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16BI302 BIODIVERSITY AND CONSERVATION

Hours Per Week :

L	T	P	C
3	1	-	4

Total Hours :

L	T	P
45	15	-

WA/RA	SSH/HSH	CS	SA	S	BS
5	45	1	8	1	5

Course Description and Objectives:

This course provides insights into professional methodologies, ethical frameworks and research procedures relevant to studies of biodiversity and conservation. The objective of this course is to impart knowledge on understanding the complexity of ecosystems, biological diversity and conservation.

Course Outcomes:

The student will be able to:

- gain adequate knowledge about the nature and historical basis of current threats to biological diversity.
- execute conservation actions that can be undertaken to mitigate these threats.
- appreciate the relationships between studies in biodiversity and conservation biology and other science and non-science disciplines.
- gain sufficient insights into the multidisciplinary nature of studies in biodiversity and conservation biology.

SKILLS:

- ✓ *Construct food chain and food web.*
- ✓ *Restore pond ecosystem.*

UNIT - 1 **L-9, T-3**

INTRODUCTION TO GEOLOGICAL HISTORY OF BIODIVERSITY: Geological history of biodiversity; Elements/types of biodiversity - genetic, species (alpha, beta and gama) and ecological diversity; Hot spots of biodiversity in India - Himalaya, Western Ghats, Gangetic planes and Deccan peninsula.

UNIT - 2 **L-9, T-3**

FUNDAMENTALS OF ECOSYSTEM: Basic concepts and structure of ecosystems - abiotic and biotic components; Climatic and edaphic regimes; Nutrients and minerals; Producers, consumers and decomposers; Communities, populations, groups and individuals; Functioning of ecosystem - energy flow and nutrient cycles; Systems approach to ecological functioning.

UNIT - 3 **L-9, T-3**

THREATS OF BIODIVERSITY: Threats of biodiversity - causes and responsible factors; Endangered and endemic species of plants and animals of India; Interaction of species; Aquatic biodiversity - deep sea and small island biodiversity, marine biodiversity; Wetlands biodiversity; Mangroves and deserts biodiversity.

UNIT - 4 **L-9, T-3**

FORESTRY AND NATURAL RESOURCE CONSERVATION: Philosophies of science, conservation and sustainable development; Concept of conservation with special reference to forest and wildlife management; Conservation vs preservation; Forestry - Introduction, principles of forest management, forest and wildlife as natural resources; Conservation movement in India - socio-economic and political realities, different phases of the conservation and how it has impacted people at large; Concept of stakeholders; International conservation bodies - IUCN UNDP, FAO and WWF.

UNIT - 5 **L-9, T-3**

CONSERVATION BIOLOGY: Introduction to conservation biology; Values of biodiversity and conservation ethics; Patterns and processes of biodiversity; Losses and threats to biodiversity; Biological consequences of habitat fragmentation - covering barriers and isolation, crowding effect, local and regional extinctions, edge effects, changes in species composition and problem of climate change.

TEXT BOOKS:

1. M.P. Singh, "Biodiversity", APH Publishing Corporation, New Delhi, 2009.
2. U.Kumar and M.J.Asija, "Biodiversity: Principles and Conservation", Agrobios, 2007.

REFERENCE BOOKS:

1. N.Ramakrishnan, "Biodiversity in Indian Scenarios", Daya Publishing House, New Delhi, 2006.
2. H.R.Singh, "Environmental Biology", S.Chand and Co. Ltd., New Delhi, 2005.

ACTIVITIES:

- *Field visit to understand the geodistribution of plants.*
- *Virtual tour to identify hotspots of the world and India.*
- *Construct ecological pyramids.*
- *Analyze effects of invasive species.*