

**SARDAR PATEL UNIVERSITY**  
**Programme: B.Sc (Environmental Science)**  
**Semester: V**  
**Syllabus with effect from: June 2013**

<b>Paper Code: US05CENV04</b>		<b>Total Credits: 3</b>
<b>Title Of Paper: Earth System Sciences</b>		
<b>Unit</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
<b>I</b>	<b>Geomorphology</b> Definition, Geomorphic processes: Epigene- Gradation, degradation, weathering, erosion and aggradations, Hypo gene- Diastrophism, Volcanism. River; its pattern, drainage system, land form characteristics; Glacier: its types, land form characteristics; Wind: landform characteristics.	<b>25%</b>
<b>II</b>	<b>Geochemistry</b> Introduction to mineral structure and composition; major and trace elements and their partitioning during mineral formation; mineral stability diagrams and control on the chemistry of natural waters; geochemical cycling concepts with suitable examples.	<b>25%</b>
<b>III</b>	<b>Geological hazards</b> Introduction <b>Volcanism</b> - Definition, Classification, characteristics and impacts <b>Earthquake</b> - Definition, physical properties, earthquake severity, causes, prediction mitigation strategies, case study-2001(Gujarat episode), Kashmir earthquake(2005), Eastern Sichuan earthquake, China(2008). Disaster Management: Resettlement and Rehabilitation	<b>25%</b>
<b>IV</b>	<b>Environmental hazards</b> <b>Landslide</b> - Definition, Physical characteristics, causes, prevention and control. <b>Flood</b> - Definition, Physical characteristics, causes, prevention and control. <b>Tsunami</b> - Definition, Physical characteristics, causes, prevention and control. <b>Drought</b> - Definition, Physical characteristics, causes, prevention and control. <b>Cyclone and Anti cyclone</b> - Case Studies: Hurricane Katrina(2005), Hurricane Rita(2005), Hurricane Gustav(2008), Cyclone Nargis(2008), Super Cyclone of Orissa(1999). <b>Avalanche</b> - Definition, Physical characteristics, causes, prevention and control. <b>Lightening</b> - Definition, Physical characteristics, causes, prevention and control, Natural Hazard Management	<b>25%</b>

**Basic Text & Reference Books:**

- Principle of Geomorphology - William D. Thornbury, New Age International Pub.
- The Earth - Frank press and Raymond Siever - 3<sup>rd</sup> edition - W.H. Freeman and Company
- Physical geography - Savindra Singh - Prayag pustak bhavan Pub.
- Textbook of Geology: P.K.Mukherjee (2000) The world press Pvt.Ltd.
- Environmental Geology: Donald R. Coates

