

SARDAR PATEL UNIVERSITY
Programme: MSC (Integrated Biotechnology)
Semester: IV
Syllabus with effect from: December 2011

Paper Code: PS04CIGB03	Total Credits: 3
Title Of Paper: Environmental Biology	

Unit	Description in detail	Weightage (%)
1	<p>Ecology: Introduction, Sub-divisions, Levels of organization, Scope of ecology – Approaches and factors</p> <p>Ecosystem: Abiotic components of ecosystem – Habitat, Gases, Inorganic and organic nutrients, Energy, Microclimates, Biotic components of ecosystem – Autotrophs, Heterotrophs – Producers, Consumers, Decomposers, Food-chains and Trophic levels, Ecological pyramids – Pyramid of numbers, Pyramid of biomass, Pyramid of energy, Productivity of ecosystem</p>	
2	<p>Biotic Relationships: Inter-specific relations – Neutral relationships: Neutralism, Commensalism, Positive relationships: Mutualism (between plants, between plant and animal, between animals), Negative relationships: Amensalism, Predation, Competition, Parasitism</p> <p>Autecology: Biological clock – Light as universal synchronizer, Diurnal rhythms in plants and animals, Lunar rhythms, Annual rhythms, Mechanism of biological clock</p> <p>Population Ecology: Natality, Mortality, Survivorship curves, Life table, Age structure</p> <p>Community Ecology: Community structure - Qualitative features, Community function – Dynamics and succession, Climax concept</p>	
3	<p>Water: Amount and distribution, Forms, Physical properties, Water and temperature, Effects of water on animals – Hydrocoles, Mesocoles, Xerocoles</p> <p>Soil: Soil formation, Soil profile, Composition of soil, Classification of soil, Weathering of soil</p> <p>Aquatic ecosystems: Freshwater ecosystem, Lakes, Lotic waters, Pond as an ecosystem Ocean ecosystem, Estuarine ecosystem</p> <p>Terrestrial ecosystems: Arctic ecosystem, Tundra ecosystem, Taiga or Coniferous ecosystem, Temperate deciduous forests ecosystem, Tropical rainforest ecosystem, Temperate grassland ecosystem, Desert ecosystem</p>	
4	<p>Temperature: Range, tolerance, Effect of temperature on animals and plants</p> <p>Light: Light on land – Intensity, Duration and Amount, Effect of light on animals and plants</p> <p>Ecological Adaptations: Origin of adaptive and non-adaptive characters – Convergent adaptations, Divergent adaptations, Adaptive radiation, Types of adaptations – Cursorial, Fossorial, Desert, Aquatic, Scansorial, Volant, Parasitic and Physiological adaptations</p> <p>Biogeochemical cycles: Hydrological cycle, Gaseous nutrient cycles – Nitrogen cycle, Carbon cycle, Sedimentary nutrient cycles – Phosphorous cycle, Sulphur cycle.</p>	
	Practical:	
	<p>Limnological Analysis:</p> <ul style="list-style-type: none"> • Determination of water pH and Total hardness • Estimation of Free carbon dioxide • Estimation of Carbonate, Bicarbonate and Total alkalinity 	



