



**Syllabus and Course of Study in Zoology - Theory UG. Semester-Vth**

**For examinations to be held in 2024-25, 2025-2026, 2026-2027**

<b>Maximum Marks</b>	<b>100</b>
<b>Core Course No.</b>	<b>UZOMJT- 502</b>
<b>Minimum Pass Marks</b>	<b>External-29, Internal-07</b>
<b>Core Course Title</b>	<b>Ecology and Conservation Biology</b>
<b>Credits</b>	<b>4</b>
<b>Marks (External)</b>	<b>80 marks</b>
<b>Internal Assessment</b>	<b>20 marks</b>
<b>Duration of external Exam.</b>	<b>3 Hours</b>
<b>Date of BOS</b>	<b>12-06-24</b>

**Course objectives**

- To understand the basic concepts of ecology and factors affecting ecosystem.
- To provide knowledge of biogeochemical and sedimentary cycles and its importance
- To develop knowledge of major Ecosystems of the world.

**Expected Course Outcomes**

- The course will enable the students to gather in depth knowledge on the basic concepts of ecology.
- The students will learn the abiotic and biotic factors that influence ecosystem structure.
- It will help understand the concepts of the basic laws in ecology.
- The students will understand the important biogeochemical cycles.
- The students will learn about various community concepts.

**SYLLABUS**

**Unit-1 Basic Concepts of Ecology**

**12 hrs**

- 1.1 Ecology –its definition ,Types and relation to humanity
- 1.2 Ecological niche, habitat
- 1.3 Energy Flow in Ecosystem
  - 1.3.1 Primary productivity and Secondary productivity
  - 1.3.2 Food chains: Grazing food chains and detritus food chains
  - 1.3.3 Food webs
  - 1.3.4 Trophic Structure and Ecological Pyramids( Pyramids of number ,Biomass and energy)
- 1.4 Biogeochemical cycles and nutrient cycling (C,N,P)
- 1.5 Law of Minimum and Law of Tolerance

**Unit-2 Ecology of Populations**

**12 hrs**

- 2.1 Characteristics of Population:
- 2.2 Size and Density, Population Growth-Geometric and Exponential (Concept of Carrying Capacity)

2.3 Age Structure

2.4 Dispersion, natality and mortality,

2.5 Life Tables, survivorship curves

**Unit-3 Organisation of Communities**

**12 hrs**

3.1 Community organization and Structure: Major Terrestrial Biomes

3.2 Keystone species, Biosphere, biome, ecotone and edge effect.

3.2 Species interactions (positive and negative)

3.3 Ecological Succession and Climax community.

**Unit-4 Natural Resources and Environmental Pollution**

**12hrs**

4.1 Types of Resources: Renewable and Non-renewable

4.2 Types of Forest Resources: its uses and importance

4.3 Ozone Layer Depletion, Climate Change, Acid Rain and its impact on Environment

4.4 Bio-indicators, Bio-remediation

4.5 Sustainable development and sustainable development Goals (SDG's)

**Unit-5 Biodiversity and Conservation**

**12hrs**

5.1 Definition and levels of Biodiversity (Genetic, Species and ecosystem Diversity)

5.2 Biodiversity HotSpots, Wetlands

5.3 Value and Threats to biodiversity (Man Wild Life Conflicts, Deleterious Influence on Wild life resources and its Conservation).

5.4 Conservation of Biodiversity---in situ and ex situ conservation of Biodiversity, Protected Areas

5.5 IUCN Red List Categories (Project Tiger, Vision Rhino 2020)

**Note 1: Scheme of examination:**

- Total weightage for theory paper shall be 100. 20% mark shall be reserved for internal assessment. External Theory paper will be set for 80 marks.

**Internal Assessment Test.**

- One long answer type question of 10 marks and five short answer type questions of 02 marks each.

**Note 2: For paper setters**

**External End Semester Exam.**

- **Section A:** 05 short answer type questions representing all units/syllabi i.e., at least one from each unit having 70-80 words and having 03 marks each. (All Compulsory)
- **Section B:** 05 medium answer type questions representing all units/syllabi i.e., at least one from each unit having 250-300 words and having 07 marks each. (All Compulsory).
- **Section C:** 05 long answer type questions representing all units/syllabi (02 to be attempted) with detailed analysis/ explanation to be stated within 500-600 words having 15 marks each.

**Books Recommended:**

1. Phillipson, J. 1966. Ecological Energetic, Edward Arnold Ltd. London.
2. Odum, E.P. 1970 . Ecology, Amerind Publ. Co. New Delhi.
3. Odum, E.P. 1971. Fundamentals of Ecology, W.B. Saunders, USA.
4. Kormondy, E.T. 1971. Concept of Ecology. Prentice Hall of India, New Delhi.
5. Ricklefs, R.E. 1973. Ecology. Thomes Nelson and sons ltd.
6. Wiegert, R.G. 1976. Ecological Energetic Dowden, Hutchinson & Ross. Inc. Pennsylvania.
7. Scuthwick, C.H. 1976. Ecology and the quality of our environment. D. Van Nestrand
8. Colinbaux, P.A. 1985 Introduction to ecology. John Wiley & Sons
9. Strinberg, Christian E. 2003. Ecology of humic substances in freshwater, Springer publishers.
10. Scheffer, Marten. 2004. Ecology of shallow lakes.
11. M.P. Sinha, Soma Dey, Bijaj. S. Singh. 2004. Conservation of biodiversity and Natural Resources. Daya Publ. House Delhi.
12. Odum, Eugene P. 2005. Fundamentals of Ecology. Publishers Cenagelearing.
13. Wilkinson, D.M. 2007. Fundamental Resources in Ecology: An Earth System Approach. Oxford Univ. Press. UK.
14. Fahey, J.J, and Knapp, A.K. 2007. Principles and Standards for measuring primary production. Oxford Univ. Press. UK.
15. Grant, W.E. and Swanmack, T.M. 2008. Ecological Modeling. Blackwell Publ. House.
16. Bhatia, S.C. 2008. Ecology and sustainable development, Atlantic Publishers.
17. Arumugar N, 2014. Concept of Ecology, Saras Publishers, year-2014.
18. Ecology & Environment (13th edition) (2 copies) Author- Sharma, P.B. Rastogi-Publishers, year-2018 Molen, Manciel C. 1048 Ecology. Publishers- Mc-Graw Hill Year-1048.

**Committee members (External)**

1	Prof. (Dr.) Seema Langer Head, Department of Zoology & Dean, Life Sciences, University of Jammu	
2	Dr. N. K. Tripathi, Professor (Retd.) Department of Zoology, University of Jammu	
3	Dr. Surya Partap Singh, Assistant Prof. & Head, Department of Zoology, GDC Basholi	
4	Dr. Shvetambri Jasrotia, Assistant Prof., Department of Zoology, Central University of Jammu	
5	Mr. Munish Sharma Assistant Director Fisheries, Jammu.	
6	Col. (Retd.) Sunil Sambyal , Biofloc Expert & Entrepreneur	

**GOVT. COLLEGE FOR WOMEN, PARADE GROUND, JAMMU-180001, J&K.**

(Erstwhile Maharani Mahila College)

**Autonomous College affiliated to the University of Jammu**

**College with Potential for Excellence, 2016**

(Estd. 1944)



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**Syllabus and Course of Study in Zoology - Practical UG. Semester-Vth**

**For examinations to be held in 2024-25, 2025-26 and 2026-2027.**

**Practical Syllabus**

**Course Title: Ecology and Conservation Biology**

**Course No: UZOMJP-505**

1. To determine the atmospheric and water temperature.
2. To determine pH of water sample.
3. To determine the depth and transparency of a pond.
4. To study the concept of food chain and food web with examples.
5. To study the concept of ecological succession through model.
6. To study the density and frequency of a population by Quadrant method.
7. To study the terrestrial biomes.
8. To study the Bio diversity hotspots of Indian subcontinent
9. A visit to an Environmental Park/Wetland/Zoo/National Park/Wild Life Sanctuary and submission of report.
10. A Project report on the endemic and threatened species of J and K.

**Examination pattern:-**

**A) Internal assessment**

**Weightage of Internal assessment:- 50% ie. 25 marks out of 50.**

**Components of internal assessment:-**

- a. 5 marks for attendance. Marks shall be awarded as per the rules already followed by the College
- b. 6 marks earmarked for the daily performance of the students in the practical exercises. The evaluation of daily performance shall be undertaken as per the standard a ß y scheme being followed in the College.
- c. 6 marks are earmarked for minor project assigned to each student. Students shall have to submit the project report according to a prescribed format on the day of internal assessment test
- d. 8 marks earmarked for internal assessment test in practical. The nature of the test shall be similar as is already followed by the College.

**B) External examination:-**

**Weightage of external examination:-**50% i.e., 25 marks out of 50. The examination pattern shall be same as followed by the College.

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