DEPARTMENT OF PHYSICS:: TEZPUR UNIVERSITY
Interdisciplinary (CBCT) course for Spring Semester-16

PH 600: Introduction to the Cosmos **L3-T0-P0-CH3-CR3**

Brief idea about celestial co-ordinate system, luminosity and magnitude of astrophysical objects.

Telescopes and its working (brief idea of ground and space based telescopes), CCD detectors. Role of Earth's atmosphere in observations (atmospheric extinction). Electromagnetic spectrum from the cosmos and the information gained from this.

Stars and Constellations. Qualitative idea about formation of a star, equation of hydrostatic equilibrium, nuclear reaction (p-p and CNO cycles), chemical abundances in a star. Measurements of mass, luminosity and temperature of a star. Saha equation.

H-R diagram and location of different stages of star. Sun as a star. Planets, satellites, asteroids and interplanetary dust. Stellar Evolution.

Astrophysical dust and molecules – Dust and molecules in space. Astrophysical plasma.

Red shift. Hubble's law. Hubble's classification of galaxies. The local group of galaxies. Radio galaxies, Quasars and Active Galactic Nuclei (AGN). Formation of the Universe.

Fundamental forces in nature. Big bang and formation of the first particles, formation of the first elements. Abundances of various elements in the Universe.

Text Books:-

1. Shu, F. H., *The Physical Universe* (McGraw-Hill, 2010)
2. Abhyankar, K. D., *Astrophysics: stars and galaxies* (Universities Press, 2002)

Reference Books:-

1. Weinberg, S. *The First Three Minutes: A Modern View Of The Origin Of The Universe* (Basic Books, 1993)
2. Tayler, R. J., *The Stars: Their Structure and Evolution* (Cambridge University Press; 2 edition, 1994)
3. Narlikar, J. V., *An Introduction to Cosmology* (Cambridge University Press; 3 edition, 2002)
4. Hawking, S., *On The Shoulders Of Giants,* (Running Press, 2002)