Logic

Logical reasoning is essential in most areas of human inquiry. The discipline of Logic treats logical reasoning itself as an object of study. Logic has been one of the main branches of philosophy since Aristotle; it revolutionized the foundations of mathematics in the 20th century; and it has been called "the calculus of computer science," with applications in many areas. Logic has also played an important role in the investigation of language and the mind, as the basis for formal semantics in linguistics and automated reasoning in artificial intelligence. With these interdisciplinary connections, Logic serves as a bridge between the humanities and STEM (Science, Technology, Engineering, and Mathematics) fields. Studying logic enhances students' abilities to reason and argue rigorously, to read and write analytically, to discern patterns amidst complexity, and to understand abstract structures. The Logic Minor (offered through the Philosophy Department) consists of three core courses in symbolic logic, which may be pursued in parallel tracks within Philosophy or Mathematics, plus a choice of three upper division electives from an array of courses in Philosophy, Mathematics, Linguistics, and Computer Science.

General Guidelines

1. All minors must be declared before the first day of classes in your Expected Graduation Term (EGT). For summer graduates, minors must be declared prior to the first day of Summer Session A.

2. All upper-division courses must be taken for a letter grade.

3. A minimum of three of the upper-division courses taken to fulfill the minor requirements must be completed at UC Berkeley.

4. A minimum grade point average (GPA) of 2.0 is required in the upper-division courses to fulfill the minor requirements.

5. Courses used to fulfill the minor requirements may be applied toward the Seven-Course Breadth requirement, for Letters & Science students.

6. No more than one upper division course may be used to simultaneously fulfill requirements for a student's major and minor programs.

7. All minor requirements must be completed prior to the last day of finals during the semester in which the student plans to graduate. If students cannot finish all courses required for the minor by that time, they should see a College of Letters & Science adviser.

8. All minor requirements must be completed within the unit ceiling. (For further information regarding the unit ceiling, please see the College Requirements tab.)

Requirements

The Logic Minor at Berkeley consists of three core courses in symbolic logic, which may be pursued in parallel tracks within Philosophy or Mathematics, plus a choice of three upper division electives from a list of courses across Philosophy, Mathematics, Linguistics, and Computer Science.

Introductory

PHILOS 12A	Introduction to Logic [1]	4
or MATH 55	Discrete Mathematics	

Mathematical Logic

PHILOS 140A	Intermediate Logic [2]	4
or MATH 125A	Mathematical Logic	

Computability and Logic

PHILOS 140B	Intermediate Logic [2]	4
or MATH 136	Incompleteness and Undecidability	

Electives: Choose Three		**10-12**

At least two of these electives must be at the undergraduate level (unless an exception is granted by petition to the Logic Minor Committee). Note also that undergraduate enrollment in graduate seminars requires the consent of the instructor.

COMPSCI 172	Computability and Complexity [4]
LINGUIS 121	Formal Semantics [4] [3]
LINGUIS 221	Advanced Formal Semantics I [3]
MATH 135	Introduction to the Theory of Sets [4]
MATH 225A & MATH 225B	Metamathematics and Metamathematics
MATH 227A	Theory of Recursive Functions [4]
MATH 229	Theory of Models [4]
MATH 235A	Theory of Sets [4]
MATH 236	Metamathematics of Set Theory [4]
PHILOS 134	Form and Meaning [4]
PHILOS 142	Philosophical Logic [4]
PHILOS 143	Modal Logic [4]
PHILOS 146	Philosophy of Mathematics [4]
PHILOS 149	Special Topics in Philosophy of Logic and Mathematics [4]
PHILOS 290	Seminar [3] [4]

Students may optionally fulfill (at most) one of their electives with a course on related formal methods and reasoning, or other courses approved by petition: PHILOS 141, PHILOS 144, PHILOS 148, and COMPSCI 188.

[1] Students who wish to count a different course as "equivalent" to PHILOS 12A or MATH 55 must submit a petition to the Logic Minor Committee.

[2] Please note that PHILOS 140A and PHILOS 140B are typically not offered in the same academic year, but rather in alternate years. Also note that MATH 125A and MATH 136 may have additional prerequisites, determined by the instructor.

[3] LINGUIS 121 requires LINGUIS 120 as a prerequisite.

[4] The Logic Minor Committee will decide which instances of PHILOS 290 count as "Graduate Seminars in Logic" for the Logic Minor.

Please note: It is a policy of the College of Letters & Sciences that no more than one upper-division course may be included in both your minor and major program.