PHILO 170 Intro to Logic and Scientific Method:

Professor James Freeman – Spring 2016

This course begins with a characterization of logic, a definition of argument and a discussion of distinguishing arguments from non-arguments. We next turn to an account of the scientific method and of explanation. Logic is concerned with argument evaluation. Cogent evaluation presupposes argument analysis, in particular seeing how the components of basic arguments can fit together and how this structure can be represented through diagrams. A logically good argument will have acceptable premises which make a sufficient case for the conclusion. We shall study a number of critical questions that one can ask about allegedly scientific claims, including those which may appear as premises in arguments. There are specific critical questions that one can ask about the acceptability of premises. We may judge an argument on whether its premises make a conclusive case for the conclusion or whether they provide a *prima facie* case for it. The tools of deductive logic may be applied to judge whether the case is conclusive. Scientific arguments may establish *prima facie* cases for their conclusions in a number of different ways. We shall study basic deductive logic and, ideally, various kinds of scientific arguments including inductive enumerations, statistical syllogisms, Mill's methods for identifying causes, the method of controlled experiment, and arguments to confirm or disconfirm scientific theories. The goal is to develop a unified picture of how arguments may be used to justify scientific claims. Work for the course will include two in-class hourlies and a final examination on the concepts of the course, homework exercises of various sorts, discussion board posts on Blackboard, and a term project contrasting arguments for opposing viewpoints on the issue of global warming and evaluating which side has the better argument.