ST. JOSEPH'S COLLEGE FOR WOMEN (A), VISAKHAPATNAM

Four Year – B.Sc. (Hons), Semester – VII

ZOOLOGY

BIODIVERSITY AND SYSTEMATICS

Code: Z 7502(3)

TIME:4HRS/WEEK
Max Marks:100

Learning Objectives:

Enable the students to

1. Develop a comprehensive understanding of biodiversity, its definition, significance, and distribution at global, national, and local levels.
2. Gain insights into the biogeographic realms of the world and biogeographic zones of India.
3. Comprehend the conservation strategies.
4. Analyze the causes of biodiversity loss and extinction, including anthropogenic impacts.
5. Be familiar with the concepts of systematics.
6. Be familiar with the traditional and modern taxonomical methods.

Learning Outcomes:

Students will be able to:

1. Develop an overview of the concept of biodiversity, its global and local significance, and the diverse patterns it exhibits across different geographical scales.
2. Understand the biogeographic realms, zones, and hotspots, and recognize the interplay between geographical factors and species distribution.
3. Comprehend the components of biodiversity – species diversity, genetic diversity, and ecosystem diversity – and appreciate their roles in maintaining ecological balance.
4. Gain insight into the threats to biodiversity and strategies of conservation.
5. Acquire knowledge on systematics, taxonomy and its components.

I. Syllabus

UNIT-1

1.1 Biodiversity: Definition and significance; biodiversity at global, national and local levels; magnitude and distribution of biodiversity.
1.2 Patterns of biodiversity: Latitudinal and altitudinal gradients; species area relationship.
1.3 Biogeographic realms of the world.

UNIT-2

2.1 Biogeographic zones of India and faunal diversity; Hotspots in the world and in India.
2.2 Hierarchical components of biodiversity: Species diversity, genetic diversity and ecosystem diversity.
2.3 Biodiversity values: Direct values and indirect values.

UNIT-3

3.1 Biodiversity in peril: Causes of biodiversity losses and extinction; anthropogenic impact on biodiversity.
3.2 Biodiversity and biotechnology: DNA based wildlife forensics; genetically modified organisms and Bioremediation.
3.3 Biodiversity management and conservation

UNIT – 4

4.1 IUCN classification of wildlife.
4.2 Biodiversity threats; In-situ conservation and Ex-situ conservation. Gene banks; conservation of genetic resource; cryopreservation, Endemic sps.
4.3 Wildlife protection acts; organizations involved in protection of Biodiversity.

UNIT – 5

5.1 Systematics: Species concept. Taxonomy and its components –classification and phylogeny, cladistic classification.
5.2 Identification: Keys, biodiversity documentation, species identification and identification tools.Nomenclature: International Code of Zoological Nomenclature (ICZN);
5.3 Types: Holotype, Paratype, Neotype, Lectotype, Syntype, Homonymy and Synonymy.Molecular taxonomy: DNA fingerprinting.

II. Text Books

- Prabodh K. Maiti and Paulami Maiti. 2011. Biodiversity: Perception, Peril and Preservation.
- Saharia VV. 1982.Wildlife in India.Natraco Publishers, Dehradun.
- TandonRK.1999. Biodiversity, Taxonomy & Ecology. Prithipal singh Scientific Publishers, Jodhpur.

III. Reference Books

- Agarwal KC. 1998. Biodiversity. India.
- International Code of Zoological Nomenclature. 1985. Third edition adopted by XX General assembly of the International Union of Biological Sciences, University of California Press, Berkeley and Los Angeles Edition.
- Kormondy EJ. 1996. Concepts of Ecology. Eastern Economy Edition.
- Oliver S & Owen Mc. Natural Resource Conservation: An Ecological Approach. Macmillan Publ. Co. New York.
- Peggy I. Fieldler and Perer M. Kareiva. 1997. Conservation Biology.

IV. Recommended Activities

- Preparation of Biodiversity chart of India
- Preparation of Local area Biodiversity chart

- Visit to BMC at village level
- Acquittance/Awareness on Peoples Biodiversity Register of the local area
- Visit to near by Zoo/ Sanctuary/National park/wetland/Mangrove/sea shore/river and observe fauna and take photos
- Take photos of birds/butterflys/moths/insects/fish..etc of your area.
- Prepare Fauna book of your village
- Celebrate World Biodiversity Day May 22

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