

ADVANCE ZOOLOGY VII (GENETICS AND WILDLIFE)

CREDIT HOURS: 3+1

Objectives

The continuity of the life from one generation to other generation is based on the mechanisms involving nucleus, chromosomes and genes etc. The process of continuity not only transfers the traits of the parents but also imparts variations that render the generations sustainable in changing environment. These concepts will be imparted to the students in this course.

Course Contents (Wild Life)

Wildlife of Pakistan, identification, distribution, status, conservation and management (population estimate technology) of fishes, reptiles, birds and mammals of major importance in Pakistan. Wildlife rules and regulations in Pakistan. National and International agencies involved in conservation and management of wildlife. Sanctuaries, Game Reserves and National Parks in Pakistan. Ramsar convention, wetlands, endangered species of Pakistan.

(Note: The teacher is suggested to provide blank maps of Pakistan in the theory class to the students to indicate the distribution of the animals. Similar blanks maps should be attached with the question paper, if distribution of animals is asked from the student in the theory paper).

Course Contents (Genetics)

Classical genetics –genetics of blood groups, chromosomal basis of inheritance, interaction of genes, linkage, recombination and chromosome mapping in eukaryotes, quantitative inheritance. gene concept (classical and modern), genetics of viruses, bacteria, transposons.

Molecular genetics – analysis and techniques of molecular genetics (elements of genetic engineering), genetic basis of cancer, genetic control of animal development, the genetic control of the vertebrate immune system, complex inheritance patterns.

Population genetics – Hardy-Wienberg equilibrium, systematic and dispersive pressures, inbreeding and heterosis.

Evaluation Criteria

Examination	Type	Marks
Internal Examination	Sessional Work	15%
	Mid-Semester	25%
External Examination	Final Semester	60%

Books Recommended

- Bailey, J.A. (1986). *Principles of Wildlife Management*, John Wiley and Sons.
- Ali S. & Ripley S.D. (1973). *A Handbook of Birds of India & Pakistan*, London: Oxford University Press.
- Ali, S.S. (1999). *Paleontology, Zoogeography & Wild-Life Management*. Hyderabad, India: Nasim Book Depot.
- Boyd, C.E. & Tucker, C. S. (1998). *Pond aquaculture and water quality management*. Boston, Kluwer Publishers Alabama.
- Magon, C.F. (1988). *Biology of freshwater pollution*. Longman and Scientific Publication.
- Roberts, T. J. (1992). *The Birds of Pakistan*, (Vol.I). Oxford University Press.
- Roberts, T. J. (1998). *The birds of Pakistan*, (Vol. II), Oxford University Press.
- Roberts, T.J. (1977). *Mammals of Pakistan*. London: Ernest Benon Ltd.
- Robinson, W.L. & Bolen, E.G. (1984). *Wildlife ecology and management*. McMillan, Cambridge.

ADVANCE ZOOLOGY VII (GENETICS AND WILDLIFE) PRACTICALS

1. Mitosis (Onion root tips.)
2. Meiosis (Grass hopper testes)
3. Blood groups.
4. Salivary gland Chromosomes of *Drosophila melanogaster*
5. General morphology of *Drosophila melanogaster*
6. Human Pedigree analysis problems
7. Human Genetics problems
8. Probability problems. Tossing of coins. X^2 test
9. Study of transformed bacteria on the basis of antibiotic resistance.

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	Mid-Semester	25%
External Examination	Final Semester	60%

Books Recommended

Gardener, E.J., Simmons, M.J. & Snustad, D.P. (1991). *Principles of genetics*. New York, USA: John Wiley and Sons Ins.

Lewin, B. (2000). *Gene-VIII*. UK: Oxford University Press.

Snustad, D.P. & Simmons, M.J. (2003). *Principles of Genetics*. (3rd ed.), New York, USA: Johan Wiley and Sons Ins.

Strickberger, M.W. (1985). *Genetics*. New York. USA: McMillan,.

Tamarin, R.H. (2001). *Principles of genetics*. (7th ed.), USA: WCB publishers.