

**BACHELORS WITH ZOOLOGY AS MAJOR (CT – I)**  
**5<sup>th</sup> SEMESTER**

**ZOL522J1 ZOOLOGY \_ ANIMAL ECOLOGY**

**CREDITS: THEORY: 03; PRACTICAL: 01**

**COURSE OBJECTIVE:**

*The course is designed to aware the students about the structure & function of different ecosystems.*

**LEARNING OUTCOME:**

*The learner will understand structure & function of different ecosystems & will utilize the knowledge in conservation & sustainable development of ecosystems.*

**THEORY: (3 CREDITS)**

**UNIT I: ECOSYSTEM ECOLOGY**

- 1.1 Ecosystem components: biotic & abiotic
- 1.2 Ecosystems types: terrestrial & aquatic
- 1.3 Energy flow and mineral cycling (CNP)
- 1.4 Ecological laws (Shelford's & Liebig' laws); food chain, food web, & ecological pyramids

**UNIT II: POPULATION ECOLOGY**

- 2.1 Attributes of population: natality, mortality, immigration, emigration, life tables & survivorship curves.
- 2.2 Population growth– exponential and logistic growth patterns; growth models
- 2.3 Life history strategies: r and k selection, clutch size and sex ratio
- 2.4 Population regulation– extrinsic and intrinsic factors

**UNIT III: COMMUNITY ECOLOGY**

- 3.1 Community characteristics: dominance, diversity, species richness, abundance, stratification.
- 3.2 Biotic interactions: intra-specific & inter-specific
- 3.3 Ecological succession: types & mechanisms: concept of climax community
- 3.4 Ecology niche: concept, types and examples

**PRACTICALS (1CREDIT)**

1. Study of an aquatic ecosystem: Temperature, turbidity/ penetration of light, determination of pH, total alkalinity and dissolved oxygen content, chemical oxygen demand and free CO<sub>2</sub>
2. Determination of population density in a natural/hypothetical community by quadrat method and calculation of Shannon-Weiner diversity index for the same community.
3. Study of life tables and plotting of survivorship curves of different types from hypothetical/real data provided.
4. Report on a visit to National Park/Biodiversity Park/Wildlife sanctuary

**SUGGESTED BOOKS / READING MATERIAL**

1. Animal Ecology and Environmental Biology by PD Sharma
2. Animal Ecology by Peter Sterling
3. Ecology & Environmental Science by H. R. Singh & Neeraj Kumar
4. Ecology by Chapman and Reiss
5. An Advanced textbook on Biodiversity by Krishnamurthy
6. Colin Vaux, P. A. (1993). Ecology. II Edition. Wiley, John and Sons, Inc.
7. Krebs, C. J. (2001). Ecology. VI Edition. Benjamin Cummings.
8. Odum, E.P., (2008). Fundamentals of Ecology. Indian Edition. Brooks/Cole
9. Robert Leo Smith Ecology and field biology Harper and Row publisher
10. Ricklefs, R.E., (2000). Ecology. V Edition. Chiron Pre