

The University of Notre Dame  
Joint PhD in Logic and Foundations of Mathematics

The Departments of Philosophy and of Mathematics at the University of Notre Dame together offer a joint Ph.D. degree in Logic and the Foundations of Mathematics. Admission to the joint-degree program requires admission to both departments; the degree itself requires coursework and research in both departments. While the program requires more by way of training than the ordinary Ph.D. in either department, it is a single degree, and requires less than the sum of the ordinary degree requirements for both departments.

Faculty most-directly involved in the joint-degree program are:

- Tim Bays (Philosophy)
- Patricia Blanchette (Philosophy)
- Steven Buechler (Mathematics)
- Peter Cholak (Mathematics)
- Michael Detlefsen (Philosophy)
- Curtis Franks (Philosophy)
- Julia Knight (Mathematics)
- Sergei Starchenko (Mathematics)
- Michael Stob (Mathematics)

What follows is a brief overview of the joint-degree program. For further information, feel free to contact the Philosophy or Mathematics department directly.

Primary and Secondary Departments

Students in the joint-degree program must choose as their *primary* department either Mathematics or Philosophy. (The other department is then known as the *secondary* department.) The majority of the student's work is done in the primary department.

Admission

Applicants who are interested in entering the joint-degree program should first apply directly to the PhD program in their intended *primary* department. Subsequently, often after having taken some coursework in the secondary department, the student will apply to the secondary department for admission to the joint-degree program.

Advising

Each student in the joint degree program has two advisors, one from the logic faculty of the primary department, the other from the logic faculty of the secondary department.

### Requirements: General Outline

There are two sets of requirements for the joint degree, one for those students whose primary department is Philosophy, and one for those whose primary department is Mathematics. An outline of these sets of requirements is as follows. All degree plans are subject to the approval of the Directors of Graduate Studies in both departments, and to both advisors.

#### Philosophy primary

- *Course requirements*
  - 27 credit hours in Philosophy, to include: 3 credits in each of ancient philosophy, medieval philosophy, modern philosophy, and epistemology or metaphysics. Courses subject to approval of the advisors and the director of graduate studies in Philosophy.
  - The 1-credit Proseminar and the 1-credit Colloquium Seminar in the Philosophy Department.
  - 21 credit hours in Mathematics, to include: basic courses in three areas of Mathematics, including logic and the two-course sequence in algebra. Courses to be approved by the advisors and the director of graduate studies in Mathematics. Students are encouraged, and may be required, to take both an advanced mathematics course in logic and an advanced mathematics course outside logic.
- *Examinations*
  - Written candidacy exam in the History of Philosophy. In consultation with the Philosophy advisory and the Director of Graduate Studies in the Philosophy department, the student chooses either the exam in Ancient and Medieval philosophy, or the exam in the History of Modern Philosophy.
  - Oral candidacy exams in Mathematics, as follows: the basic and advanced examinations in logic, and one other basic exam in an area determined by the student, advisors, and director of graduate studies in Mathematics.
- *Written Work Sample and Dissertation Proposal*
  - A sample of philosophical work;
  - A dissertation proposal
- *Dissertation*
  - A single dissertation, co-directed by the two advisors. The dissertation must have both significant mathematical and significant philosophical content.
- 

#### Mathematics primary:

- *Course requirements:*
  - 24 credit hours in Philosophy, with a minimum of 12 hours in topics in philosophical logic and the philosophy of

mathematics; at least six in the history of philosophy, especially in that area of history in which the student does not take the written candidacy exam (see below). The remainder in areas outside logic and its contiguous areas. By approval of the director of graduate studies in Philosophy.

- 24 credit hours in Mathematics, to include: basic courses in three areas, including logic and algebra; at least one advanced course in logic, and at least one advanced course in another area of mathematics. Subject to approval of the director of graduate studies in Mathematics.
- *Examinations:*
  - Oral candidacy exam in Mathematics. Must demonstrate mastery of two basic areas of mathematics and one advanced topic, selected with approval of the mathematics advisor and the Director of Graduate Studies in Mathematics.
  - Written candidacy exam in the History of Philosophy. In consultation with the Philosophy advisory and the Director of Graduate Studies in the Philosophy department, the student chooses either the exam in Ancient and Medieval philosophy, or the exam in the History of Modern Philosophy.
- *Written Work Sample and Dissertation Proposal*
  - A sample of philosophical work;
  - A dissertation proposal
- *Dissertation*
  - A single dissertation, co-directed by the two advisors. The dissertation must have both significant mathematical and significant philosophical content.