

PHIL M09: INTRODUCTION TO SYMBOLIC LOGIC

Originator

mmorgan

Co-Contributor(s)
Name(s)

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College

Moorpark College

Discipline (CB01A)

PHIL - Philosophy

Course Number (CB01B)

M09

Course Title (CB02)

Introduction to Symbolic Logic

Banner/Short Title

Introduction to Symbolic Logic

Credit Type

Credit

Start Term

Fall 2024

Catalog Course Description

Covers elements of sentential and quantificational symbolic logic. Analyzes forms of reasoning and structure of language.

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)

A - Satisfies English composition req (CSUGE-B A2/A3, IGETC 1A/1B, VCCCD D1, or 4-yr)

Support Course Status (CB26)

N - Course is not a support course

Field trips

Will not be required

Grading method

(L) Letter Graded

Alternate grading methods

(O) Student Option- Letter/Pass

(P) Pass/No Pass Grading

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	demonstrate their ability to evaluate the validity or invalidity of deductive arguments.
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Course Objectives

Upon satisfactory completion of the course, students will be able to:

1	identify and define all symbols in the logic notation.
2	translate ordinary English sentences and arguments into logical form.
3	analyze arguments symbolically.
4	set up deductive logic proofs.
5	evaluate strength and weakness of inductive arguments.

Course Content

Lecture/Course Content

10.00% Basic Concepts

- arguments, premises, conclusions
- recognizing arguments
- deduction and induction
- evaluating arguments: truth, validity, soundness, strength, cogency
- argument forms
- extended arguments

10.00% Categorical Propositions

- components of categorical propositions
- quality, quantity, and distribution
- Venn diagrams and the modern square of opposition
- conversion, obversion, and contraposition
- the traditional square of opposition

- translating ordinary language statements into categorical form

10.00% Categorical Syllogisms

- standard form, mood, figure
- Venn diagrams
- rules and fallacies
- reducing the number of terms
- ordinary language arguments
- sorites

20.00% Propositional Logic

- symbols and translation
- truth functions
- truth tables for propositions
- truth tables for arguments
- arguments forms and fallacies

20.00% Natural Deduction in Propositional Logic

- rules of implication
- rules of replacement
- conditional proof
- indirect proof
- proving logical truths

20.00% Predicate Logic

- symbols and translation
- using rules of inference
- change of quantifier rules
- conditional proof
- indirect proof
- proving invalidity
- relational predicates and overlapping quantifiers
- identity

10.00% Inductive Logic

- analogy
- causality
- probability
- hypothetical/scientific reasoning

Laboratory or Activity Content

N/A

Methods of Evaluation

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

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
- Individual projects
- Objective exams
- Oral presentations
- Problem-solving exams
- Problem-solving homework
- Quizzes
- Reports/papers
- Research papers
- Skills demonstrations
- Written analyses
- Written homework
- Other (specify)
- Classroom Discussion
- Projects
- Participation
- Reports/Papers/Journals

Other

Problem sets

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

Distance Education
 Group discussions
 Instructor-guided interpretation and analysis
 Large group activities
 Lecture
 Small group activities
 Other (specify)

Specify other method of instruction

construct an argument in a group setting

Describe specific examples of the methods the instructor will use:

Instructor breaks up the class into small group to identify and translate a chorus section of a popular song into predicate logical form. Each group then reports out to the whole class.

Instructor breaks up the class into small groups. Each group is assigned three logical rules of inference. The whole class is then given a topic to argue about incorporating their respective rules of inference. Each group reports out to the whole class on the argument they constructed.

Instructor leads the class into a large group philosophical discussion and debate, and provides additional lecture content on the discussion topic.

Representative Course Assignments**Writing Assignments**

translating English sentences from ordinary language such as opinion essays and editorials into logical symbols.
 completing hard copy and electronic end-of-chapter exercises.
 participating in group written work.
 generating truth trees, proofs, and similar exercises on the board.
 translating "well-formed formulas" into English sentences.

Critical Thinking Assignments

prepare an argument in narrative form, then write the argument in symbols using sentence letters and truth-functional connectives.
 evaluate different methods of proof.
 construct truth tables.
 give a formal proof.

Reading Assignments

- Read section 8.2 of Hurley and Watson's *A Concise Introduction to Logic* and be prepared to discuss the rules of universal instantiation, existential instantiation, universal generalization, and existential generalization.
- Read Section 8.6 of Hurley and Watson's *A Concise Introduction to Logic* and be prepared to discuss translation and using the rules of inference with regard to relational predicates and overlapping quantifiers.

Outside Assignments**Representative Outside Assignments**

completing textbook and online exercises.
 using electronic resources, including supplementary textbook materials.
 interviewing math majors and computer science majors about applicability of symbolic logic to their disciplines.

Articulation**C-ID Descriptor Number**

PHIL 210

Status

Approved

Equivalent Courses at 4 year institutions

University	Course ID	Course Title	Units
CSU Long Beach	PHIL 270	Symbolic Logic I	3
UC San Diego	PHIL 10	Introduction to Logic	4
CSU Northridge	PHIL 230	Intro to Formal Logic	3
UC Davis	PHIL 12	Intro to Symbolic Logic	4

Comparable Courses within the VCCCD

PHIL R112 - Symbolic 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:

F1995

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

Classic Textbook

No

Description

Hausman, Alan, Frank Boardman, and Howard Kahane. *Logic and Philosophy: A Modern Introduction*. 13th ed., Hackett, 2021.

Resource Type

Textbook

Classic Textbook

No

Description

Bergmann, Merrie, James Moor, and Jack Nelson. *The Logic Book with Student Solutions*. 6th ed., McGraw-Hill 2014.

Resource Type

Textbook

Classic Textbook

No

Description

Hurley, Patrick, and Lori Watson. *A Concise Introduction to Logic*. 14th ed., Cengage, 2024.

Resource Type

Textbook

Classic Textbook

No

Description

Baronett, Stan. *Logic*. 5th ed., Oxford UP, 2021.

Resource Type

Textbook

Classic Textbook

No

Description

Copi, Irving, Carl Cohen, and Kenneth McMahon. *Introduction to Logic*, 15th ed. Routledge, 2019.

Library Resources

Assignments requiring library resources

Research using the Library's print and online resources.

Sufficient Library Resources exist

Yes

Example of Assignments Requiring Library Resources

Using predicate logic, translate the title of a book from the Library into symbolic form.

Distance Education Addendum

Definitions

Distance Education Modalities

Hybrid (1%–50% online)
Hybrid (51%–99% 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)	Instructors may provide lesson modules that require activities such as reading course material from a mandatory textbook and participating in discussion forums or chat room topics. Instructors will provide students with feedback on the content and quality of assignments and discussion posts. provide students with an online schedule of class events using the "calendar" tool in the online course shell.
E-mail	Instructors may engage students using the following communication activities available in the online classroom: contact students via e-mail within the course shell, by campus e-mail, and/or MyVCCCD; use the "announcement" tool to remind students of important assignments and due dates.
Other DE (e.g., recorded lectures)	Instructor may provide recorded instructional lectures; links to textbook and professional journals; links to online resources.
Synchronous Dialog (e.g., online chat)	Instructors may provide feedback on student graded assignments or address general student questions using the Canvas chatroom feature.
Telephone	Instructors may provide feedback on student graded assignments or address general student questions using telephone conversations.
Video Conferencing	Instructors may provide feedback on student graded assignments or address general student questions using online video conferencing like ConferZoom.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Instructors may provide lesson modules that require activities such as reading course material from a mandatory textbook and participating in discussion forums or chat room topics. Instructors will provide students with feedback on the content and quality of assignments and discussion posts. provide students with an online schedule of class events using the "calendar" tool in the online course shell.
E-mail	Instructors may engage students using the following communication activities available in the online classroom: contact students via e-mail within the course shell, by campus e-mail, and/or MyVCCCD; use the "announcement" tool to remind students of important assignments and due dates.
Other DE (e.g., recorded lectures)	Instructor may provide recorded instructional lectures; links to textbook and professional journals; links to online resources.
Synchronous Dialog (e.g., online chat)	Instructors may provide feedback on student graded assignments or address general student questions using the Canvas chatroom feature.
Telephone	Instructors may provide feedback on student graded assignments or address general student questions using telephone conversations.
Video Conferencing	Instructors may provide feedback on student graded assignments or address general student questions using online video conferencing like ConferZoom.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Instructors may provide lesson modules that require activities such as reading course material from a mandatory textbook and participating in discussion forums or chat room topics. Instructors will provide students with feedback on the content and quality of assignments and discussion posts. provide students with an online schedule of class events using the "calendar" tool in the online course shell.

E-mail	Instructors may engage students using the following communication activities available in the online classroom: contact students via e-mail within the course shell, by campus e-mail, and/or MyVCCCD; use the "announcement" tool to remind students of important assignments and due dates.
Other DE (e.g., recorded lectures)	Instructor may provide recorded instructional lectures; links to textbook and professional journals; links to online resources.
Synchronous Dialog (e.g., online chat)	Instructors may provide feedback on student graded assignments or address general student questions using the Canvas chatroom feature.
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Examinations

Hybrid (1%–50% online) Modality

On campus
Online

Hybrid (51%–99% online) Modality

On campus
Online

Primary Minimum Qualification

PHILOSOPHY

Review and Approval Dates

Department Chair

04/17/2023

Dean

04/17/2023

Technical Review

04/20/2023

Curriculum Committee

5/2/2023

DTRW-I

MM/DD/YYYY

Curriculum Committee

MM/DD/YYYY

Board

MM/DD/YYYY

CCCCO

MM/DD/YYYY

Control Number

CCC000430419

DOE/accreditation approval date

MM/DD/YYYY