

COTTON COLLEGE STATE UNIVERSITY

History: A bigger picture

Paper Code: HBP 101CMP

HISTORY: A bigger picture

Credits: 1+0+0 (L+T+P)

(16 lectures)

Course is designed for anybody interested.

Basic requirement: a HS level understanding of science and a curiosity to learn. Being a one-credit course, it gives a broad overview and is non-mathematical.

Objectives: This multi-disciplinary course is designed to examine the bigger picture of the history of the Universe itself, how the solar system may have formed and life on Earth originated. It examines our attempts at comprehending the Universe, and how our very existence may be intimately related to the evolution of the stars and the Universe.

Module 1: The beginnings of science in different civilizations such as Babylonian, Chinese, Egyptian, Greek, Indian, Islamic; A history of measurements from ancient times leading on to modern definitions. (3 Lectures)

Module 2: An overview of the Universe and its constituents; types of stars and galaxies; a historical perspective on how this has developed; An overview of the major contributions of Newton, Galileo, Brahe, Kepler, Copernicus, Einstein; Expansion of the Universe; Hubble's law of expansion. (4 Lectures)

Module 3: Did the Universe originate in a big bang? How old is the Universe? Measuring the Universe: measurements of distances in the Universe and constructing its history by looking back in time; Cosmic micro-wave background radiation; synthesis of light elements; Synthesis of elements. (4 Lectures)

Module 4: Tree of life; last universal common ancestor leading to Bacteria, Eukarya and Archaea; Basic constituents of life: molecules, proteins, DNA/RNA, chromosomes, cells (their basic properties); Common elements that make up the human body, and how these may have originated. (3 Lectures)

Module 5: Formation of planetary systems such as the solar system; History of the Earth and estimation of its age; How did life originate on Earth: possible sites and theories; Miller-Yuri experiment; Earliest signs of life on Earth; stromatolites, the earliest fossils. (2 Lectures)

Suggested Readings

Benton, Michael J, 2008, *The History of Life*, Oxford University Press

Bronowski, Jacob, 2011. *The Ascent of Man*, BBC Books

Coles, Peter, 2001. *Cosmology: A Very Short Introduction*, Oxford University Press

Emiliani, Cesare, 1992. *Planet Earth: Cosmology, Geology, and the Evolution of Life and Environment*, Cambridge University Press

Gribbin, John, 2008. *Galaxies: A Very Short Introduction*, Oxford University Press

King, Andrew, 2012. *Stars: A Very Short Introduction*, Oxford University Press

Rothery, David A., 2011. *Planets: A Very Short Introduction*, Oxford University Press

Webb, Stephen, 1999. *Measuring the Universe, the Cosmological Distance Ladder*, Springer Praxis