PHIL R107: INTRODUCTION TO LOGIC

Originator
chorrock

College
Oxnard College

Discipline (CB01A)
PHIL - Philosophy

Course Number (CB01B)
R107

Course Title (CB02)
Introduction to Logic

Banner/Short Title
Introduction to Logic

Credit Type
Credit

Start Term
Fall 2021

Catalog Course Description
This course studies the elements, principles and methods of formal deductive reasoning. Topics include: basic analysis of arguments, traditional categorical logic, modern propositional logic, and formal and informal fallacies.

Taxonomy of Programs (TOP) Code (CB03)
1509.00 - Philosophy

Course Credit Status (CB04)
D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)
A (Transferable to both UC and CSU)

Course Basic Skills Status (CB08)
N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)
E - Non-Occupational

Course Cooperative Work Experience Education Status (CB10)
N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)
Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)
N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)
Y - Not Applicable

Course Noncredit Category (CB22)
Y - Credit Course

Funding Agency Category (CB23)
Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)
1 - Program Applicable

General Education Status (CB25)
Y - Not Applicable

Support Course Status (CB26)
N - Course is not a support course

Field trips
Will not be required

Grading method
Letter Graded

Does this course require an instructional materials fee?
No

Repeatable for Credit
No

Is this course part of a family?
No

Units and Hours

Carnegie Unit Override
No

In-Class

Lecture
Minimum Contact/In-Class Lecture Hours
52.5
Maximum Contact/In-Class Lecture Hours
52.5

Activity

Laboratory

Total in-Class

Total in-Class
Total Minimum Contact/In-Class Hours
52.5
Total Maximum Contact/In-Class Hours
52.5

Outside-of-Class

Internship/Cooperative Work Experience

Paid

Unpaid

Total Outside-of-Class

Total Outside-of-Class
Minimum Outside-of-Class Hours
105
Maximum Outside-of-Class Hours
105

Total Student Learning

Total Student Learning
Total Minimum Student Learning Hours
157.5
Total Maximum Student Learning Hours
157.5

Minimum Units (CB07)
3
Maximum Units (CB06)
3

Student Learning Outcomes (CSLOs)

	Upon satisfactory completion of the course, students will be able to:
1	Student will test an argument by means of the formal deduction method/proof.
2	Student will test an argument by using the truth table method.
3	Student will test an argument by means of the indirect or "short-cut" method/proof.
4	Demonstrate an understanding of the use of informal fallacies to deceive (in contrast to logic) in modern day-to-day life.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1	Identify arguments and their basic components.
2	Restate and translate statements and arguments from ordinary language into formal structures.
3	Recognize, diagram and critically evaluate the logic of categorical statements and arguments.
4	Translate and rewrite ordinary language statements using formal symbolic notation.
5	Test the validity of formal statements using the sentential calculus.
6	Apply the principles of formal natural deduction to arguments written in modern symbolic notation.
7	Identify formal and informal fallacies.

Course Content

Lecture/Course Content
1. Overview of logic
    a. Basic elements of arguments
        i. Statements and truth-value
        ii. Premises and conclusions
        iii. Context
    b. Recognizing arguments
        i. Inferential discourse
        ii. Non-inferential discourse
    c. Basic types of arguments

      i. Deduction
      ii. Induction
      iii. Fallacious forms of reasoning
   d. Related concepts
      i. Truth and falsity
      ii. Empirical and necessary
      iii. Deductive validity and invalidity
      iv. Inductive strength and weakness
      v. Soundness and unsoundness

2. Categorical logic
   a. Categorical statements
      i. Parts of a categorical sentence
      ii. Venn diagrams of sentences
   b. The traditional square of opposition
      i. Logical functions
         1. Contradiction
         2. Contrary relations
         3. Implication/alternation
      ii. Immediate inferences
   c. Operations on categorical sentences
      i. Conversion
      ii. Obversion
      iii. Contraposition
   d. Categorical syllogisms
      i. Arranging categorical arguments
      ii. Testing by Venn diagrams
      iii. Testing by syllogistic rules

3. Propositional logic
   a. Translating ordinary language into symbolic language
   b. Logical connectives (logical "operators")
      i. Negation ("not")
      ii. Conjunction ("and")
      iii. Disjunction ("or")
      iv. Conditionals ("if…then…")
      v. Bi-conditionals ("…if and only if…")
   c. Semantics versus syntax of formal systems
      i. Semantics: focus on meaning and truth
      ii. Syntax: focus on form or structure
   d. Truth tables for propositions
   e. Truth tables for arguments
   f. Tautologies, contradictions and contingent statements
   g. Indirect truth tables

4. Formal natural deduction: Proofs
   a. Rules of replacement
      i. Statement equivalences
         1. Double negation
         2. DeMorgan's theorm
         3. Material implication
         4. Contraposition
      ii. Argument forms
         1. Modus ponens/tollens
         2. Disjunctive syllogism
         3. Hypothetical syllogism
         4. Simplification and conjunction
   b. Indirect proofs
   c. Conditional proofs

5. Fallacies
   a. Formal fallacies: non-sequitors
   b. Informal fallacies

      i. Fallacies of ambiguity
         1. Equivocation
         2. Amphiboly
     ii. Fallacious ir/relevance
         1. Appeal to authority
         2. Appeal to popularity/tradition
         3. Appeal to pity
         4. Ad hominem attack
         5. False dilemma
         6. Begging the question

Laboratory or Activity Content

None

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Problem solving exercises
Written expression

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Essay exams
Group projects
Objective exams
Problem-Solving Assignments
Quizzes
Reports/papers
Research papers
Skill tests

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
Computer-aided presentations
Class discussions
Distance Education
Field trips
Instructor-guided interpretation and analysis
Lecture

Describe specific examples of the methods the instructor will use:

1. Instructor will direct interactive instructional activities asking students to compare and contrast the "intuitive" use of logic with the formal, ruled-based methods of logic studied in the course.
2. Guided and focused class discussions of various formal, methodological problem-solving techniques. These discussions would elicit student recognition of types of problems in logic; methods to re/solve; solution to problem
3. Instructor will show video/s depicting the integration of (formal) logic with concrete counterparts, for example, the codification of societal law/s; games (ex. chess) and game theory; artificial intelligence and computational studies; and so forth.

Representative Course Assignments

Writing Assignments
1. Rewriting ordinary language statements using symbolic language
2. Constructing "models" to solve for a variety of logical tasks
3. Handwritten problem-solving exercises

Critical Thinking Assignments
1. Participate in class and small group discussions which engage in dialogue about solving problems in logic, for example, law-school-style (LSAT) "analytic"/(mathematical-logic-style) questions.

2. Compare and contrast different approaches of solving a logic problem within a single system, for example, solving a truth-functional argument by using a "full" truth-table versus solving by a "short" truth-table, (i.e, by the "indirect method").

Reading Assignments
1. Standard logic textbook chapter readings
2. "Streamlined" formula guides (which "synthesize" the concepts being studied)
3. Examples of "model" arguments, written in ordinary language, which can be translated into symbolic language.

Skills Demonstrations
1. Putting an ordinary-language into "standard form."
2. Using Venn diagrams to represent (and solve-for) a categorical syllogism.

Other assignments (if applicable)
1. Research electronic databases for additional material on logic
   a. Logic and computers
   b. Logic and language (and brain function)
   c. Logic and law

Outside Assignments

Representative Outside Assignments
1. Reading/s of primary source materials in logic, and completing homework-style problems related to the reading/s.
2. Reading/s of secondary source materials in logic, and completing homework-style problems related to the reading/s.
3. Reviewing video of, for example, open-source university lectures on topics in logic
4. Searching for video related to course topics, but not included in the syllabus, and/or course bibliography
5. Research electronic databases, e.g., Standard Encyclopedia of Philosophy, for additional material on a subject
6. Reviewing content found on university/4-yr. college philosophy department websites, including philosophy program features, instructor web pages (of recent work, professional background), student web pages, insofar as they are indicative of professional work within the field of logic.
7. Weekly short essay assignments related to class lecture and assignments.
8. Library/Learning resource search-inquiries and assignments.
9. (Self)-Reports/-ing of searches/inquiries, outcomes of searches, interpretation/analysis of searches.

Articulation

C-ID Descriptor Number
PHIL 110

Status
Approved

Comparable Courses within the VCCCD
PHIL M07 - Introduction to Logic
PHIL V04 - Introduction to Logic

District General Education

A. Natural Sciences

B. Social and Behavioral Sciences

C. Humanities

D. Language and Rationality

D2. Communication/Analytical Thinking
Approved

E. Health and Physical Education/Kinesiology

F. Ethnic Studies/Gender Studies

Course is CSU transferable
Yes

CSU Baccalaureate List effective term:
Fall 1999

CSU GE-Breadth

Area A: English Language Communication and Critical Thinking

A3 Critical Thinking
Approved

Area B: Scientific Inquiry and Quantitative Reasoning

Area C: Arts and Humanities

Area D: Social Sciences

Area E: Lifelong Learning and Self-Development

Area F: Ethnic Studies

CSU Graduation Requirement in U.S. History, Constitution and American Ideals:

UC TCA

UC TCA
Approved

IGETC

Area 1: English Communication

Area 2A: Mathematical Concepts & Quantitative Reasoning

Area 3: Arts and Humanities

Area 4: Social and Behavioral Sciences

Area 5: Physical and Biological Sciences

Area 6: Languages Other than English (LOTE)

Textbooks and Lab Manuals
Resource Type
Textbook

Description
Copi & Cohen (2020). *Introduction to Logic.* Prentice Hall. (Saddle River/NJ)

Resource Type
Textbook

Description
Stan Baronett (2018). *Logic.* Oxford University Press. (UK)

Resource Type
Textbook

Description
Patrick Hurley (2020). *A Concise Introduction to Logic.* Cengage. (Boston/MA)

Distance Education Addendum

Definitions

Distance Education Modalities
Hybrid (51%–99% online)
Hybrid (1%–50% online)
100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.
Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.
Yes

Regular Effective/Substantive Contact

Hybrid (1%–50% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic such as by distinguishing arguments as either deductive Or inductive and assessing the relative merits or deficiencies exhibited by those arguments.
E-mail	Faculty will communicate with students via email regarding course information and concerns.
Other DE (e.g., recorded lectures)	Faculty may record audio recordings and/or video lectures on the course content including videos on metaphysics, epistemology, ethics, social and political philosophy, theology, philosophy of science, and/or axiology...within the context of each one's (relative) impact on the field of logic.
Video Conferencing	Faculty may utilize online live meetings with students to deliver lectures and have discussions on topics related to the course content.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic such as by distinguishing arguments as either deductive Or inductive and assessing the relative merits or deficiencies exhibited by those arguments.

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Video Conferencing	Faculty may utilize online live meetings with students to deliver lectures and have discussions on topics related to the course content.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic such as by distinguishing arguments as either deductive Or inductive and assessing the relative merits or deficiencies exhibited by those arguments.
E-mail	Faculty will communicate with students via email regarding course information and concerns.
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Examinations

Hybrid (1%–50% online) Modality
Online
On campus

Hybrid (51%–99% online) Modality
Online
On campus

Primary Minimum Qualification
PHILOSOPHY

Review and Approval Dates

Department Chair
09/14/2020

Dean
09/14/2020

Technical Review
10/28/2020

Curriculum Committee
10/28/2020

DTRW-I
MM/DD/YYYY

Curriculum Committee
11/25/2020

Board
MM/DD/YYYY

CCCCO
MM/DD/YYYY

Control Number
CCC000328193

DOE/accreditation approval date
MM/DD/YYYY