Semester Lecture Plan

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

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

Paper code: BOC110 (Plant Ecology & Phytogeography) | **Program/Course: T.Y.B.Sc.** | **Division: A**

Academic Year: 2024 - 2025 | **Semester: VI** | **Total Lectures: 60**

Course Objectives: To familiarise students with the environment and the processes occurring in it.

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

- Understand Ecosystem Concepts and Soil Dynamics
- Analyze Water-Plant Relationships and Hydrological Processes
- Examine Community Dynamics and Ecological Interactions
- Evaluate Ecosystem Diversity and Biogeochemical Cycles

Student Learning Outcome:

- Student will be able to explain the concepts of ecosystems and communities
- Student will be able to explain the components, composition, types of soil and effect of soil on plants
- Student will be able to explain the types of precipitation and their association with plants
- Student will be able to explain the biotic interactions
- Student will be able to explain the energy flow and nutrient cycling in an ecosystem
- Student will be able to discuss how plants are distributed, vegetation in India and Goa

Month	Lectures		No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
	From:	To:					
December 2024	09/12/2024	14/12/2024	04	Concept of Ecosystem, components and organization, structure and function, trophic organization;	Create a detailed report on soil profiles	Chalk and board	Ecology and Environment By P.D. Sharma
	16/12/2024	17/12/2024	01	Importance, Origin of soil, Formation;			

January 2025	02/01/2025	04/01/2025	04	Composition of soil; Physical, chemical and biological components of soil. Soil profile: type of soil; its effect on vegetation. Importance; States of water in the environment: Water in soil, Water table; Atmospheric moisture;			Concepts of Ecology By P. S Verma & V. S. Agarwal Fundamentals of Ecology By E. P. Odum
	06/01/2025	11/01/2025	04	Precipitation types (rain, fog, snow, hail, dew); Hydrological cycle; Atmospheric humidity in relation to plants. Atmospheric precipitation in relation to plants.			
	11/01/2025	18/01/2025	04	Source of energy, autotrophy, heterotrophy, symbiosis, commensalism, parasitism; food chain;			
	20/01/2025	25/01/2025	04	Ecological pyramids; biomass; standing crop. Communities: Definition, analytic, quantitative characteristics; ISA I			
	27/01/2025	01/02/2025	04	Synthetic characteristics; life forms; habitat and niche	Explore the concepts of habitat and niche with examples		
February 2025	03/02/2025	08/02/2025	04	Ecotone and edge effect; Dynamics; Succession - processes, types; climax concepts.			
	10/02/2025	15/02/2025	04	Ecosystems: Aquatic, terrestrial, manmade (agricultural).	Analyze local vegetation types, focusing on forests and agricultural landscapes.		
	17/02/2025	22/02/2025	03	Ecosystems of west coast and Western Ghats with special reference to Goa			
	24/02/2025	01/03/2025	03	Wetlands, mangroves, coastal, sand dune vegetation	Prepare a field report on the vegetation and ecosystems specific to		
March 2025	03/03/2025	08/03/2025	04	Plateaus and forests vegetation; Principles of phytogeography			
	10/03/2025	15/03/2025	03	Continental drift; theory of tolerance; Endemism; Brief description of major terrestrial biomes (tropical, temperate);			

	17/03/2025	22/03/2025	04	Brief description of major terrestrial biomes (tundra); Phytogeographical division of India; ISA II	Goa, including mangroves and coastal areas.		
	24/03/2025	29/03/2025	04	Local vegetation – forest, agriculture			
April 2025	31/03/2023	05/04/2023	04	Principles and models of energy flow; production and productivity; Ecological efficiencies			
	07/04/2023	11/04/2023	03	Biogeochemical cycles -carbon, nitrogen and phosphorus Revision.			

*** Assessment Rubrics**

Component	Max Marks
ISA 1	10
ISA 2	10
Practical	NA
Project	NA
Semester End Exam	80

Practical Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim-Goa

Name of Faculty: Dr Jyosna Gawas	**Subject: Botany**	
Paper code: BOC110 (Plant Ecology & Phytogeography)	**Program: T.Y.B.Sc**	**Batch: I**
Academic year: 2023 - 2024	**Semester: VI**	**Total Practicals/Labs: 15**

Credits: 02

Course Objectives: To familiarise students with various ecological parameters mentioned in the syllabus

Expected Course Outcome: After completion of this course student will be able to discuss, describe and determine various ecological parameters mentioned in the syllabus

Student Learning Outcome:

1. Describe the working of instruments used determine ecological factors.
2. Learn various methods to find out pH, conductivity, dissolved O_2, carbon content, species diversity.
3. Describe interactions between plants
4. Discuss major phytogeographical zones in India and vegetation types in Goa

Month	Practicals/Labs Scheduled Date	No. of Practicals/Labs planned	List of Experiments	Reference books
January	02-01-2023	01	Study of instruments used to measure microclimatic variables; Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter	Ecology and Environment By P.D. Sharma Concepts of Ecology By P. S Verma & V. S. Agarwal Practicals in Ecology By Pratima Kapur & Sudha Rani Govil
	09-01-2023	01	Determination of pH of various soil and water samples (pH meter, universal indicator/ lovibond comparator and pH paper).	

	16-01-2023	01	Analysis for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency from two soil samples by rapid field tests.	
	23-01-2023	01	Determination of organic matter of different soil samples by Walkley & Black rapid titration method	
	30-01-2023	01	Determination of soil conductivity & water holding capacity in soils of three habitats	
February	06-01-2023	01	Study of dissolved oxygen of water samples from polluted and unpolluted sources.	
	13-02-2023	01	Study of aquatic ecosystem of phytoplanktons and hydrophyte diversity.	
	20-02-2023	01	Study of morphological and anatomical adaptations of hydrophytes and xerophytes	
	27-03-2023	01	Study of biotic interaction of the following: Stem parasite (*Loranthus* & *Cuscuta*), Epiphytes (Orchids), Predation (Insectivorous plants – *Utricularia*/*Drosera*/Pitcher plant).	
March	5-03-2023	01	Determination of minimal quadrate size for the study of herbaceous vegetation in the college campus, by species area curve method	
	12-03-2023	01	Quantitative analysis of herbaceous vegetation for density and abundance in the college campus.	
	19-03-2023	01	To prepare map of India with respect to (i) major climatic zones (ii) forest type (iii) biogeographical regions.	
	26-03-2023	01	To prepare map of Goa to show its vegetation types as specified in theory.	
April	02-04-2023	01	Jpurnal certification	