

Elective course (Disciplinary)

EPH- 402: SPACE PHYSICS

UNIT-I

Basic Concepts of Earth's Atmosphere:

Atmosphere nomenclature, Hydrostatic equations scale height, Geopotential height, Chemical concepts of atmosphere, Thermodynamic considerations, elementary chemical kinetics composition and chemistry of middle atmosphere and thermosphere.

Structure and Variability of Earth's Ionosphere:

Introduction to ionosphere, photochemical processes, Chapman's theory of photo ionization, production of ionospheric layers, morphology of the ionosphere.

UNIT-II

Aurora and Airglow: Night glow, Dayglow, Twilight glow, Aurora, Photometer for airglow measurement, applications of Airglow measurement for ionospheric dynamics and composition

Magnetosphere: Circulation in the magnetosphere, magnetospheric electric fields, particles in the magnetosphere, plasmasphere and its dynamics, magnetospheric current system, magneto pause current tail current ring current and Birkeland current.

References:

- (1) Introduction to Ionosphere and Magnetosphere: J.A. Ratcliff (CUP)
- (2) The Solar-Terrestrial Environment: JK. Hargreaves (CUP)
- (3) Introduction Space Physics: M.J. Kievelson (CUP)
- (4) Chemistry Sensing and Image Interpretation: T.M. Lillesand and R.L. Kiefer, (John Wiley & Sons, 4th Edition).
- (5) The solar terrestrial environment – J K Hargreaves, CUP (For Unit-II)
- (6) Space Plasma Physics – A C Das, Narosa Pub.(For Unit-II)