

SARDAR PATEL UNIVERSITY

Programme: B.Sc (Physics)

Semester: IV

Syllabus with effect from: November/December-2012

Unit	Description in detail	Weighting (%)
I	Principles, types and uses of Geophysical methods - I Gravity methods: Introduction, Gravity and Geology Measuring, Density and Specific Gravity, Gravity Survey, Gravity Data Reduction, Free Air Correction Bouguer Correction, Latitude Correction, Terrain Correction, their Applications(Introduction only), Geomagnetic methods: Magnetic Minerals, Earth's Magnetic Field, Magnetic Instruments, Magnetic Surveys, their Applications(Introduction only)	
II	Principles, types and uses of Geophysical methods –II Seismic Methods : Seismic Refraction Profiling, Seismic Reflection Profiling, Continuous Surface-Wave System (CSWS), Down hole Seismic Surveys, Cross hole Seismic Surveys, Cross hole Seismic Tomography and their Applications(Introduction only)	
III	Introductions to Remote Sensing & Electromagnetic Radiation Introduction, Sun and atmosphere, Concept of signatures, Multi-spectral concept, Remote sensing system, Remote sensors, Platforms, Data products generation, Data analysis : visual interpretation and digital techniques, End utilization, Why observe earth from space?, Introduction to electromagnetic radiation, Polarization, Coherent Radiation, Some more wave properties of EM radiation : Diffraction and Doppler effect, Attenuation, Absorption, Scattering, Quantum nature of EM radiation	
IV	Fundamentals of Radiometry Measurement geometry – concept of the solid angle, Radiometric quantities : radiant energy, radiant flux, Irradiance, radiant intensity, Radiance, Surface characteristics for radiometric measurements, Observation geometry in remote sensing, Principles of satellite motion, Kepler's laws, Locating a satellite in space, Types of orbit, Geosynchronous and geostationary orbit, Sunynchronous orbit	

Basic Text & Reference Books :-

- Core and Geomagnetism
Jacobs J.A., Academic Press, London
- D.C. Geoelectric Sounding: Principles and Interpretation
Bhattacharya & Patra, Banaras Hindu University
- Fundamentals of Geophysical Prospecting
Clarbout Telford et al, Banaras Hindu University
- Gravity and Magnetism
B.S.R Rao, I.V. Radhakrishna Murthy and C. Visweswara Rao
Banaras Hindu University
- Remote Sensing
Teekshadulu & Rajan, Indian Academy of Sciences
- Fundamentals of Remote Sensing,
George Joseph, University Press, New Delhi

