

## **H302: History and Philosophy of Science**

**History of World Science up to the Scientific Revolution** : Introduction about stone age, beginning of agriculture, urban civilization and science. Science in Sumeria, Babylonia and Egypt. Natural philosophy of pre-Socratic Greece. Natural philosophy in Athens. Greek science in the Alexandrian period. Rome and decline of Ancient European science. Science and technology in China. Science and technology in the Muslim world. Technology and the craft tradition in medieval Europe. The scholarly tradition during the middle ages. Renaissance, the Copernican system of the world. Gilbert, Bacon and the experimental method. Galileo and the science of mechanics.

Descartes – the mathematical method and the mechanical philosophy. The Protestant reformation and the scientific revolution. Newton –the theory of universal gravitation and optics. Alchemy and iatrochemistry. Medicine, theory of circulation of blood. Growth and characteristics of the scientific revolution.

### **History of Ancient Indian Science :**

Indian civilization from pre-historic times to the Indus Valley

Civilization. Ancient Indian mathematics and astronomy. Ancient Indian medicine and biology.

Chemistry, metallurgy and technology in general in ancient India. Strengths, weaknesses and potentialities of ancient Indian science.

**Introduction to Philosophy of Science:** What is science? Scientific reasoning; Explanation in science; Realism and instrumentalism; Scientific change and scientific revolutions.

**Great Scientific Experiments:** Group wise study and presentations by students of historically significant experiments in science.

### **Suggested Texts and References:**

1. A History of the Sciences, Stephen F. Mason, Collier Books, Macmillan Pub. Co. (1962)
2. A Concise History of Science in India, D. M. Bose, S. N. Sen, B. V. Subbarayappa, INSA (1971)
3. Philosophy of Science – A Very Short Introduction, Samir Okasha, Oxford Univ Press (2002)
4. Great Scientific Experiments – Ron Harre, Oxford University Press (1983)
5. The Story of Physics, Lloyd Motz and Jefferson Hane Weaver, Avon Books (1992)
6. The Cambridge Illustrated History of World Science, Colin A. Ronan, Cambridge-Newnes (1982)
7. Encyclopaedia of Classical Indian Sciences, Ed. Helaine Selin and Roddam Narasimha, University Press (2007)
8. Articles from Wikipedia on History and philosophy of science