

FACULTY OF LIFE SCIENCES

SYLLABUS

FOR

Interdisciplinary Course

Zoology (UG & PG)

(Under Credit Based Continuous Evaluation Grading System)

Examinations: 2014-15



GURU NANAK DEV UNIVERSITY
AMRITSAR

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ZOL 001: Animal Diversity (Odd Semester)**Credit 3-0-0****Unit – I****Invertebrates**

Broad Classification (upto class level)

Important features

Unit – II**Lower Chordates**

Broad Classification (upto class level)

Important features

Unit – III**Vertebrates**

Broad Classification (upto class level)

Important features

Suggested Reading Material:

Barnes, R. D. (1980), The Invertebrate Zoology, Holt-Saunders, Philadelphia, 4th Ed.

Dhami, P. S. and Dhami, J. K. (1988), Invertebrates Zoology, R. Chand & Company, New Delhi.

Dhami, P.S. and Dhami, J. K. (1994), A Text Book of Zoology, Pradeep Publications, Jalandhar.

Kotpal, R. L. (2011). Modern Text Books of Zoology: Invertebrates & Vertebrates, Rastogi Publications, Meerut.

Meglitsch, P. (1972), Invertebrate Zoology, Oxford Uni. Press, New York.

Prasad, S. N. (1970), A Text Book of Vertebrate Zoology. Kitab Mahal, Allahabad.

ZOL -002: Important Wildlife Projects in India (Even Semester)**Credit 3-0-0****Unit –I**

1. Important wildlife sanctuaries and national parks in India
2. Ecological status and conservation status of the following :
 - i) Project Tiger
 - ii) Asiatic Lion & Gir National Park

Unit-II

3. Ecological status and conservation status of the following :
 - iii) Project Elephant
 - iv) Project Hangul
 - v) Manipur Brow Antler Deer
 - vi) Crocodile breeding project

Unit-III

4. Ecological status and conservation status of the following :
 - vii) One horned rhinoceros
 - viii) Musk deer
 - ix) Great Indian Bustard

Suggested Reading Material:

- Dasmann, R. F. (1982), *Wildlife Biology*, Wiley Eastern, New Delhi.
- Giles, R. H. (1984), *Wildlife Management Techniques*, Natraj Publishers, Dehradun.
- Gopal, R. (1992), *Fundamental of Wildlife Management* Justice Home, Allahabad.
- Hosetti, B. B. (1997), *Concepts in Wildlife Management*, Chawla Press, Delhi.
- Sharma, B. D. (1994), *High Altitude Wildlife of India*, Oxford IBH, New Delhi.
- Sharma, B.D. (1999), *Indian Wild Life Resources Ecology and Development*. Daya Publishing House, Delhi.
- Sharma, B.D. (2002), *Man Environment and Wildlife animal*. IBH Publishing Co., Pvt . Ltd. New Delhi.
- Sharma, P. D *Ecology and Environment*, BPR Publishers
- Singh, H. R. *Environmental Biology*. S. Chand and Company Limited.
- Teague, R. D. (1987), *A Manual of Wildlife Conservation*, Natraj Publishers, Dehradun.
- Tirvedi, P.R. and Singh, U. K. (1996), *Environmental Laws of Wildlife*.

ZOL 051: Concepts of Environmental Biology (Odd Semester)**Credit Hrs: 3-0-0****Unit – I**

Environmental pollution & Disasters

Pollution – Definition, types and control of pollution.

Eutrophication and Bioaccumulation of pollutants.

Water and Wastewater studies with reference to environment.

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

Unit – II

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.

Unit – III

Recent Trends in Environmental Biology

Biofertilizers and food form micro-organisms

Solid waste management with vermicomposting

Bioremediation

Bioreactors in Environment monitoring.

Suggested Reading Material:Brewer, R. (1994), *The Science of Ecology*. Saunders Publishers, New York.Heywood, V.H. & Waston, R. T. (1995), *Global Biodiversity Assessment*, Cambridge House, Delhi.Townsend, C., Harper, J. & Micheal, B (2001), *Essentials of Ecology*, Blackwell Science.Singh, H.R. & Kumar, N. (2004) *Ecology & Environmental Science*, Vishal Publishing Co., Jalandhar.Sharma, P.D. (2005), *Ecology & Environment*, Rastogi Publication, Meerut.Odum, E.P. (1971), *Fundamentals of Ecology*. W.B. Saunders Company Co., USA.Tambrell, J. (2002), *Introduction to Toxicology*, Taylor & Francis, London.Smith, K. (1996), *Environmental Hazards*. Routledge, London.Smith, R.L. (1972), *The Ecology of Man: An Ecosystem Approach*, Harper & Row Publisher, New York.Chapman, J.L. and Reiss, M.J. (1995), *Ecology: Principles and Applications*, Cambridge University, Press, New Delhi.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.Nathanson, J. A. (1986), *Basic Environmental Technology*, Prentice Hall, New Jersey.

ZOL 052: Concepts of Zoology (Even Semester)**Credit 3-0-0****Unit-I****Evolution**

Origin of Life

Evolution of multicellularity

Theories and evidences of animal evolution

Taxonomy

Importance of classification

Nomenclature

Concept of species

Unit-II**Ecology**

Ecosystem Components

Niche

Homeostasis

Biotic and Abiotic factors affecting animals

Behaviour

Innate and learnt behaviour

Parental care

Migration

Unit-III**Embryology**

Gamete structure, Gametogenesis

Fertilization

Early development upto three germ layers

Applied Zoology

Economically important Invertebrates

Economically important Vertebrates

Suggested Reading Material:

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