

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Earth Science)
Semester: III
Syllabus with Effect from: June - 2014

Paper Code: PT03EESC02	Total Credit: 4
Title Of Paper: Geo-Informatics, GPS, Natural and Manmade Hazards and Global warming	

Unit	Description in Detail	Weightage (%)
I	Geo informatics applications in Water and Land Resources: Water, Hydrology, Hydrogeology, Geohydrology, Hydrologic cycle, and their equations, Evaporation, Transpiration, Formation and Measurement of precipitation. Groundwater problems related to foundation work, mining, canals, dams reservoirs and tunnels Problems of overexploitation and ground water mining. Instruments for measuring gravity on land, Magnetic surveys on land, Equipment for land surveys: Surface energy sources, Geophones, Amplifiers, Analog data recording, Digital recording, important Remote Sensing Satellites- LANDSAT	25%
II	Global Position System – NAVSTAR, GPS basics, signals, control segment, Absolute and Differential positioning, Errors in GPS data- Noise, international errors, other sources of errors, GLONASS, GALILEO, COMPASS, WAEE, GNSS, GPS in India, GPS Traversing, GPS applications. Geographic Information System- Definitions of GIS, CAD verses GIS, GIS applications in India. Components of GIS, Software of GIS, Proprietary file formats, Data standards, metadata.	25%
III	Natural Hazards: Earthquakes and Seismic Hazards – Origin, Severity and effect of Earthquakes, Stability of structure and risk evaluation, Seismicity Condition in India, Spatial and Temporal Gaps in seismicity, Coping with Seismic Hazards, Instability of Hill-slopes and Landslides – Destabilizing forces and Mass movements, Identification of Land slide zone, Controlling land-slides, Floods- causes of floods, floods hazards in India, Management of floods. Cyclones and Tsunamis - Hazards on Indian coasts, Cyclone and their genesis, Tsunamis and Dimension of hazards.	25%
IV	Pollution, Waste management and Global warming: pollution, ground water contamination, Pollution of River Waters, Pollution from mining activities, Contamination of lake water, pollution of marine water, Treatment of polluted water, Nature and effects of air pollution, Disposal of solids wastes, Noise as factor in pollution. Global Warming and climate change – Inevitable warming, Impact of global warming, Urbanization and climate of cites	25%

Basic Text & Reference Books:-

- Concepts and Techniques of Geo-informatics, Masood A. Siddiqui, Sharada Pustak Bhavan.
- Remote Sensing and Image Interpretation, Lillesand, Kiefer, Chipman, Wiley India Publication, 6th Edition.
- Remote Sensing, GIS and Wetland Management, Millea Cooke, Random Publications, New Delhi.
- Environmental Geology Ecology, Resource and Hazard management, K. S. Valadiya McGraw Hill Education (India) private Ltd, 2nd Edition,
- Geosciences, Environment and Man, H. Chamley, Elsevier Science.
- Earthquake and Natural Disasters, Manik Kar, EBH Publishers.

