered in nearly every class period with students being called on to give their answers. Class size is kept low (35 max., but preferably lower) so that every student will get feedback from the instructor at least once every class period.
2. **Quizzes and tests:** There will be regular quizzes and tests.
3. **The University General Education policy states that each course in lower division GE must have a 2,000 word writing requirement.** Accordingly, each student will be required to complete writing assignments, at a minimum of 2,000 words. (Specific writing assignments are given on the Typical Syllabus which follows. If it is desired that specific writing assignments be put on the "General Elements Document
4. **Final Exam.** There will be a 2 hour final exam.

Attachment #3: Typical Syllabus

PHIL. 45 INTRODUCTION TO LOGIC

Tuesday-Thursday 8:10-9:25
Education 181

Instructor: Dr. James Slinger
Office: Music Building, Room 112
Office hours: Mon. 1:00-3:00, Tues. 1:00-3:00, Fri. 10:00-11:00, and by appointment
Phone/email: 278-4940 (with voice mail); email address: james@csufresno.edu
Dept. office: Music Building, Room 102; hours: M-F 8:30-12:00, 1:00-5:00
Dept. phone: 278-2621

Catalog description: Basic concepts and methods of logic; development of skills in deductive and inductive reasoning, with emphasis on deduction. Includes elementary formal techniques for propositional logic; also categorical logic, fallacies, and language. (Phil. 45 and Phil. 25 cannot both be taken for credit.)

3 units, no prerequisites, no special fees or other student supplied equipment and materials apart from textbook.

General Education: This course meets General Education requirements. For students with catalogs 1997-98 or earlier, it meets the requirement for CORE, Critical Thinking. For all other students, it meets the requirement for FOUNDATION. A grade of C or better is required for G.E. credit.

Course objectives:

1. Understanding of the basic concepts of logic and reasoning.
2. Understanding of the characteristics of good reasoning; principles relevant in evaluating any reasoning
3. Ability to recognize the most common mistakes in reasoning
4. Understanding of basic techniques for evaluating deductive inferences.
5. Skill in making deductive inferences
6. Understanding principles for evaluating basic types of inductive reasoning
7. Skill in making inductive inferences
8. Increased ability to think more clearly
9. Skill in handling vagueness and ambiguity in language

Textbook: Patrick Hurley, *A Concise Introduction to Logic*

Tests, Assignments, and Requirements:

1. Students will prosper in the course only to the extent that they do the homework regularly so as to develop skills. Homework and other **exercises** will be covered in every class period with students being called on to give their answers. Class size is kept moderate so that every student will get feedback

- from the instructor at least once every class period. Exercises normally need not be turned in unless one's quiz scores are low.
2. There will be a **quiz** nearly every week, normally on Thursday. Exceptions will be announced in class. No books or notes may be used on quizzes. (About 400 points total, 50% of grade)
 3. There will be three **writing assignments** during the semester, approximately three pages each, typed and double spaced. (About 100 points total, 15% of grade)
 4. There will be a comprehensive **final exam** on Thursday, May 21, from 7:30 to 9:30 a.m. in our classroom. (200 points, 25% of grade)
 5. **Class attendance and participation** is expected, and will be taken into account on borderline grade decisions. (Approximately 10% of grade, but the further down the grading scale one goes, the more effort will be taken into account.)

Grading Policy:

1. There will be a make-up policy for quizzes, consisting of a substantial set of exercises. These are to be completed at home, and may be done by students who took the quiz and don't like their grade as well as those who missed the quiz. A satisfactory completion of a set of make-up exercises will eliminate a bad grade, but will not substitute a good grade for the bad grade.
2. Writing assignments turned in late will receive a lower grade except in very extenuating circumstances.
3. As indicated above, class attendance, participation, and effort may affect one's grade. The following grading scale indicates the minimum percentage of total points available that are required for each grade. The lower number is the minimum percentage with excellent effort, the higher number is the minimum percentage with poor effort.

85-88%	A
70-75%	B
55-63%	C
40-50%	D

General Information:

1. **Cheating and plagiarism** will be treated very seriously. The student is referred to the University Policy, as stated in the *Catalog* and in the *Schedule of Courses*. Depending on the seriousness of the action, the student may be penalized by an 'F' on the assignment or quiz, an 'F' in the course, and/or the filing of a Cheating/Plagiarism Report to be placed in the student's permanent academic record.
2. **Students with disabilities.** If you have a disability, be sure to identify yourself to the university and the instructor so that reasonable accommodation for learning and evaluation within the course can be

made. Please contact Services to Students with Disabilities, Library Room 1049, 278-2811.

Course Calendar

- Jan. 27: Introduction to course; basic concepts of logic and reasoning: argument, premise, conclusion, inference,
- Jan. 29: Identifying premises and conclusions. HURLEY 1.1 ("Arguments, Premises, and Conclusions"; Exercise is on identifying premises and conclusions)
- Feb. 3: Arguments, conditional statements, and explanations. HURLEY 1.2 ("Recognizing Arguments"; Exercise is on identifying passages as argument, conditional statement, explanation, or as passages lacking an inferential claim)
- Feb. 5: Deduction & induction. HURLEY 1.3. ("Deduction and Induction"; Exercise on identifying arguments as deductive or inductive, and stating the reasons for such identification). Intro. to terminology for evaluating inferences. HURLEY 1.4. ("Validity, Truth, Soundness, Strength, Cogency"; Exercises of different types of test understanding of these concepts, and work on distinguishing appraisals of premises from appraisals of inferences)
- Feb. 10: Finish work on exercises, HURLEY 1.4. Proving invalidity. HURLEY 1.5. ("Argument Forms: Proving Invalidity"; Exercise is on proving invalidity by providing counterexamples of the same form as the argument to be evaluated)
- Feb. 12: Diagramming argument structure: HURLEY 1.6. ("Extended Arguments"; Exercise is on diagramming the structure of arguments with multiple inferences using the "circled number and arrow" technique.)
- Feb. 17: Longer Quiz on Chap. 1 of Hurley. Clarifying meaning & definitions: HURLEY 2.3 ("Definitions and Their Purposes"; Exercise on identifying definitions as stipulative, lexical, precisising, theoretical, or persuasive, plus a TF exercise on relevant concepts.)
- Feb. 19: Handling ambiguity & vagueness. CLASS HANDOUT. (WRITING ASSIGNMENT #1 DUE ON DIAGRAMMING ARGUMENT STRUCTURE)

Directions for Writing Assignment #1:

A complex argument is given below (but not given in this G. E. document):

Directions

(1) Diagram the structure of the argument, representing propositions with circled numbers, and representing inferences with arrows. I have provided a list of all propositions contained in the argument, with numbers.

(2) Indicate for each assumption of the argument whether it seems to you (a) surely true, (b) a reasonable assumption, but possible false, (c) very doubtful, although possibly true, or (d) surely false. You may also choose to indicate that an assumption is/seems (probably) true *with some qualification*.

(3) Indicate for each inference of the argument whether it seems to you (a) deductively valid, (b) a reasonable inductive inference, (c) an inference where the premise(s) provide a little evidence for the conclusion, but not sufficient to warrant belief, and (d) a worthless inference.

(4) Identify what you take to be the most crucial mistake(s) in the argument, and try to show they are mistakes. (Or, if you think there are no crucial mistakes, try to support your judgment that the argument is good.)

Approximate length: Diagram plus 3-5 pages typed double-spaced.

Assignments will be graded on the basis of accuracy of the diagram, clarity of organization of the evaluation of the argument, demonstrated understanding of what is to be done in Parts (2) and (3) of the assignment, demonstrated understanding of how one goes about evaluating an argument, clarity of writing, observance of rules for good grammar and correct punctuation.

- Feb. 24: Fallacies of irrelevance. HURLEY 3.1 ("Fallacies in General") 3.2 ("Fallacies of Relevance"; Exercise on identifying fallacies of relevance, plus TF exercise on relevant concepts)
- Feb. 26: Fallacies of irrelevance. Finish exercises on HURLEY 3.2
- Mar 3: Categorical propositions. HURLEY 4.1 ("The Components of Categorical Propositions"; Exercise on identifying quantifier, subject term, copula, and predicate term of categorical propositions), 4.2. ("Quality, Quantity, and Distribution"; Exercise on identifying type of proposition (A,E,I,O), quantity, quality, and terms distributed)
- Mar 5: Venn Diagrams & Immediate inferences. HURLEY, 4.3 ("Venn Diagrams and the Modern Square of Opposition"; Exercises on drawing Venn Diagrams for single propositions, and on using the modern square of opposition), 4.4 ("Conversion, Obversion, and Contraposition"; Exercises on using Conversion, Obversion, and Contraposition, and on using Venn Diagrams to evaluate immediate inferences)
- Mar 10: Finish exercises on HURLEY 4.4. Intro to Venn diagrams for categorical arguments.
- Mar 12: Venn diagrams for categorical arguments: HURLEY 5.2 ("Venn Diagrams"; Exercises on using Venn Diagrams to evaluate categorical syllogisms)
- Mar 17: Propositional logic: symbols and translation. HURLEY 6.1 ("Symbols and Translation"; Exercise on using propositional connectives to represent form of statements)
- Mar 19: Truth functions. HURLEY 6.2 ("Truth Functions"; Exercises on symbolizing sentences and on determining the truth or falsity of compound sentences)
- Mar 24: Truth tables for propositions: HURLEY 6.3. ("Truth Tables for Propositions"; Exercise on using truth tables to determine whether sentences tautologous,

self-contradictory, or contingent, and whether pairs of sentences are logically equivalent, contradictory, or consistent)

- Mar 26: Truth tables for arguments: HURLEY 6.4. ("Truth Tables for Arguments: Exercise on using truth tables to evaluate propositional arguments))
- Mar 31: Indirect truth tables for arguments: HURLEY 6.5 ("Indirect Truth Tables for Arguments"; Exercise on using indirect truth table technique to evaluate propositional arguments))
- Apr 2: Deductive argument forms: HURLEY 6.6. ("Argument Forms and Fallacies"; Exercise on identifying the form of propositional arguments) Longer Quiz on Chap. 6.)
- Apr 14: Natural deduction rules of implication I: HURLEY 7.1. ("Rules of Implication I"; Exercises on supplying justification for steps in a derivation, and on constructing derivations using Modus Ponens, Modus Tollens, Hypothetical Syllogism, Disjunctive Syllogism))
- Apr 16: Natural deduction rules of implication II: HURLEY 7.2. ("Rules of Implication II"; Exercises on supplying justification for steps in a derivation, and on constructing derivations using Constructive Dilemma, Simplification, Conjunction, Addition, together with previous rules))
- Apr 21: Natural deduction rules of replacement I: HURLEY 7.3. ("Rules of Replacement I"; Exercises on ("Rules of Implication I"; Exercises on supplying justification for steps in a derivation, and on constructing derivations using DeMorgan's, Commutation, Association, Distribution, Double Negation, together with previous rules))
- Apr 23: Natural deduction rules of replacement II: HURLEY 7.4. ("Rules of Replacement II"; Exercises on supplying justification for steps in a derivation, and on constructing derivations using Transposition, Material Implication, Material Equivalence, Exportation, Tautology, together with previous rules))
- Apr 28: Conditional proof: HURLEY 7.5 ("Conditional Proof"; Exercise on constructing derivations using the Conditional Proof together with previous rules))
- Apr 30: Longer quiz on Chap. 7. Intro. to inductive reasoning. Inductive generalization.
- May 5: Arguments from analogy. HURLEY 9.1 ("Analogy and Legal and Moral Reasoning"; Exercise on evaluating arguments from analogy in various contexts, including legal arguments and moral arguments))
- May 7: Applications to legal and moral reasoning. Continued HURLEY 9.1
- May 12: Explanations and hypothetical reasoning. HURLEY 9.5. ("Hypothetical Reasoning"; Exercise on identifying hypotheses, test implications, and test procedures, plus TF exercise on relevant concepts))

May 14: Exercises on explanations: Continued HURLEY 9.5 (WRITING ASSIGNMENT #2 ON EXPLANATORY HYPOTHESES, DUE AT TIME OF FINAL:

Directions: Choose any problem or facts requiring explanation from science, or, from any Sherlock Holmes story, and, discuss the problem requiring explanation, the proposed hypothesis and any pertinent alternatives, the implications that may be or were drawn from that hypothesis, and the test procedures. Then, evaluate the degree of evidence for that hypothesis. (A long list of possible scientific facts or problems to write on will be supplied.)

Approximate length: 3-5 pages typed double-spaced.

Assignments will be graded on the basis of clarity of organization of the paper, understanding of what is to be done in evaluating a hypothesis, understanding of the criteria to be used in evaluating a hypothesis, clarity of writing, observance of rules for good grammar and correct punctuation

The above schedule and procedures for this course are subject to change, minor changes to provide more or less time on a topic, major changes if extenuating circumstances.

Attachment #4: Special Cost factors: There are no special cost factors associated with this course.