Course Type	Course Code	Name of Course	L	T	P	Credit
DE	ESD401	Biodiversity Conservation	3	0	0	9

Course Objective

The identification of different aspects of biological diversity and conservation techniques.

Learning Outcomes

Upon successful completion of this course, students will:

- An insight into the structure and function of diversity for ecosystem stability.
- An understanding of biodiversity in community resource management.
- Student can apply fundamental knowledge of biodiversity conservation to solve problems associated with infrastructure development.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
UNIT-I	Introduction: Concept of Species, Variation; Introduction to Major Plant Groups; Evolutionary relationships between Plant Groups; Nomenclature and History of plant taxonomy; Systems of Classification and their Application; Study of Plant Groups; Study of Identification Characters; Study of important families of Angiosperms; Plant Diversity Application.	6	Understanding the role of plant diversity at population, community, ecosystem and biome levels.
UNIT-II	Introduction to Animal Diversity and Taxonomy; Principles and Rules of Taxonomy; ICZN Rules, Animal Study Techniques; Concepts of Taxon, Categories, Holotype, Paratype, Topotype etc; Classification of Animal kingdom, Invertebrates, Vertebrates, Evolutionary relationships between Animal Groups.	6	Understanding the role of animal diversity at population, community, ecosystem and biome levels.
UNIT-III	Microbial Diversity; Microbes and Earth History, Magnitude, Occurrence and Distribution. Concept of Species, Criteria for Classification, Outline Classification of Microorganisms (Bacteria, Viruses and Protozoa); Criteria for Classification and Identification of Fungi; Chemical and Biochemical Methods of Microbial Diversity Analysis	6	Understanding the role of microbial diversity at population, community, ecosystem and biome levels.
UNIT-IV	Mega diversity; Biodiversity Hot-spots, Floristic and Faunal Regions in India and World; IUCN Red List; Factors affecting Diversity, Impact of Exotic Species and Human Disturbance on Diversity, Dispersal, Diversity-Stability Relationship; Socio-economic Issues of Biodiversity; Sustainable Utilization of Bioresources; National Movements and International Convention/Treaties on Biodiversity.	7	Understanding the concept of biodiversity terminologies; policy of biodiversity conservation; national and international scenario of past, present and future trends of biodiversity issues.
UNIT-V	Conservations of Biodiversity: In-Situ Conservation- National parks, Wildlife sanctuaries, Biosphere reserves; Ex-situ conservation-Gene bank, Cryopreservation, Tissue culture bank; Long term captive breeding, Botanical gardens, Animal Translocation, Zoological Gardens; Concept of Keystone Species, Endangered Species, Threatened Species, Rare Species, Extinct Species	7	Understanding of biodiversity conservation methods.
UNIT-VI	Introduction to Biodiversity Sampling and Sample Size; Sampling units- Quadrats & Transects, Study of SOI Toposheets, Compass and GPS for making Field Maps; Sampling of various life forms (Flora: herbs, shrubs, trees, lianas etc.; Fauna: bird, insects, mammal etc.); Qualitative and Quantitative Characteristics of Diversity; Species Area Curve, Species Abundance Distribution; Girth Class Distribution, Estimation of Regeneration Potential; Estimation of Ecological Indices, Application of Statistics in Biodiversity Conservation	10	Understanding of biodiversity conservation methods.

Recommended Text Books:

1. A textbook of Botany: Angiosperms- Taxonomy, Anatomy, Economic Botany & Embryology. S. Chand, Limited, Pandey, B. P.
2. Principles of Systematic Zoology, Mcgraw-Hill College, Ashlock, P.D., Latest Edition.
3. Microbiology, MacGraw Hill Companies Inc, Prescott, L.M., Harley, J.P., and Klein D.A. (2005).

Recommended References:

5. Ecological Census Technique: A Handbook, Cambridge University Press, Sutherland, W.
6. Encyclopaedia of Biodiversity, Academic Press, Simonson Asher Levin.