(Master of Science) (Biochemistry)
(M.Sc.) (Biochemistry) Semester (II)

Course Code	PS02EBIC51	Title of the Course	Ecological Principles
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	(i) To understand the ecological aspects of biotic and abiotic mechanisms. (ii) To learn about distribution, growth and maintenance at population level (iii) To appreciate about the natural resources and their diversity

Course Content		
Unit	Description	Weightage* (%)
1.	Basic Concepts of Ecology and Environment. Ecosystem concept; Structure and functions of biotic and abiotic components; Energy in ecosystems; Energy exchange and productivity: food chains and food webs, ecological pyramids, nutrient cycles and recycle pathways. Evolution of human settlement, Influence of human activities including various developmental activities on natural ecosystems and on environment.	25
2.	Autecology, synecology, habitat ecology, systems ecology. Population - Density, Natality, Mortality, Dispersal, Age distribution, Population distribution; Population growth – Factors affecting biotic potential, Carrying capacity; Population regulation. Community organisation: concept of habitat and niche; population dynamics, species and individuals in the ecosystem. Ecological interactions between different species. Concepts of Habitat, Ecological niche. Keystone species, Dominant species. Types of forest, characteristic features, structure and function of forest, grassland, plantation, desert; Aquatic and agro-ecosystem. Ecological succession-types and causes.	25
3.	Climate change: Global warming and greenhouse effect, sources and sinks of green house gases, major GHGs, monitoring greenhouse gases in atmosphere. Impact of climate change on agriculture, forestry, water resources, human health and overall ecological processes. Carbon sequestration; Types of renewable sources of energy; Solar energy, wind energy Geothermal and tidal energy; Biogas, Bio	25

	fuels from petrocrops, Energy plantation crops	
4.	Natural resources of India: land, soil, water, forest including wildlife. Effects of deforestation on soil erosion; Land degradation. Restoration of degraded ecosystems: Soil and water conservation, rain water harvesting and watershed management. Controlling desertification, floods and biological invasions. Impact of green revolution on the environments.	25

Teaching-Learning Methodology	Topics will be taught and discussed in interactive sessions using conventional black board and chalk as well as ICT tools such as power point presentations and videos. Practical sessions will be conducted in a suitably equipped laboratory either individually or in groups depending on the nature of exercise as well as availability of infrastructure. Course materials will be provided from primary and secondary sources of information.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
	By the end of this course students will have:
1.	An overview of various ecological components of local, regional and global level and their significance.
2.	Clear understanding about linkages between biotic and abiotic components
3.	Greater sensibility towards the natural world that is still surrounding them.
4.	Correlating relationships and conflicts between socioeconomic development and conservation of ecosystems
5.	An encouragement to appreciate the ecological services provided by different wild

	species.

Suggested References:	
Sr. No.	References
1.	Begon, M., Harper, J. L., Townsend, C. R., (1996), Ecology. 4th Edn. Blackwell Science, Cambridge, USA.
2.	Odum, E. P., Barrett, G. W. (2005). Fundamentals of ecology. 5th Edn. Thomson Brooks/Cole, Belmont, CA.
3.	Ambasht, R. S., Ambasht, N. K. (2017). Textbook of Plant Ecology. 15th Edn. Students Friends Publishers, Varanasi
4.	Mahendran P., P., Rajan, P., M., (2008). A Textbook on Ecology & Environmental Science. Agrotech Publishing Academy, Rajasthan
5.	Sharma, P. D., (2001). Ecology and Environment. Rastogi Publications, Meerut.

On-line resources to be used if available as reference material
On-line Resources

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