

SARDAR PATEL UNIVERSITY
Programme & Subject: B.Sc (Environmental Science)
Semester: VI
Syllabus with Effect from: November-2013

Paper Code: US06CENV01	Total Credit: 3
Title of Paper: Environmental Microbiology	

Unit	Description in detail	Weightage (%)
I	Role of micro - organisms in nutrient cycling Distribution and ecological importance of micro-organisms- Prototrophs, Chemolithotrophs, Organotrophs, Saprotrophs and Parasites and their environmental importance, Nitrogen, Phosphorus, Carbon, Sulphur and Iron Cycles with reference to the specific micro organisms involved.	25%
II	Bio fertilizers Introduction, Isolation, starter culture, Mass cultivation, preparation of Carrier based inoculum and curing, Packaging and storage. Importance of Bacterial, Algal and fungal fertilizers (Ecto and Endo Mycorrhizae fungi), Phosphate solublizing Micro-organisms, Green manuring, Vermiculture, Bio pesticides, Biological control and integrated pest management.	25%
III	Biomass energy and Bio fuels Biomass Resources for fuel generation, Biomass strategy, Biogas production. Bio fuels- Bio diesel, Bio diesel production from Jatropha, Bio ethanol as a fuel, Biological Hydrogen generation, Microbial fuel cell (MFC).	25%
IV	Micro - organisms as food Single Cell protein, Advantages of SCP over plants and animal protein. Use of various Micro-organisms for SCP production, Disadvantages, Mass cultivation of Spirulina and Pseudomonas for SCP production, Mushroom Cultivation, Types of Foods, Use of micro organisms in food preparation, Food Spoilage, Effect of temperature on food, Food Spoilage caused by various Micro-organisms, Botulism, Staphylococcal poisoning.	25%

Basic Text & Reference Books:

- Microbiology - Prescott, Harley and Klein (1996) WCB VS
- Microbial Ecology - Atlas and Bartha (2000), Benjamin Cummings Science Pub. California
- Modern Food Microbiology - James M.J.
- Basic and Practical Microbiology - R.M. Atlas (1986) Macmillan Pub.co.US.
- General Microbiology - Pelzer
- General Microbiology - Fifth - Roger Y. Stanier
- Industrial Microbiology - A.H. Patel
- A Textbook of Biotechnology - R.C. Dubey

