

**Biol 500S: Philosophy of Science**

**Fall 2006**

**Professor: Karina Nielsen**

What distinguishes intelligent design from evolutionary theory, or astrology from astronomy, if anything? Why is there so much controversy surrounding the science of global warming? Should we believe what scientists say? Things are always changing; how do we know what is true? How do we know what we know and learn about the world and the way it works? These philosophical questions about the nature of science have a strong relationship to the way we view the world, how skeptical we are when confronted with new ideas, information and theories, and indeed how we perceive the world we live in, and how we choose to care for it, or not.

In this seminar we will read, discuss and explore the nature of science with an emphasis on how it relates to current biological and ecological controversies of relevance to society. We will start by reading a short book that provides an overview of scientific philosophers and concepts. We will then decide, as a group, which ideas or philosophers of science we would like to read about in a bit more depth. I will provide some suggested readings we can choose from but this should not be all that we consider.

Students will be responsible for the following:

- 1) Leading discussion and picking the readings for one class session (40%);
- 2) Writing a 2-3 page essay introducing the topic they have picked, how it relates to different philosophies of science we have read about and discussed in seminar, its relevance to current day scientific controversies on the topic (20%);
- 3) Writing a 1-2 page reflection on their presentation and discussion. The reflection should include a self-assessment of the student's presentation (content and delivery), and a short discussion of what the student learned after discussing the topic with the group including areas he or she would like to explore more in the future (10%);
- 4) Completing the assigned readings before coming to class and being prepared to write a 1-2 paragraph quick-write in response to the readings at the start of seminar. You may write this ahead of class if you prefer (30%). You may miss 2 without losing points.

Book:

**What Is This Thing Called Science?**

Alan F. Chalmers (3<sup>rd</sup> Edition; 1999)

**ISBN:** 0872204529

Available online from Barnes & Noble for: \$16.95 (other sources possible – a group order perhaps?)

Additional Readings:

To be determined by instructor in collaboration with seminar participants but will likely include excerpts from:

**Logic of Scientific Discovery** by Karl Popper

**Structure of Scientific Revolutions** by Thomas Kuhn

**For and Against Method:** *Including Lakatos's Lectures on Scientific Method and the Lakatos-Feyerabend Correspondence*, by Imre Lakatos and Paul Feyerabend. Edited by Matteo Motterlini.

**Darwin's Dangerous Idea** by Daniel Dennett

**The Growth of Biological Thought** by Ernst Mayr

Movies:

Inherit the Wind

An Inconvenient Truth