## **Department of Mathematics and Statistics**

## MATH/PHILO 275 Intermediate Symbolic Logic 3 hrs, 3 cr

When is a statement—theorem—provable from a set of assumptions—axioms, postulates, definitions? That is the central question of this course, stated broadly. As we shall develop, provability or derivability is a matter of the logical form of the assumptions and statements involved. We may distinguish sentential from predicate form. We may also distinguish techniques enabling us to show that a statement *is* provable given a set of assumptions from techniques letting us show that a statement *is not* provable from those assumptions.

We shall present these techniques in four units. In the first, we shall study a formal technique—*sentential derivation*—for showing the provability of statements from assumptions based on their sentential form. In the second, we shall introduce *interpretations* to show failure of provability based first on sentential and then on predicate form. In the third, we shall extend our derivation technique to show provability based on predicate form. In the last, we shall extend the interpretation and derivation techniques to statements involving further formal features including identity and operation symbols.

The text is Merrie Bergmann, James Moor, and Jack Nelson, *The Logic Book* Fifth Edition (New York: McGraw Hill Companies, Inc., 2009). \$105.00 hardcopy/\$52.94 as etext.