

SARDAR PATEL UNIVERSITY
Programme: MSc (Applied Science)
Semester: II
Syllabus with effect from: December 2013

Paper Code: PT02EASC03	Total Credits: 4
Title Of Paper: Environmental, Ocean and Atmosphere Science	

Unit	Description in detail	Weightage (%)
1	Planet Earth - a dynamic composite system: A holistic understanding of planet Earth; dynamic interacting subsystems - lithosphere (crust, mantle and core), hydrosphere, atmosphere, cryosphere, magnetosphere and biosphere. Distribution of chemical elements in the solar system and on the Earth, chemical differentiation and composition of the Earth Origin, basic properties and significance of the geo-magnetic field	25 %
2	Atmosphere and radiation aspects: Electromagnetic spectrum - Basics, Radiative equilibrium, Atmospheric windows, Atomic-molecular aspects of atmosphere, atmospheric chemistry, Ionosphere. Electromagnetic communications, Surface communications, telemetry, Satellite communications, remote sensing and GIS applications.	25 %
3	The ocean sub-system: Oceans - basic physical features, hypsography, Ocean currents and the Coriolis forces, waves and tides, mean-sea-level and eustasy, The upper ocean, the coupled air-sea system and interactions. The ocean bottom surface and minerals, Paleoclimatic indicators, Geological records	25 %
4	Geophysics Fluid Dynamics: Equation of motion for a rotating stratified theory, scaling analysis, potential vorticity dynamics linear waves, energetics and instability theory with application to the mean circulation and vorticity	25 %

Basic Text & Reference Books:

- J. R. Holton. An Introduction to Dynamic Meteorology, Academic Press.
- Adrian E. Gill, Atmosphere Ocean Dynamics, Academic Press.

