

Open Elective

MBE- 459: Microbial Diversity

40h

UNIT I

Classification of microbes: Virus, Bacteria, Fungi, Algae and protozoans Microbial interaction: Algae & Plants, Plants & fungi, Bacteria & Animals, Plants & Bacteria. Parasitism: Bacterial, Fungal and Viral diseases. Rhizosphere and Phyllosphere microflora. Microbial life in extreme environment.

Unit II

Indicator organisms and Bioleaching, biodegradation, bioremediation and phytoremediation. Ecological and Evolutionary diversity (Genetic diversity) of microbes. Intestinal microflora, Biofilms, Rumen Microbiology. Conventional and molecular methods of studying microbial diversity.

Unit III

Bacterial diseases: Cholera, Typhoid, Tuberculosis, Salmonellosis, Anthrax, Shigellosis. Fungal Disease: Candidiasis, Dermatitis, Aspergillosis, Mycotoxicosis. Viral Diseases: AIDS, HIV, Rabies, Hepatitis, Poliomyelitis, Small pox, Chicken pox.

UNIT IV

Importance of microbial diversity in environment: Forest ecosystem, Aquatic ecosystem, Soil ecosystem, Marine ecosystem, Air microflora. Antibiotics and its importance: Streptomycin, Ampicillin/ Penicillin, Tetracycline.

Note: Each unit is for 10h

Open Elective

MBE- 460: Bio fertilizers and Bio pesticides

40h

Unit I

Biofertilizers- Definition & types, Biological Nitrogen fixers- symbiotic and non- symbiotic- *Gluconoacetobacter*, *Rhizobium*, *Frankia*, *Azotobacter*, *Azospirillum*, *Azolla*, Blue green alage.

Unit II

Phosphate solubilizers- mechanisms, examples. Phosphate Mobilizers- Mycorrhizae- Ecto and Endomycorrhizae- Orchid, Arbutoid, Ericoid and VAM. Compost making: Decomposition of Agro residues

Unit III

Biopesticides- Definitions, Importance in management of crop pests- *Numorea relays*, *Verticillium*, *Metarrhizium*, *Beaveria*. Biofungicides: *Trichoderma* and its importance in Biocontrl of plant diseases.

Note: Unit – I – 14h, Unit II & III 13h

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