

Course Name: Space, Time and the Universe

Course Number: PHYS-0131

Department: PHYSICS

Faculty: For both Science and Humanities majors

Requirement:

*Syllabus*

SPACE, TIME AND THE UNIVERSE

[50 lectures]

Four elements and quintessence; Plato and Aristotle's Universe; Sun signs, Solstice, Equinox and the Seasons; Indian and Arabic Astronomy.

Geocentric study of the Heavens; The puzzle of the planets; Retrograde motion.

Visual representations of the Universe from earliest times to the Aristotle-Ptolemaic model; Copernicus, Solar magic and Giordano Bruno; Almanacs and the question of infinity; Donne and the "new philosophy"; The new stars and 17th century poetry; Milton's Universe; Newton and 18th century poetry.

How does Science progress? A discussion of Kuhn's Theory of paradigm shift; A comparison of patterns of creativity in the Arts and the Sciences.

Tycho Brahe and Kepler: the new Astronomy; Galileo's discoveries; Newton and the new physics.

Universal gravitation; Newton's mechanics: conservation laws; Weighing the Earth and the Sun;  
Kant's island universes; Discovery of Uranus and Neptune.

Einstein's view of space and time; Testing Relativity: Pulsars and Black holes; Finding our way in  
the Milky Way Galaxy.

The origin of the Universe: The steady state Universe vs The Big Bang; The curvature of space;  
Hawking and the future of the Universe.