

**SYLLABUS OF  
ENVIRONMENTAL BIOLOGY AND HUMAN RIGHTS  
FOR ZOOLOGY  
UNDER GRADUATE PROGRAMME  
SEMESTER V. ZY5CRT05**

**Credit - 3**

**Total Time allotted - 54 Hrs**

**OBJECTIVES**

To instil the basic concepts of Environmental Sciences, Ecosystems, Natural Resources, Population, Environment and Society

To make the students aware of natural resources, their protection, conservation, the factors polluting the environment, their impacts and control measures.

To teach the basic concepts of toxicology, their impact on human health and remedial measures

To create a consciousness regarding Biodiversity, environmental issues & conservation strategies

To develop the real sense of Human rights – its concepts & manifestations

**MODULE- 1:- ECOSYSTEM - 8 hrs**

**Basic concepts and Components of ecosystem:** Abiotic (Sunlight, temperature, soil, water, atmosphere) and Biotic components (Producers, consumers, decomposers), Ecological pyramid- number, biomass, energy,

**Functions of ecosystem:** Productivity-Food chain-Food web-Energy flow-Laws of Thermodynamics. Types of Ecosystem: Terrestrial-Forest-Grassland-Desert, Aquatic-Marine-Fresh water, Wetland & Biome

**Concept of limiting factors:** Liebig's and Shelford's laws of limiting factors.

**Biogeochemical cycles:** Concept, gaseous and sedimentary cycles, Carbon cycle, Nitrogen cycle.

**Renewable resources** (solar, wind, hydroelectric, biomass and geothermal) **and Non renewable resources** (mineral and metal ore, fossil fuels)

## **MODULE-2:-CONCEPTS OF POPULATION AND COMMUNITY -7 hrs**

**Concept of population:** Population attributes- Population growth forms, Basic concepts of growth rates, density, natality, mortality, growth curves

**Animal interactions:** Positive- Commensalism- Mutualism- Proto co-operation, Negative- Predation-Parasitism-Competition-Antibiosis

**Characteristics of a community:** Species diversity- richness, evenness, stratification, dominance, ecological indicators, Ecotone and Edge effect, Keystone species, Concepts of Ecological Niche and Guild, Ecological succession, community evolution- climax.

## **MODULE-3:-BIODIVERSITY AND ENVIRONMENTAL ISSUES- 16.hrs**

**Introduction to Biodiversity:** Types of biodiversity- Alpha, Beta and Gamma diversity.

**Concept and importance of Biodiversity:** Levels of Biodiversity-Species diversity, Genetic diversity, Microbial, Ecosystem diversity, India as a mega-diversity nation, Biodiversity hotspots

**Global Environmental Issues:** Ozone depletion, Greenhouse effect, Global warming, Climate change, Carbon trading, carbon credit; Carbon sequestration, Acid rain, Oil spills, Nuclear accidents, IPCC/UNFCCC.

**National Environmental issues:** Deforestation, forest fire, pollution(air, water, soil, noise thermal, nuclear- brief account only) , solid waste management, sewage, drinking water crisis and water logging,

**Toxic products and disaster:** Types of toxic substances – degradable, non degradable, Impact on human – case studies: Endosulphan tragedy, Bhopal disaster

Flood, drought, cyclone, earthquake and landslide (Management and mitigation)

**Local Environmental issues:** Landscape alteration, sand mining, quarrying, changing crop pattern, conversion of paddy lands,

**Threats to water resources of Kerala:** Degrading Mangrove and wetland ecosystems of Kerala,

RAMSAR sites, Marine ecosystem crisis- pollution, overfishing etc. Impact of tourism on Environment.

## **MODULE- 4:- CONSERVATION OF BIODIVERSITY- 5 .hrs**

**Protected area concept** – Sanctuary, National Park, Biosphere reserve, Core Zone, Buffer Zone, Corridor concept. Conservation reserves

**Concept of threatened fauna – IUCN categories** - extinct, extinct in the wild, critically endangered, endangered, vulnerable, near threatened, least concern and data deficient. Red and Green Data Books.

**Man–animal conflict** (Tiger, Elephant,) – causes and concern

**Water conservation-** rainwater harvesting, watershed management

**Environmental laws** (Brief account only): The Wildlife Protection Act, 1972, Biodiversity Act, 2002.

## **MODULE- 5:- HUMAN RIGHTS- 18. Hrs**

### **Unit 1 - Human Rights**

An Introduction to Human Rights, Meaning, concept and development –History of Human Rights-Different Generations of Human Rights- Universality of Human Rights- Basic International Human Rights Documents - UDHR ,ICCPR,ICESCR.-Value dimensions of Human Rights

### **Unit 2 - Human Rights and United Nations**

Human Rights co-ordination within UN system- Role of UN secretariat- The Economic and Social Council- The Commission Human Rights-The Security Council and Human rights-The Committee on the Elimination of Racial Discrimination- The Committee on the Elimination of Discrimination Against Women- the Committee on Economic, Social and Cultural Rights- The Human Rights Committee- Critical Appraisal of UN Human Rights Regime.

### **Unit 3- Human Rights National Perspective**

Human Rights in Indian Constitution – Fundamental Rights- The Constitutional Context of Human Rights-directive Principles of State Policy and Human Rights- Human Rights of Women-children –minorities- Prisoners- Science Technology and Human Rights- National Human Rights Commission- State Human Rights Commission- Human Rights Awareness in Education.

## **References**

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