Semester Lecture Plan (Theory)

Name of the college: Government College of Arts, Science and Commerce, Sanquelim

Name of Faculty: Dr Jyosna Gawas | **Subject:** Botany

Paper code: BOT-305 | **Program/Course: B.Sc.** | **Division: A**

Academic Year: 2025-2026 | **Semester: VI** | **Total Lectures:** 15

Course Objectives: To impart fundamental knowledge of ecology; familiarize students with population, community, succession and biome studies; provide an insight of principles of phytogeography and remote sensing and their applications.

Expected Course Outcome: On completion of the course, students will be able to

1. Recall concepts of ecosystem, phytogeography and remote sensing.
2. Describe the structure of community and dynamics of population.
3. Apply the knowledge of vegetation survey method, RS and GIS in various ecological studies.
4. Analyze the applications of RS and GIS in vegetation analysis.

Student Learning Outcome:

1. Explain and analyze the structure, function, and dynamics of ecosystems, plant communities, and populations, including energy flow, biogeochemical cycles, ecological adaptations, succession, biodiversity patterns, major ecosystems (with reference to Goa), and environmental conservation organizations.
2. Describe and evaluate principles of phytogeography and the applications of remote sensing, GIS, and GPS in studying vegetation, biomes, species distribution, ecological monitoring, and preparation of field and vegetation maps.

Month	Lectures		No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
	From:	To:					
December 2025	1/12/2025	6/12/2025	1	Ecosystem: Concept, composition, structure and function of an ecosystem		Powerpoint presentation	Ecology and Environment by P.D. Sharma Concepts of Ecology by P. S Verma & V. S. Agarwal
	8/12/2025	13/12/2025	3	Biogeochemical cycles (C, N and P) and hydrological cycle;			
	1512/2025	20/12/2025	0	Tarang 2025, ZP election			
	22/12/2025	27/12/2025	0	Christmas Vacation			
January 2026	1/1/2026	3/1/2026	3	Energy flow in an ecosystem; biotic interactions; ecological			

				adaptations of hydrophytes, xerophytes, halophytes and epiphytes.			Practicals in Ecology by Pratima Kapur & Sudha Rani Govil
	5/1/2026	10/1/2026	3	Plant communities: Definition, analytic, quantitative and synthetic characteristics; life forms; habitat and niche;			
	12/1/2026	17/1/2026	3	Ecotone and edge effect; dynamics; succession – processes and types; concept of a climax.			
	19/1/2026	24/1/2026	3	Population ecology: Characteristics of a population (density, natality, mortality, dispersion, population size, age structure, life tables); population growth curves; population regulation; life history strategies (r and K selection). ISA I			
	26/1/2026	31/1/2026	3	Biodiversity: Definition, values of biodiversity and threats to biodiversity; endemic and endangered species in India.			
February	2/2/2026	7/2/2026	3	Major ecosystems: Aquatic, terrestrial, manmade (agricultural); ecosystems of west coast and Western Ghats with special reference to Goa (wetlands, mangroves, coastal, sand dunes, plateaus and forests).			
	9/2/2026	14/2/2026	3	National organizations (MoEF - Ministry of Environment and Forest, Govt. of India; CEE; MSSRF; NEERI; TERI); I S A I I			
	16/2/2026	21/2/2026	3	international organizations (UNESCO, CITIES, UNEP, MAB, WWF, TRAFFIC, Green Peace IUCN).			
	23/2/2026	28/2/2026	3	Phytogeography and remote sensing Phytogeography: Definition, general principles, static and dynamic plant geography; continuous and discontinuous distribution; theories of discontinuous distribution (Land bridge theory, continental drift); factors affecting distribution of species;			
March	2/3/2026	7/3/2026	3	Major biomes of the world; vegetation of India; phytogeographic regions of India; local vegetation.			
	9/3/2026	14/3/2026	3	Remote sensing and GIS in ecological applications: Definition of remote sensing; electromagnetic radiation and atmospheric windows; EMR and reflectance from vegetation;			
	16/3/2026	21/3/2026	3	satellites and satellite remote sensing; applications of remote sensing in ecology, forestry, agriculture and environment. GIS - principle and applications.			

	23/3/2026	28/3/2026	3	Satellite imageries and false color imaging; GPS and its applications in field; preparation of field maps and vegetation maps.			
	30/3/2026	31/3/2026	0				

Assessment Rubrics

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5
Practical	NA
Project	NA
Semester End Exam	60