



SOLAPUR UNIVERSITY, SOLAPUR

Ph.D. (ZOOLOGY) COURSE SYLLABUS (Implemented from July, 2014)

Paper	Title of the paper
I	Research Methodology and ICT
II	Recent Trends in Zoology
III	Advanced Development in Zoology

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Paper II – Recent Trends in Zoology

Sr. No.	Chapters
1	<p>Medical Zoology</p> <p>I. Brief introduction to pathogenic microbes. a) Viruses: Rabies, Swine flu, Chikungunya b) bacteria: <i>Mycobacterium tuberculosis</i>, <i>Salmonella typhi</i></p> <p>II. Pathogenic protozoans: <i>Leishmania</i>, <i>Giardia</i>, <i>Trichomonas</i>,</p> <p>III Pathogenic helminths: <i>Schistosomia</i>, <i>Moniezia</i>, <i>Raillietina</i>, <i>Echinococcus</i>, <i>Ancylostoma</i>, <i>Trichinella</i>, <i>Wuchereria</i>, <i>Oxyuris</i>.</p> <p>IV Arthropod vectors of human diseases with respect to their biology, vector-host-pathogen interaction and epidemics of diseases of: Mosquito, I. Flies, Lice and mites.</p>
2	<p>Physiological and biochemical techniques</p> <p>I. Hematological Techniques- Blood composition, hematological techniques. II. Biochemical methods- Centrifugation, spectroscopy, chromatography, electrophoresis. III. Detection of carbohydrates and lipids- Chemistry and classification, qualitative and quantitative detection. IV. Detection of enzymes- Chemistry and classification, qualitative and quantitative detection.</p>
3	<p>Recent trends in biotechniques</p> <p>I. Nucleic acid biotechniques- Salient features, laboratory biotechniques. II. Immunological techniques- Elements of immunology, immune reaction, immunological techniques. III. Radioimmunoassay of hormones- Principle of radioimmunoassay, chemistry and classification of hormones, radioimmunoassay (RIA) techniques for hormones. IV. Animal cell and tissue culture- Salient features, cell culture techniques, cell culture and immunocytochemistry.</p>
4	<p>Environmental Biology</p> <p>I. Global Environmental problems: Ozone depletion, UV- B , Green house effect and acid rain, their impact and biotechnological approaches for management. II. Bioremediation of Contaminated soil and waste land. Diversity Indices</p>
5	<p>Biosystematics and Biodiversity</p> <p>I. Biological nomenclature theories of biological classification, II. Taxonomic Keys III. Modern trends in Taxonomy: Morphological, Cytological, Biochemical and Physiological basis of taxonomy</p>

	IV. Concept, Importance and Threats of Biodiversity
	V. Wildlife biology
	VI. Conservation strategies. Cryopreservation of gametes

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Paper III – Advanced Development in Zoology

1	Physiology I. CNS, Neuro-endocrinology II. Types of endocrine glands III. Classification of hormones IV. Mechanism of their action V. Stress and adaptation. VI. Space physiology
2	Fisheries I. Fisheries and aquaculture II. Fish breeding techniques III. Fish culture IV. Aquarium fishes and their economic importance
3	Biochemistry I. Enzymes and coenzyme II. Allosteric enzymes III. Ribozyme and Abzyme. IV. Fermentation technology, V. Techniques in food preservation, carbohydrates, lipids, proteins including enzymes of industrial importance, bio-sensors.
4	Evolution I. Origin of life II. Concept of evolution III. Theories of organic evolution IV. Mechanism of speciation V. Origin and evolution economically important microbes, plants and animals
5	Developmental biology I. Molecular events during fertilization II. Genetic regulation of early embryonic development in Drosophila III. Cell differentiation IV. Stem cells & Embryo transplantation, Transgenesis. V. Genes in Development: Homeotic genes , HOX genes.

Reference Books:

Sr. No	Title	Author
1	World of the Cell, The, 7/E	Wayne M. Becker
2	Human Molecular Genetics Latest Ed.	Peter Sudbery
3	Endocrinology Latest Ed.	Mac Hadley, Jonathan Levine
4	Human Physiology An Integrated Approach: International Edition Latest Ed.	Dee Silverthorn
5	Concepts of Genetics Latest Ed.	Watson
6	GENES IX	BENJAMIN LEWIN
7	Instrumentation and Bio-analytical techniques	Alka Gupta
8	Principles of Genetics	Gardener
9	Biological Instrumentation & Methodology	Dr.P.K.Bajpai
10	Stress Biology	U. Chakraborti
11	Virology	S.Rajan V. Kumaresan
12	Bioinformatics	R. Sundaralingam V. Kumaresan
13	Animal Biotechnology	V. Kumaresan
14	Experimental Biology	Abhijit Dutta
15	Biotechnology	Kumaresan
16	Instrumentation and Bio-analytical techniques	Alka Gupta
17	Basic Concepts of Biotechnology	Irfan Khan and A. Khanum
	Text book of physiology and functional histology	A. K. Berry
18	The Biology of Biodiversity, Springer	M. Kato
19	Principal of Animal Taxonomy. Oxford	E.O. Wilson
20	Molecular Markers, Natural history And Evolution, Chapman & Hall, New York.	J.C Avise
21	Biostatic	M.K Madan

22	Molecular Biology of the cell,	B. Albert's, d Bray J. Lewis, M, Faff; K. Robertes
23	Cell Biology	De-Robertes
24	Biochemistry	By Zubay
25	Molecular biology of fertilization	Segatten and Schatten
26	Developmental biology	Balinsky
27	Oraganic Evolution	N.Arumugams
28	Genes Chromosomes and Evolution	Beny G.Ashton
29	Principle of Genetics	Robert H. Tamarin
30	Ecology	Odum
31	Parasitology	.K.D.Chatterjee: Chatterjee Medical Publication, Kolkata
32	Medicai Parasitology,	M.C.Dey and T.K.Dey: Allied Agency, Kolkata
33	Biodiversity and environment	S.K.Agrawal , S.Tiwari and P.S. Dubey 1996.
34	Biodiversity principles and conservation.	Kumar and Asija.,Agrobios(India).
35	Physiology of Hormones	Dr. R Chakraborti
	Principals of Genetics and Genetic Engineering	Dr. E.J.J. Prakash
36	Outlines of Microtechniques	Dr. Prasad
37	Environmental Studies	Manjunath
38	Principals of Animal Physiology	Moyes
39	What are Bacteria Viruses and more	Sharma
40	Instrumentation & Techniques	by Chatwal & Chatwal.
41	Environmental & Metabolic Animal Physiology.	Prosser C.L.
42	Animal Physiology: Mechanisms & Adaptation.	Eckert R.
43	Environmental Biodegradation. Sarup & Sons Publ. New Delhi.	Ramkumar P.
44	Biostatistics, Computer Application & IT	N.Arumugam A.Gopi
45	Aquaculture and Fishery	N.Arumugam

Ph.D. (Course Work) Nature of Question Paper Pattern

- Ph.D. कोर्सवर्कसाठी फक्त Long Answer व Short Answer असेच प्रश्न असतील.
- Ph.D. (Course work) प्रश्नपत्रिकेत कोणताही External Option व Objective प्रश्न असणार नाहीत.
- एकूण प्रश्न - ५ X गुण २० = १०० गुण
- प्रश्न क्रमांक १ ते ५
- (A) दिर्घोत्तरी प्रश्न (१० गुण)
(B) Answer Any two out of three (प्रत्येकी ५ गुण)

या प्रश्नपत्रिकेच्या स्वरूपामुळे Internal Option हा २५% राहतो.