Philosophy of Science

Credits: 2

Course Coordinator/Instructor: Nagarjuna G.

Course Tutor: K. DurgaPrasad

Outline:

The course will begin with a discussion on the possible criteria of demarcation between science and folklore (common knowledge), non-science, and metaphysics. The distinctions of empiricism vs rationalism, materialism vs idealism will be dealt with in the introduction. Taking detour through various turns in philosophy of science, arrive at logical positivism, and what is normally called the 'standard view'. A criticism of the standard view will be covered in detail. The students are also expected to associate the above ideas with the following leading philosophers of science: Carnap, Russell, Fred Suppe, Kant, Karl Popper, Thomas Kuhn, Ludwig Wittgenstein, van Frassen, Ian Hacking, Larry Laudan, Philip Kitcher, Ronald Geire, Ernst Nagel, Mary Hesse, Nancy Cartwright, Paul Thagard, Nancy Nersessian etc.

Objectives:

The cognitive objective of the course is: after the end of the course the student would have understood how to distinguish between theory, hypotheses, laws, phenomena, models, and physical systems; develop an appreciation of axiomatic structure of scientific theories; understand what happens to the structure of a scientific theory when conceptual change takes place; the various criteria of demarcating science from other modes of pursuit; implications of nature of science debate on science education. The course structure would be woven around episodes from history of science, which would highlight an issue in History and Philosophy of Science.

The students will be writing several short pieces from the readings and discussions in the class. This is also to train the students to compose papers and cogent answers according to the rules of the game (review, proper citations, research, discussion, argument, conclusion ...).

Course Delivery:

There will be one class of 150 minutes each per week. Evaluation will be regular (presentations and participation in the discussions); and questions will be posted periodically at the course website, and students are expected to upload the answers on the site. At the end of the course, each student will give a seminar and write a short-term paper on the same subject of the seminar.

Some of the Suggested Readings:

- Philosophy of Science - A Very Short Introduction by Samir Okasha,
- What is this thing called science? by Alan Chalmers,
- The Structure of Scientific Theories by Frederick Suppe
- Representations and Intervening, by Ian Hacking
- Structure of Scientific Revolutions, by Thomas Kuhn
- Science Teaching, by Michael Matthews

and a few selected classics to be read from anthologies on the subject.