

FACULTY OF LIFE SCIENCES

Syllabus

For

Interdisciplinary Course in Zoology (UG & PG)

Examinations: 2019–20



Guru Nanak Dev University
Amritsar

- Note:** (i) **Copy rights are reserved.**
Nobody is allowed to print it in any form.
Defaulters will be prosecuted.
- (ii) **Subject to change in the syllabi at any time.**
Please visit the University website time to time.

Interdisciplinary Course in Zoology (UG)**ZOL 001: Animal Diversity (Odd Semester)****Time: 3 Hrs.****Credits 4-0-0****Max. Marks : 100****Mid Semester Marks : 20****End Semester Marks : 80****Mid Semester Examination: 20% weightage****End Semester Examination: 80% weightage****Instructions for the Paper Setters:**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section-A**Invertebrates**

Broad classification (upto class level) and Important features of the following phyla:

Protozoa

Porifera

Coelentrata

Platyhelminthes

Aschelminthes

Section-B**Invertebrates**

Broad classification (upto class level) and Important features of the following phyla:

Annelida

Arthropoda

Mollusca

Echinodermata

Section-C**Lower Chordates and Vertebrates**

Broad classification (upto class level) and Important features of the following phyla/subphyla:

Hemichordata

Urochordata

Cephalochordata

Vertebrata (Important features of the following classes):

Cyclostomata, Chondrichthyses, Osteichthyes

Section-D**Vertebrates**

Important features of the following classes:

Amphibia

Reptilia

Aves

Mammalia

Interdisciplinary Course in Zoology (UG)

Suggested Reading Material:

1. Barnes, R. D. (1980). *The Invertebrate Zoology*, Holt-Saunders, Philadelphia, 4th ed.
2. Dhama, P. S. and Dhama, J. K. (1988). *Invertebrates Zoology*, R., Chand & Company, New Delhi.
3. Dhama, P.S. and Dhama, J. K. (1994). *A Text Book of Zoology*. Pradeep Publications, Jalandhar.
4. Kotpal, R. L. (2011). *Modern Text Books of Zoology: Invertebrates & Vertebrates*. Rastogi Publications, Meerut.
5. Meglitsch, P. (1972). *Invertebrate Zoology*. Oxford Uni. Press, New York.
6. Prasad, S. N. (1970). *A Text Book of Vertebrate Zoology*. Kitab Mahal Allahabad.

Interdisciplinary Course in Zoology (UG)**ZOL -002: Important Wildlife Projects in India (Even Semester)****Time: 3 Hrs.****Credits 4-0-0****Max. Marks : 100****Mid Semester Marks : 20****End Semester Marks : 80****Mid Semester Examination: 20% weightage****End Semester Examination: 80% weightage****Instructions for the Paper Setters:**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section-A**1. Wildlife:**

Introduction, Importance, Threats

Conservation methods- *In-situ and Ex-situ*

Important wildlife sanctuaries and national parks in India

Section-B**2. Ecological status and conservation status of the following :**

- i) Tiger
- ii) Elephant
- iii) Hangul

Section-C**3. Ecological status and conservation status of the following :**

- i) Crocodile breeding project
- ii) One horned rhinoceros
- iii) Musk deer

Section-D**4. Ecological status and conservation status of the following :**

- i) Great Indian Bustard
- ii) Manipur Brow Antler Deer
- iii) Asiatic Lion & Gir National Park

Interdisciplinary Course in Zoology (UG)

Suggested Reading Material:

1. Dasmann, R. F. (1982), Wildlife Biology, Wiley Eastern, New Delhi.
2. Giles, R. H. (1984), Wildlife Management Techniques, Natraj Publishers, Dehradun.
3. Gopal, R. (1992), Fundamental of Wildlife management Justice Home Allahabad.
4. Hosetti, B. B. (1997), Concepts in Wildlife Management, Chawla Press, Delhi.
5. Sharma, B. D. (1994), High Altitude Wildlife of India, Oxford IBH, New Delhi.
6. Sharma, B.D. (1999), Indian Wild Life Resources Ecology and Development . Daya Publishing House, Delhi.
7. Sharma, B.D. (2002), Man environment and wildlife animal. IBH Publishing Co., Pvt . Ltd. New Delhi.
8. Sharma, P. D [Ecology and Environment](#) , BPR Publishers
9. Singh, H. R. Environmental Biology. S. Chand and Company Limited.
10. Teague, R. D. (1987), A manual of Wildlife Conservation, Natraj Publishers, Dehradun.
11. Tirvedi, P.R. and Singh , U. K. (1996), Environmental Laws of Wildlife.

Interdisciplinary Course in Zoology (PG)**ZOL 051 : Concepts of Environmental Biology(Odd Semester)****Time: 3 Hrs.****Credits: 4-0-0****Max. Marks : 100****Mid Semester Marks : 20****End Semester Marks : 80****Mid Semester Examination: 20% weightage****End Semester Examination: 80% weightage****Instructions for the Paper Setters:**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section-A

Environmental pollution & Disasters

Pollution – Definition, types and control of pollution.

Eutrophication and Bioaccumulation of pollutants.

Section-B

Water and Wastewater studies with reference to environment.

Natural and Man induced disasters – Floods, Earthquakes, landslides, deforestation and Tsunami.

Section-C

Environmental Impact Assessment

Environmental hazards and risk assessment.

Environmental Planning and management – need and scope of EI A.

EIA processes.

Policies and laws with reference to environmental protection.

Agencies involved in protection and conservation of environment.

Section-D

Recent Trends in Environmental Biology

Biofertilizers and food form micro-organisms

Solid waste management with vermicomposting

Bioremediation

Bioreactors in Environment monitoring.

Interdisciplinary Course in Zoology (PG)**Suggested Reading Material :**

1. Brewer, R. (1994). The science of Ecology. Saunders Publishers, New York.
2. Heywood, V.H. & Waston, R. T. (1995) Global biodiversity Assessment, Cambridge House, Delhi.
3. Townsend, C., Harper, J. & Micheal, B (2001) Essentials of Ecology, Blackwell Science.
4. Singh, H.R. & Kumar, N. (2004) Ecology & Environmental Science, Vishal Publishing Co., Jalandhar.
5. Sharma, P.D. (2005) Ecology & Environment, Rastogi Publication, Meerut.
6. Odum, E.P. (1971) Fundamentals of Ecology. W.B. Saunders Company Co.USA
7. Tambrell, J. (2002) Introduction to toxicology, Taylor & Francis, London.
8. Smith, K. (1996) Environmental Hazards. Routledge, London.
9. Smith, R.L. (1972) The ecology of Man: An ecosystem Approach, Harper & Row Publisher, New York.
10. Chapman, J.L. and Reiss, M.J. (1995) Ecology: Principles and applications, Cambridge University, Press, New Delhi.
11. Clesceri, L.S., Greenberg A.E. Eaton, A.D. (1998) 20th Edition Standard methods for the examination of water and wastewaters. American Public Health Association , U.S.A.
12. Nathanson, J. A. (1986). Basic Environmental Technology. Prentice Hall, New Jersey.

Interdisciplinary Course in Zoology (PG)**ZOL 052: Concepts of Zoology (Even Semester)****Time: 3 Hrs.****Credits 4-0-0****Max. Marks : 100****Mid Semester Marks : 20****End Semester Marks : 80****Mid Semester Examination: 20% weightage****End Semester Examination: 80% weightage****Instructions for the Paper Setters:**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section-A**Evolution**

Origin of Life

Evolution of multicellularity

Theories and evidences of animal evolution

Taxonomy

Importance of classification

Nomenclature

Concept of species

Section-B**Ecology**

Ecosystem Components

Niche

Homeostasis

Biotic and Abiotic factors affecting animals

Behaviour

Innate and learnt behaviour

Parental care

Migration

Section-C**Embryology**

Gamete structure, Gametogenesis

Fertilization

Early development upto three germ layers

Applied Zoology

Economically important Invertebrates

Economically important Vertebrates

Section-D**Cell and Cell Organelles**

Prokaryotic & Eukaryotic cell

Introduction to cell organelles(nucleus, mitochondria, ribosomes, lysosome, endoplasmic reticulum, golgi complex)

Interdisciplinary Course in Zoology (PG)**Suggested Reading Material**

1. Meglitsch, P. A. (1991), Invertebrate Zoology (3rd edition), Oxford University Press.
2. Minkoff, E. C. (1983), Evolutionary Biology, Addison Wesley Pub. Co., London.
3. Kapoor, V. C. (2001), Theory and practice of Animal Taxonomy, IPH Pub. New Delhi.
4. Mayer, E. and Aschhok (1991), Principles of Systematics, McGraw Hill Book Co. London.
5. Alcock, J. (1998), Animal behaviour, An evolutionary approach Sinauer Assoc., Sunderland, Mass , USA.
6. Drickamer, L. C. and Vessey, S. H. (1986), Animal Behaviour - Concepts, Processes and Methods. (2nd ed.), Wordsworth Publ. Co., California.
7. Manning, A. and Dawkins, M. S. (1992 & 1998), An Introduction to Animal Behaviour , 4th ed.(Cambridge low price editions). Cambridge University Press, Cambridge.
8. Sharma, B.D. (1999), Indian Wild Life Resources Ecology and Development . Daya Publishing House, Delhi.
9. Balinsky, B. I. (1981), An introduction of Embryology, Saunders, Philadelphia.
10. Berril, N. J. (1971), Development Biology. McGraw Hill, New Delhi.
11. Gilbert, S.F. (2003), Developmental Biology, Sinauer – associates, Inc. USA.
12. Goel, S. C (1984), Principles and Animal Developmental Biology, Himalaya, Bombay.
13. Saunder, J. W. (1982), Developmental Biology, Patterns, Principles, Problems, MacMillan, New York.
14. Shukla, G. S. & Upadhaya, V. B. (1991-92), Economic Zoology, Rastogi Publications, Meerut.
15. Srivastava, P. A. (1977), Economic Zoology, Commercial Publication Bureau, Kanpur.

Interdisciplinary Course in Zoology (PG)**Odd Semester****PSL053: HUMAN RIGHTS AND CONSTITUTIONAL DUTIES
(COMPULSORY PAPER)****Time: 3 Hrs.****Credits: 4****Max. Marks : 100****Mid Semester Marks : 20****End Semester Marks : 80****Mid Semester Examination: 20% weightage****End Semester Examination: 80% weightage****Instructions for the Paper Setters:**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section - A***INTRODUCTION TO HUMAN RIGHTS*****Foundational Aspects:** Meaning, Nature, Classification**Evolution of the Concept:** Magna Carta to Universal Declaration of Human Rights; Generations of Human Rights**Section – B*****INTRODUCTION TO HUMAN DUTIES*****Conceptual Perspective:** Meaning, Nature & Characteristics of Human Duties; Classification of Human Duties; Relevance of Human Duties**Human Duties in India:** Fundamental Duties in Indian Constitution Part IV A

((a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;

(k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.)

Interdisciplinary Course in Zoology (PG)

Section - C

CONCEPT OF HUMAN RIGHTS IN INDIA

Constitutional-Legal Framework: Fundamental Rights; Directive Principles of State Policy

Governmental Institutions for the Protection of Human Rights: Working of National Human Rights Commission; National Commission for Women.

Section – D

ACTUAL STATUS OF HUMAN RIGHTS IN INDIA

Status of Economic Social & Cultural Rights in India: Violence against Women; Violation of Child Rights: An Appraisal.

State of Civil & Political Rights in India: A study of Jammu & Kashmir and the North-East

Readings List

1. United Nations. *The United Nations and Human Rights 1945-1995*. Geneva: United Nations Blue Books Series, Vol. VII, 1996.
2. Sastry, S. N. *Introduction to Human Rights and Duties*. Pune: University of Pune Press, 2011.
3. Mertus, Julie. *The United Nations and Human Rights-A Guide for a New Era*. London: Routledge, 2009.
4. Donnelly, Jack. *Universal Human Rights in Theory and Practice*. New York: Cornell University Press, 2013.
5. Hammarberg, Thomas. *Taking Duties Seriously- Individual Duties in International Humanitarian Law*. Versoix: International Council on Human Policy, 1999.
6. Miller P. Frederic, et al. *Fundamental Rights, Directive Principles and Fundamental Duties in India*. New York: VDM Publishing, 2009.
7. Cinganelli, Davis Louis. *Human Rights- Theory and Measurements*. London: Macmillan Press, 1988.
8. Ishay, M. R. *The History of Human Rights*. New Delhi: Orient Longman, 2004.
9. Mohapatra, Arun Ray. *National Human Rights Commission of India: Formation, Functioning and Future Perspectives*. New Delhi: Atlantic, 2004.
10. Deol, Satnam Singh. *Human Rights in India-Theory and Practice*. New Delhi: Serials Publications, 2011.
11. Nessa, Saifun, et al. *Human Rights- With Special Reference to North East*. New Delhi: Reliance Publishing House, 2007.
12. Haragopal G. & B. Jagannatham. "Terrorism and Human Rights- The Indian Experience with Repressive Laws". *Economic and Political Weekly*, Vol. 44, No. 28, 2009.
13. JKHRDC (J & K Human Rights Awareness and Documentation Centre). *Human Rights Abuses in Kashmir (a collection of case study reports of human rights violation in Kashmir)*. Sri Nagar: IKS Publishers & Distributers, 2000.
14. Human Rights Watch. *With Friends like these: Human Rights Violations in Kashmir*. Washington: Human Rights Watch Publication, 2006.
15. Asia Watch & Physicians for Human Rights. *Human Rights Crisis in Kashmir*. Washington: Human Rights Watch Publication, 1993.
16. Chadrashekhar, Mamta, *Human Rights, Women & Violation*. New Delhi: Educreation Publishing, 2016.
17. Chopra, Geeta. *Child Rights in India- Challenges and Social Action*. New Delhi: Springer, 2015.