Logic Minor, Department of Philosophy

A. Mission

The logic minor at SUNY Oswego offers students the opportunity to learn advanced symbolic logic as it is applied in a range of disciplines. Students take courses in philosophy, computer science, and mathematics, and learn the fundamentals of theoretical and applied logic.

The mission of SUNY Oswego is to contribute to the common good by lighting the path to wisdom and empowering women and men to pursue meaningful lives as productive, responsible citizens.

The mission of our College of Liberal Arts and Sciences is to challenge faculty and students to be responsible, thinking, creative members of both the campus and the wider communities; through in-depth study and general education in the arts and sciences, we prepare students to address complex problems, communicate ideas, and approach the world with a curious and critical spirit; and to strive to be a learner-centered community of scholars committed to high intellectual aspiration and the application of the skills and knowledge of a liberal arts education in service of a changing and diverse world.

The minor in logic will contribute toward both missions.

Logic is fundamental to good reasoning, and the acquisition of wisdom requires good reasoning. Logic also trains students to recognize misleading arguments and identify why they are misleading, an essential skill required of citizens if they intend to participate in a democracy.

Also, logic is fundamental not only to good reasoning, mathematics, and philosophy, but also to the information sciences and to interdisciplinary study. Computer programming, for example, can be understood as an application of logic. As such, logic is excellent training both to provide a foundation to many disciplines and also to prepare for a career in a time when all the aspects of the global economy are touched by the information sciences. Having acquired a general and fundamental skill that applies across disciplines, students with a logic minor will learn to engage with diverse challenges from a perspective of critical reasoning.

B. Learning Outcomes & Assessment

Upon completion of the required coursework, students will be able to:

- Perform proofs in logic
- Apply logic to complex philosophical problems, such as concerning possibility or time
- Prove the completeness of first order logic
- Outline the incompleteness proof for stronger logics
- Describe the nature and capabilities of logical machines
- Write basic computer programs
- Apply logic to solve computer programming problems
- Apply discrete mathematics to solve a range of problems, including programming problems

Assessment of the minor will take place after three years, through evaluation of performance of minors in PHL310 Valid Reasoning II, as measured against the learning outcomes for the minor.

D. Enrollment

Expected enrollment at the beginning of the program would be 1 or 2 students per year. After five years, we would expect an enrollment closer to 5 students per year. This estimate is based upon the portion of philosophy, philosophy-psychology, and cognitive science majors taking PHL111 Valid Reasoning who express an interest in continuing study in logic.
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C. Curriculum Outline
   The minor requires 21 hours of course work.

   A. Core Requirements (18 hours)
      
      CSC212 -- Principles of Programming
      CSC221 -- Foundations of Computer Science
      MAT215 -- Introduction with Discrete Mathematics
      PHL111 -- Valid Reasoning
      PHL309 -- Logic, Language, and Thought
      PHL310 -- Valid Reasoning II

   B. Distribution Requirements (None)

   C. Elective Requirements (3 hours)
      
      Select one of the following courses.
      
      CSC222 -- Computer Organization and Programming
      CSC241 -- Abstract Data Types and Programming Methodology
      COGS166 -- Introduction to Cognitive Science
      MAT373 -- Number Theory
      PHL313 -- Philosophy of Language
      PHL321 -- Philosophy of Science

   D. Cognate Requirements (None)