

Course Code: ZOO 402
Number of Credits: 3
Effective from AY: 2020 -21

Course Title: Biodiversity

Prerequisite for the Course:	Should have studied B. Sc. Zoology with assumption that the student has a basic working knowledge of classical faunal biological diversity.	
Objectives:	1. To provide graduates in Biology a specialization in the field of Biodiversity and Conservation. 2. To generate qualified postgraduates who can be part professional organizations working in the field of conservation and environment protection. 3. To provide an alternate avenue to Biology graduates to specialize as “environmental entrepreneurs” in areas such as Environmental audits, Environmental education, Ecotourism etc. 4. To create awareness about Biodiversity and Nature Conservation.	
Content:	Module 1: Introduction: Measuring Biological Diversity, Measuring global biodiversity and its decline with special reference to Mammals, Avifauna, Herpetofauna, Ichthyofauna, Malacofauna and Insects, Keystone species, Geographic Distribution of Biological Diversity, Gradients of Spatial Distribution, Endemism and biodiversity	12 hrs
	Module 2: Biodiversity and Ecosystem function (a) Theories on relation between biodiversity and ecosystem function i. Species Complementarity ii. Sampling effect iii. Redundancy (b) Decline of global biodiversity and loss of Ecosystem function. (c) Functional diversity and ecosystem functioning. (d) Insurance Hypothesis: The effect of habitat fragmentation and dispersal on ecosystem functioning. (e) Biodiversity and stability in soil ecosystem: pattern processes and the effect of disturbance. (f) Global pollinator loss and their effect on crop production and non-crop plant reproduction. (g) Multi-trophic dynamics and ecosystem processes. (h) The economics of biodiversity and ecosystem function.	04 hrs
	Module 3: Type of Diversity: Alfa, Beta and Gama diversity; Indices: Shannon Index, Simpson Index, Lincoln Index, Dominance index, Margalef richness index, Menhinick Index, Equitability Index, Whitaker Index, Sorensen’s Index, Jaccard Index, Brillouin Index,	08 hrs
	Legal framework of biodiversity conservation Introduction to laws and policies for biodiversity conservation: Convention on Biological	03 hrs

	Diversity, Kyoto protocol, Nagoya Protocol, Ramsar Convention on conservation of wetlands, Forest Conservation Act of India (1927), Environment Protection Act of India (1986). Indian Biodiversity law and rules, State Biodiversity rules: Bio prospecting and conservation, IPR, patent protection and biopiracy. Tradable bio-resources, biodiversity informatics, databases in biological materials. International efforts and issues of sustainability Organisations involved in biodiversity conservation: World conservation Union, National Biodiversity Authority, State Biodiversity Boards, Biodiversity Management Committees and Peoples Biodiversity Register.	03 hrs 03 hrs
Pedagogy:	Lectures/Tutorials/Videos/Assignments/Group Activities/Self-study.	
Learning Outcome:	1. Learner will understand the concept and components of biodiversity, its importance. 2. Realise the role of human population Vs biodiversity. 3. Will have sufficient knowledge on wild life and its conservation. 4. Will realise the national and international efforts to protect and propagate biodiversity, Bioprospecting, IPR, biopiracy etc. 5. Utilizing skills for preparation of PBR and can actively participate in conservation.	
References /Reading:	1. Belsare DK, (2007) Introduction to Biodiversity, A. P. H. Publishing Corp. New Delhi. 2. Groombridge B. (2011) Global Biodiversity: Status of Earth's Living Resources. Chapman and Hall Publ. London 3. Huston AM (1994), Biological diversity, Cambridge University Press, Cambridge 4. Wilson, E O (1998), Biodiversity, National Academy Press, New York 5. M. Kato. (2000) The Biology of Biodiversity, Springer. 6. B.K. Tikadar. (1983) Threatened Animals of India, ZSI Publication, Calcutta. 7. Kothari, A.S. & Chapgar. (2005) Treasure of Indian Wildlife, BNHS, Mumbai. 8. B. B. Hosetti. (2005) Concepts in Wildlife Management. 2nd Revised & Enlarged Edn, 2005. Daya Publishing House, Delhi. 9. Anne E., Magurran. (2004) Measuring Biological Diversity. Blackwell Publishing. 10. Gadgil, M. <i>et. al.</i> (2005) A Methodology Manual for Documenting People's Priorities for Biodiversity and Conservation. Shrutiyaan.	