CURRICULUM PLAN (Aug. -Dec., 2024)

Dr. MAYANGLAMBAM ROJINA DEVI

Subject- **Evolutionary Ecology (DSC 15; Theory)**
Class- **B. Sc. Life Science Sem. V**

Contents	Allocation of lectures	Month-wise schedule to be followed	Tutorial/ Assignments / Presentations
UNIT- 1: Introduction to Evolutionary Ecology 3 hrs Introduction to the concepts of evolution and ecology and the relationship, evolutionary theories and origin of life, Levels of ecological hierarchy, heritability, natural selection, fitness and adaptation; Types of selection, Ecological adaptations of animals to their environment	3 lectures	August-September	• Overall introduction to this paper • PPT with relevant pictures and videos
UNIT- 2: Population Ecology 7 hrs Group attributes- Density, natality, mortality, dispersal and dispersion, life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion. Population growth- Exponential and logistic growth, Life history traits - r and K selection. Population regulation - Density dependent and independent. Population interactions: Positive and negative interactions	7 lectures	September-October	• 2 minutes recap of previous class • PPT with relevant pictures
UNIT- 3: Community Interactions 6 hrs Characteristics of community- species richness, dominance, diversity and abundance. Community organisation – habitat, niche, guilds, and dominant species. Interspecific interactions with examples. Species diversity indices. Types of ecological succession. Characteristics of climax community, Concept of keystone, flagship, umbrella species with examples.	6 lectures	October-November	• Discussion through PPT • Surprise quiz • Distribution of assignments

Subject- **Evolutionary Ecology (DSC 15; Practical)**
Class- **B. Sc. Life Science Sem. V**

Date	Practical
06/08/2024	• Study of Phytoplankton and zooplankton from an aquatic ecosystem • Measurement of temperature, turbidity/penetration of light, determination of pH
13/08/2024	Determination of Dissolved oxygen content (Winkler's method) from different water samples
20/08/2024	Determination of Free carbon dioxide and hardness in different water sample
	Determination of chlorides in different water sample
27/08/2024	Determination of population density in a natural or a hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index
03/09/2024	Study of life tables and plotting of survivorship curves of different types from hypothetical/ real data
10/09/2024	Determination of Chemical oxygen demand from different water samples
17/09/2024	Gause's Principle with laboratory and field examples,
24/09/2024	Lotka-Volterra equation significance in competition; Lotka-Volterra equation, functional and numerical responses in Predation
01/10/2024	Study of homology, analogy and homoplasy from suitable specimens
08/10/2024	Study and verification of Hardy-Weinberg Law by Chi-square analysis
15/10/2024	Construction of cladograms based on morphological characters
22/10/2024	Catch, mark and recapture technique for finding the population size.
05/11/2024	A visit to a National Park/Biodiversity Park/Wildlife Sanctuary
November	**REVISION and MOCK PRACTICAL TEST**