

Course Code	Course Name	Credits
26BY602	PHYTOGEOGRAPHY AND FORESTRY	04

### Course Objectives

- To develop a clear understanding of phytogeography, plant distribution patterns, migration and floristic regions of the world and India.
- To explain ecological diversification, mechanisms of speciation and major biogeographical theories related to species distribution and evolution.
- To impart knowledge of forest conservation, afforestation, reforestation, agroforestry and the role of protected areas in biodiversity conservation.
- To familiarize students with silvicultural practices, forest regeneration methods, nursery techniques and important forest laws in India.

### Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Describe global and regional patterns of plant distribution, centers of origin, migration barriers and floristic regions.
- Analyze ecological diversification, speciation processes and the significance of island biogeography in conservation planning.
- Evaluate strategies for forest protection, management, afforestation, agroforestry and biodiversity conservation.
- Apply knowledge of silvicultural systems, forest regeneration, seed technology, community forest management and relevant Indian forest legislation.

### Unit 1 - Fundamentals of Phytogeography and Plant Distribution (12 Hrs.)

Phytogeography, Types of plant distribution: Continuous distribution, Cosmopolitan, Circumpolar, Circumboreal or Circumastral and Pantropical, Discontinuous distribution, Theory of land-bridge, Theory of continental drift.

### Unit 2 – Ecological Diversification and Speciation (12 Hrs.)

Ecological diversification, Types and processes of speciation: Allopatric, Parapatric, Sympatric, Island Biogeography theory, Equilibrium theory of insular biogeography, Application of biogeographical rules in design of protected area and biosphere reserves.

### Unit 3 - Plant Origin, Migration and Floristic Regions (12 Hrs.)

Centers of origin and diversity of plants, Plant dispersal, Barriers to plant migration, Age and area hypothesis, Theory of tolerance, Floristic regions of the world, Vegetation zones in relation to latitudes and altitudes, A brief account of the phytochoria of the Indian subcontinent.

### Unit 4 – Forest Conservation and Protected Areas (12 Hrs.)

Afforestation, Reforestation, Agro-forestry, General forest protection against forest fire and grazing, Damages of forest by animals, birds parasitic plants and climatic factors, Sanctuaries, National parks, Reserve forests, Sacred groves and Biosphere reserves.

### Unit 5 - Silviculture, Forest Management and Forest Laws (12 Hrs.)

Silvicultural systems, Natural and artificial regeneration of forests, Nursery techniques, Collection, storage, pre-treatment and germination of seeds, establishment and tendings, Community forest management, Necessity and general principles of Forest laws, Indian Forest Act, 1927, Forest Conservation Act, 1980.

### Reference Books:

1. Collins, B. M., & White, F. M. (1981). Elementary forestry. Reston Publishing Company, Inc.
2. Lal, J. B. (2003). Tropical silviculture: New imperatives: New systems. International Book Distributors.
3. Lomolino, M. V., Riddle, B. R., Whittaker, R. J., & Brown, J. H. (2010). Biogeography (4th ed.). Sinauer Associates.
4. Longman, K. A., & Jenik, J. (1987). Tropical forest and its environment (2nd ed.). ELBS.
5. MacDonald, G. (2003). Biogeography: Introduction to space, time and life. John Wiley & Sons, Inc.
6. Sagreiya, K. P. (1967). Forests and forestry. National Book Trust.
7. Shanmughavel, P. (2003). Techniques in forestry. Pointer Publishers.
8. Simmons, I. G. (1979). Biogeography: Natural and cultural. Edward Arnold Ltd.
9. Williams, D. M., & Ebach, M. C. (2008). Foundations of systematics and biogeography. Springer.