

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF ZOOLOGY**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor in Life Science (Diploma / Degree/Honors)		Semester -IV	Session: 2024-2025
1	Course Code	ZOSE-02T	
2	Course Title	Ecology and Wildlife Conservation & Management	
3	Course Type	Discipline Specific Elective	
4	Pre-requisite (if, any)	<i>As per Program</i>	
5	Course Learning Outcomes (CLO)	<p>After successfully completing this course, the students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Understand the concepts of fundamental ecological principles, including energy flow, nutrient cycling, and population dynamics.</li> <li>➤ Apply the knowledge of ecology to understand equilibrium of nature.</li> <li>➤ Analyze the strategies of Populations to survive and sustain.</li> <li>➤ Evaluate the significance of biodiversity and its conservation.</li> <li>➤ Create awareness about wildlife and nature.</li> </ul>	
6	Credit Value	3 Credits	<i>Credit = 15 Hours - learning &amp; Observation</i>
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40

<b>PART -B: Content of the Course</b>		
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)		
Unit	Topics (Course contents)	No. of Period
I	An overview of Ecology and Biomes: Aims and scope of Ecology. Difference between Auto-ecology and Synecology. Abiotic & Biotic factors. Ecosystem and Ecological Pyramids. Bio-geo-chemical cycles. Energy flow in ecosystem: Trophic levels. Food Chain, Food Web, Food chain in fresh water ecosystem. Laws of limiting factor: Leibig's Law of Minimum, Shelford Law of tolerance. Major Biomes of the world, Biogeographic zones of India.	11
II	Population ecology: Population characteristics: Density, Measurement of Population Density (Quadrat method and tagging method) Mortality, Natality, Age Pyramids, Migration and Dispersal. Life tables. Survivorship curves. Population Growth: Types of Population Growth, Growth Curves (S shaped & J shaped), Mathematical Expression of population growth: logistic & stochastic, R and K strategies. Carrying Capacity. Population Regulation: extrinsic & intrinsic factors.	12
III	Biotic community and Environmental degradation: Biotic community characteristics and attributes: Stratification; Dominance, diversity, species richness, abundance, Evenness, Similarity, Ecotone and edge effect. Ecological succession. Species interaction: Positive interactions: commensalism, proto-cooperation and mutualism. Negative interactions: parasitism. Competition: Interspecific and Intraspecific, Lotka Volterra Model, Gause's Principle. Prey-Predator Model. Environmental degradation: Air, water and noise pollution and their control. Natural resources: Mineral, water and forest, their significance and conservation.	11
IV	Biodiversity & Wildlife management: Biodiversity: Concept and characteristics. Levels of Biodiversity (Genetic Diversity, Species Diversity & Ecosystem Diversity), Hotspots of Biodiversity. Major National Parks of Chhattisgarh and their biodiversity. Endemic animal species of Chhattisgarh. IUCN red list categories and criteria. Conservation of Biodiversity (In Situ, & Ex Situ Conservation). Major international & national treaties, laws and regulations for conserving biodiversity. Important conservation projects undertaken in India: Project Tiger & Project Elephant. Tiger Census and Estimation (Techniques and Findings). Cheetah re-introduction plan, Captive breeding and Propagation: Founder population, rehabilitation, education, utilization, gene banks. GIS and other technologies in Forest & Wild life conservation.	11
Keywords	Ecology, Biome, Abiotic, Biotic factors, Nutrient Cycle, Population, Wildlife conservation, In Situ & Ex Situ	

**Signature of Convener & Members (CBoS) :**

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### **PART-C: Learning Resources**

#### **Text Books, Reference Books and Others**

##### **Text Books Recommended –**

- Sharma, P.D. Ecology and Environment, Rastogi Publication.
- Kumar Pranav, Meena Usha. Fundamentals of Ecology and Environment.
- Mathur Reena. Wildlife Conservation and Management, Rastogi Publication.
- Singh S.K., Text book of Wildlife Management, CBC Publishers and Distributors

##### **Reference Books Recommended –**

- Chapman, J.L. & M.J. Reiss. 1998. Ecology: Principles and Applications. Cambridge Univ. press. 2nd edition.
- Odum, E. P. (2004). Fundamentals of Ecology, Oxford and IBH Publishing Co. Pvt. Ltd.
- Smith, TM and Smith RL. 2015. Elements of Ecology, Pearson Education, India.

##### **Online Resources–**

- [https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp\\_content/S000035ZO/P000891/M020617/ET/1498712980Ecosystemprocesses-IPart-1Quad1.pdf](https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000035ZO/P000891/M020617/ET/1498712980Ecosystemprocesses-IPart-1Quad1.pdf)
- [https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp\\_content/S000035ZO/P000891/M020612/ET/1498710746CommunitycharacteristicsstratificationPart4Quad1.pdf](https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000035ZO/P000891/M020612/ET/1498710746CommunitycharacteristicsstratificationPart4Quad1.pdf)
- [http://ndl.iitkgp.ac.in/he\\_document/swayam\\_prabha/cao2zsydjq](http://ndl.iitkgp.ac.in/he_document/swayam_prabha/cao2zsydjq)

##### **Online Resources–**

- <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1788373>
- [https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp\\_content/S000032SW/P001702/M020403/ET/14969150701-](https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000032SW/P001702/M020403/ET/14969150701-)

### **PART -D: Assessment and Evaluation**

#### **Suggested Continuous Evaluation Methods:**

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

<b>Continuous Internal Assessment (CIA):</b> (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10 Total Marks - 30	
<b>End Semester Exam (ESE):</b>	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:









