

Guidelines for Logic as a Research Tool

As specified in the UM Department of Philosophy Graduate Studies Guidebook,

PhD students must demonstrate sufficient ability in *either* (1) one natural language relevant to the student's dissertation area (or two natural languages if the director of the student's dissertation determines that this additional capability is required for successful research in the student's area of specialization) *or* (2) one non-natural language or research tool (e.g., logic) if such a language or tool is determined to be most useful to the student's area of research (pp. 6-7).

This document outlines the requirements for students who select option (2) and who choose to satisfy this option by demonstrating their ability in logic. These students will be required to pass a 1-2 hour exam and write a 15-20 page paper.

Logic Exam

In preparation for this assessment, students are strongly advised to consult the following textbook: M. Bergmann, J. Moor, J. Nelson, *The Logic Book* (McGraw Hill). No particular edition is required.

Students should demonstrate understanding and ability in the following areas:

- syntax, symbolism, and semantics of sentential logic (Bergmann, chs.2-3);
- derivations in sentential logic (Bergmann, chs. 4-5);
- syntax, symbolism, and semantics of predicate logic (Bergmann, chs. 7-8);
- derivations in predicate logic (Bergmann, chs. 9-10).

In addition, students should be able to:

- discuss the difference between various methods of proof and their merits, including truth tables, truth trees, and derivations;
- explain the concept of completeness and why proof of completeness is important; and
- explain the concept of incompleteness and what implications that has for logic.

Material pertinent to the preceding topics may be found in Bergmann, chs. 6 and 11.

Logic Paper

In preparation for this assessment, students are strongly advised to consult the following textbook: T. Sider, *Logic for Philosophy* (Oxford University Press). No particular edition is required. Relevant entries in the Stanford Encyclopedia of Philosophy (<http://plato.stanford.edu>) may also be helpful.

The paper should address a topic in philosophical logic that is both of interest to the student and relevant to their chosen research area. The array of possible paper topics is extensive, and students should be guided by both their interests and what investigation might serve them well in future work. But here are some possibilities: counterfactuals, dialethism, two-dimensional semantics, possible worlds, "quantifying in," necessity.

Whatever the topic, the paper should demonstrate students' understanding of the formal aspects of the issue under discussion and their capacity to engage those details in the service of a thesis of philosophical import.