

HISTORY OF SCIENCE

(G. Nagarjuna)

The course is structured around several episodes in the history of systematic ideas, and the emphasis will be on conceptual change. The lectures are grouped into three parts:

GENESIS OF SYSTEMATIC IDEAS: SCIENCE IN ANCIENT GREECE

1. Against mythological explanations to natural phenomena (Thales to Anaximenes)
2. Early Atomism (Heraclitus, Democritus and early Atomism)
3. Mathematical Atomism (Pythagoras and Plato)
4. Against Atomism (Aristotle)
5. Method of Analysis and Synthesis (Pappus and Euclid)
6. Beginning of Mathematical Physics, Statics (Archimedes)
7. Multicultural Origins of Science

PART II RENAISSANCE AND SCIENTIFIC REVOLUTION

1. Galileo (Marriage of Mathematics, Experiment and Physics)
2. Mechanization of World Picture (Descartes, Newton and Leibniz)
3. From Alchemy to Chemistry (Boyle, Priestley, Lavoisier)
4. From natural history to evolutionary history (Linnaeus, Buffon, Lamarck, Darwin)
5. From natural numbers to complex numbers
6. Physiology to Cell Biology

RISE OF EXPERIMENTAL SCIENCE

Several of the great experiments that were adjudged by historians of science as crucial experiments will be discussed.

Science in India, China and Middle East

This part will be done through invited speakers on the above subjects.

Since some of them are part of the school science, emphasis will be on analysing the conceptual change that took place while discussing the episodes, rather than on details of the experiment.

BOOKS AND RESOURCES

- * Cambridge Illustrated History of Science, by Colin Ronan
- * Great Scientific Experiments: 20 experiments that changed our view of the world by Rom Harre

Several other references will be added through the course.

Assessment is continuous online discussion and will be done at the online site

<https://abcde.metastudio.org/HOS/>

[abcde.metastudio.org]

All students will be making presentations (oral and written essays will be uploaded on the above site.) on some of the topics selected by them.