ZOS505- ENVIRONMENTAL BIOLOGY

Teaching hours **10hrs /Unit**

COURSE OUTCOME:

1. The course provides a broad outline on 'Ecology and ecosystem functions' covering various aspects. They include, types of ecosystem, components of ecosystem, community and populations, factors regulating community origination, species interactions.
2. Concept of habitat, ecological niche ecological pyramids are dealt.
3. Community ecology , types of interactions and ecological succession
4. Emphasis is given on marine ecosystem including 'Exclusive Economic Zone (EEZ). Environmental pollutions on biological system.
5. Microbial influence on ecosystem, impact assessment and development of sustainable ecosystems are also included.
6. The theoretical foundation will help the students to understand the impact of various environmental pollutions on ecosystems in general and biological resources in particular.

UNIT I

Ecosystems: Structure, function and types of ecosystem- terrestrial, fresh water, marine and estuarine. Abiotic and Biotic components, basic laws of energy flow, food chain, food web, ecological pyramids. Concept of habitat, niche and guild, concept of ecotone, edge effect and Concept of Gaia hypothesis.

UNIT II

Population ecology, population dynamics, stochastic and time lag models of population growth, population characteristics- mortality, fecundity, density, age distribution, population explosion. Community ecology- prey and predator relationships and various types of interactions. Ecological succession, its mechanism and its type. Ecological climax.

UNIT III

Biogeochemical cycles- carbon, nitrogen and phosphorus. Biomes- classification, biotic elements of biome and their characteristic in the biome. Microbial distribution in nature, interaction within microbial communities, with man and animals, dispersal of microorganisms in different environments.

UNIT IV

Marine ecosystem – Biological zones and its type, inter-tidal ecosystem: rocky - zonation pattern -physical and biological factors, sandy shores and protected sand flats – physical and biological factors, bio-geographical zones of India, faunal composition and adaptations. Exclusive Economic Zones (EEZ).

UNIT V

Environmental pollution, control and its effect on biological systems. Conservation management of natural resources. Environmental impact assessment. Sustainable development.

REFERENCES

1. Cherrett, J. M. (1990) Ecological Concepts. Blackwell Science Publication, Oxford, U. K.
2. Elseth, G. D., & K. D. Baumgardner (1981) Population biology. Van Nostrand , New York.
3. Findlay, S. &Sinsabaugh R. L. (2002) Aquatic Ecosystem. Elsevier Science Publishing Co Inc.
4. Krebs, C.J. (1972). Ecology: the Experimental Analysis of Distribution and Abundance. Harper & Row, New York.
5. Noor M. (2012) Environment and water pollution cause effect and control, Cyber tech Publication, New Delhi.
6. Odum, E.P. (1971) Fundamentals of ecology, W.B. Saunders, Philadelphia.
7. Prabu, P. C., Udayasoorian C. and Balasubramanian G. (2009) An introduction to ecology and environmental science, Arihant.
8. Saha, T. K. (2013) Ecology and environmental biology, 1st edition, Books and Allied (P) Ltd.
9. Sharma, P. D. (2014) Ecology and environment. 12th edition, Rastogi Publication.
10. Sharma, P. D. (2013) Environmental biology and toxicology, 3rd Rev edition, Rastogi Publication.

ZOP 512: ENVIRONMENTAL BIOLOGY - LABORATORY

4 Hours/Week

COURSE OUTCOME

1. The students will be trained on various methods of assessment of pollutions.
2. The impact of various pollutions on biotic community will be assessed through analysis of samples collected from different habitat (polluted / un polluted). The seasonal impact also will be assessed wherever possible.
3. It makes learners to understand the importance of a healthy environment for the survival of different living organisms.

Experiments:

1. Aspirants are exposed to nature and its components
2. Exploration of ecosystems to study life cycle of different organisms.
3. Calculation of biodiversity Index.
4. Vegetation studies by line, quadrate and belt transect methods.5.
5. Construction of ecological pyramids of different ecosystems.
6. Productivity of aquatic ecosystem by plankton study,
7. Study of wetland flora and fauna.
8. Field visit to aquatic, forest and other ecosystems for identification of biota.
9. Surveillance and quality of analysis of potable water.
10. Physico-chemical properties of polluted water.