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

PART- A: Introduction				
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)	***As per Program***		
5	**Course Learning. Outcomes (CLO)**	**After successfully completing this course, the students will be able to:** ➢ Understand the concepts of fundamental ecological principles, including energy flow, nutrient cycling, and population dynamics. ➢ Apply the knowledge of ecology to understand equilibrium of nature. ➢ Analyze the strategies of Populations to survive and sustain. ➢ Evaluate the significance of biodiversity and its conservation. ➢ Create awareness about wildlife and nature.		
6	**Credit Value**	**3 Credits**	***Credit = 15 Hours - learning & Observation***	
7	**Total Marks**	**Max. Marks: 100**		**Min Passing Marks: 40**

PART -B: Content of the Course

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 (Quadrate 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 Intraspecifi, Lotka Volterra Model, Gause's Principle. Prey-Predatator 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 Biodiveristy (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/M020612/ET/1498710746CommunitycharacteristicsstratificationPart4Quad1.pdf**
- **http://ndl.iitkgp.ac.in/he_document/swayam_prabha/cao2zsydjqu**

Online Resources–

- **https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1788373**
- **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**

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): **20** +**20** Assignment / Seminar - **10** Total Marks - **30**	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam (ESE):	**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:

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PART-A: Introduction				
Program:Bachelor in Life Science*(Diploma / Degree/ Honors)*			**Semester -IV**	Session:2024-2025
1	**CourseCode**	**ZOSE-02P**		
2	**CourseTitle**	**Ecology and Wildlife Conservation & Management**		
3	**CourseType**	**Discipline Specific Elective Lab Course**		
4	**Pre-requisite**(if, any)	***As per Program***		
5	**Course Learning. Outcomes(CLO)**	**After successfully completing this course, the students will be able to:** ➢ Understand practical fieldwork skills, including sampling techniques, data collection and methods of analysis used in ecological research. ➢ Learn to design and implement ecological experiments. ➢ Understand soil profile and characteristics. ➢ Analyse chemical parameters of various water bodies. ➢ Create awareness about local faunaand evaluate biodiversity of an area.		
6	**CreditValue**	**1 Credits**	***Credit =30 Hours Laboratory or Field learning/Training***	
7	**TotalMarks**	**Max.Marks:50**		**Min Passing Marks:20**

PART -B: Content oftheCourse		
TotalNo.of learning-Training/performancePeriods:30 Periods (30 Hours)		
Module	**Topics(Coursecontents)**	**No. of Period**
Lab./Field Training/ Experiment Contents of Course	• Study of biodegradable and non-biodegradable pollutants in the locality. • Study of a representative type of ecosystem. • Determination of pH of water samples from various water bodies. • To determine the transparency of water of Pond ecosystem by Secchi disc. • To study the profile of soil in the field/ Soil sampling by V- cut method. • To study the zooplankton communities in a fresh water ecosystem. • To prepare a checklist of birds/Insects in and around college campus. • Estimation of ecological density, diversity and frequency of college premises by quadrate method. • Estimation of Shannon – Weiner index of a given area. • Estimation of Simpson– biodiversity index of a given area. • Study of strategy for preventing and managing human-wildlife conflicts. • Project Work / Quiz / Poster / Model preparation/Viva. • Practical Record	**30**
Keywords	*Density, Diversity, Frequency, Biodegradable, Non- biodegradable, Pollutants, Sechhi disc,*	
SignatureofConvener&Members (CBoS):		

PART–C:Learning Resources

Text Books, Reference Books and Others

Text BooksRecommended –

- Yadaw Vikas, YadawParul; 2022 Modern Practical Zoology; Kedar Nath Ram Nath.
- Verma P.S. A Manual of Practical Zoology Chordates, S.Chand.
- Lal S.S. Practical Zoology Vertebrate; Rastogi Publications.
- Jayasurya, Arumugam N.: Practical Zoology: Saras Publication.

Reference BooksRecommended –

- Odum, E.P. 1971Fundamentals of Ecology; W.B. Sounders
- Beard, J.M. 2013Environmental Chemistry in Society (2nd Edition). CRC Press.

Online Resources–

- **https://www.statology.org/simpsons-diversity-index/**
- **https://www.statology.org/shannon-diversity-index/**

Online Resources–

- **https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000014ER/P000280/M026066/ET/1520505951paper10_Module27_etext.pdf**

PART-D:Assessment andEvaluation

Suggested Continuous Evaluation Methods:
MaximumMarks: 50 Marks
ContinuousInternal Assessment(CIA):15 Marks
EndSemesterExam(ESE):35Marks

Continuous InternalAssessment(CIA): **(By Course Teacher)**	Internal Test / Quiz-(2): **10 &10** Assignment/Seminar +Attendance- **05** Total Marks -**15**	Better marks out of thetwo Test / Quiz **+**obtained marks in Assignment shall be considered against **15** Marks
End Semester Exam (ESE):	**Laboratory / Field Skill Performance: On spot Assessment** **A. Performed the Task based on lab. work - 20 Marks** **B. Spotting based on tools& technology (written) – 10 Marks** **C. Viva-voce (based on principle/technology) - 05 Marks**	**Managed by Course teacher as per lab. status**

NameandSignatureofConvener&MembersofCBoS: