Course Code	Course Name	Credits
26BY006	PLANT ECOLOGY	04

Course Objectives

- To understand the basic concepts of ecology and the effect of environmental factors on plant life.
- To learn the structure and function of ecosystems, including energy flow and food chains.
- To understand vegetation, ecological succession, and methods of studying plant communities.
- To develop awareness about environmental issues, pollution, and plant distribution patterns.

Learning Outcomes

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

- Identify major ecosystems and their components.
- Compare different types of ecosystems.
- Identify the main causes of environmental problems.
- Explain the interconnectedness of life on Earth.

Unit 1 – General ecology (12 Hrs.)

Scope and importance of ecology. Approaches to the study of ecology –autecology and synecology. Plant Environmental factors- Climatic, Edaphic, Biotic and Topographic factors. Study of morphological and anatomical adaptation of hydrophytes, halophytes and xerophytes.

Unit 2 – Ecosystem concept (12 Hrs.)

Structural attributes of ecosystem: Abiotic components (Inorganic elements, organic compounds and climatic regimes) and biotic components (producers, macroconsumers and microconsumers). Functional attributes of ecosystem: Flow of energy- Energy flow model, Ecological pyramids, Productivity – primary, secondary & gross; food chain and food web.

Unit 3 - Vegetation (12 Hrs.)

Units of vegetation – formation, association, consociation, society –Methods of study of vegetation (Quadrate & transect). Ecological succession. Ecological classification of Plants.

Unit 4 – Applied ecology (12 Hrs.)

Pollution and its control: Atmospheric pollution - air pollution; Acid rain, Radiation pollution, Thermal pollution, Soil pollution, Water pollution, Agricultural pollution: plant residues, insecticides, pesticides, fungicides, herbicides; BOD and eutrophication.

Unit 5 – Phytogeography (12 Hrs.)

Approaches to Phytogeography – Climate of India & its climatic zones, Botanical regions of India; Continuous and discontinuous distribution; Continental drift theory; Basic knowledge on remote sensing.

Reference Books:

1. Odum, E.P. & Barrett, G.W. (2005). Fundamentals of Ecology. Thomson Brooks/Cole, USA.
2. Sharma, P.D. (2019). Ecology and Environment. Rastogi Publications, Meerut, India.
3. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall of India, New Delhi.
4. Chapman, J.L. & Reiss, M.J. (1999). Ecology: Principles and Applications. Cambridge University Press.
5. Smith, T.M. & Smith, R.L. (2015). Elements of Ecology. Pearson Education.
6. Singh, J.S., Singh, S.P. & Gupta, S.R. (2014). Ecology, Environmental Science and Conservation. S. Chand & Company, New Delhi.
7. Good, R. (1974). The Geography of the Flowering Plants. Longman Group Ltd., London.
8. Mani, M.S. (1974). Ecology and Phytogeography of High Altitude Plants of the Himalaya. Oxford & IBH Publishing Co., New Delhi.