CC - 6: ECOLOGY **(Credit: 3)**

Course Code:

Course Objectives: Ecology is the study of how organisms interact with each other and their environment at the population, community, and ecosystem levels. The goal of this course is to familiarize the students with ecological theory and its applications.

Learning Outcome: The students shall gain an understanding of the broad biological significance of ecological theory and the methods they use, and the questions that remain unanswered. The student shall be able to develop an ability to apply quantitative skills to analyzeand interpret ecological data.

UNIT -I

Define Ecology, importance of studying Ecology. Concept of Ecosystem, Ecological niche, habitat and ecological equivalents. Energy flow through an ecosystem, Laws of thermodynamics.Food chain and food web. Nutrient cycling: Nitrogen and Sulphur. Productivity of an ecosystem: Primary and Secondary.

UNIT -II

Organization of communities: Characteristics of a community. Ecological dominance, species diversity in communities, Ecotones and Edge Effect. Ecological Succession: Concept and types of pioneer species and climax communities, climax concept and mechanism of succession. The terrestrial biota. Aquatic zonation and biota.

UNIT - III

Attributes of a population - Natality, Mortality, Age Distribution, Biotic Potential, Population growth forms, Carrying Capacity concept. Population structure, Aggregation and Allee's principle, Isolation and Territoriality, dispersal and dispersion. Biological invasion. Negative Interact ions - Competition, Parasitism and Predation. Positive Interact ions - Commensalism, Cooperation and Proto-cooperation, Mutualism and Social behaviour.

UNIT -IV

Biogeographical regions of India -Trans Himalayan zone. Himalayan zone, Desert. Semi-Arid, Western Ghats, Deccan Plateau, Gangetic Plains, North East, Coasts, Andaman Nicobar Island.

UNIT -V

Remote Sensing and Geographic Information System: Definition, Importance and application. Biodiversity -its types and factors effecting biodiversity. Biodiversity assessment, Conservation and management. Non-conventional source of energy and their utilization. Environmental Impact Assessment. Ecological Modelling.

REFERENCES:

1.Odum, E. P. 1970. Ecology. Amerind Publ. Co. New Delhi. 2.Odum

E.P. 1971. Fundamentals of Ecology, W B Saunders, USA.3

3.Sinha M. P., Soma Dey, Bijaj and S Singh. 2004. Conservation of Biodiversity and Natural Resources. Daya Publ., New Delhi.

PRACTICAL CC-6: ECOLOGY LAB (CREDIT: 1)

1. To study the density and frequency of a population by quadrate method.
2. To study the concept of food chain and food web.
3. To study the primary productivity through the light and dark bottle method.
4. To study the concept of ecological succession through model.
5. To study the terrestrial biota, aquatic biota.
6. To study the Biogeographical Realms of India.
7. To study the remote sensing technique.
8. To study the Geographic Information System (GIS).
9. To study some physico-chemical parameters of water.