Name of the Programme: M.Sc. Zoology Course Code: ZOO-510 Number of Credits: 03 Effective from AY: 2023-24

Title of the Course: Laboratory Course-II

Pre-requisites	Basic working knowledge of Animal Anatomy, Biochemistry, Embryology and		
for the Course:	Ecology		
Course	1. To examine various anatomical features of chordates		
Objectives:	2. To determine the concentrations of biomolecules in different samples		
	3. To experiment with different life stages of chick embryo		
	4. To interpret ecological indices of selected areas		
Content:	Anatomy of Chordates		
	Preparation of the skeleton using a Chicken*.		
	Exposure of axial muscle of fish*.	11 x 2 lab	
	Digestive system of fish*.	hours	
	Reproductive system of fish*.		
	Afferent and Efferent branchial system of fishes*.		
	Brain of Chicken*		
	*Dead fish collected from the market and chicken from the		
	slaughterhouse		
	Biochemistry		
	Preparation of biological buffers and standard reagents		
	Calibration of pH meter using standard buffers	11 x 2 lab	
	Extraction and Estimation of major biomolecules in different	hours	
	tissues of fish. Total Protein & free amino acids / glycogen &		
	glucose/ triglycerides & cholesterol.		
	Determination of Km and Vmax of Na+ -K + - ATPase/		
	Acetylcholinesterase.		
	Fractionation of Lipid moieties through TLC (demo).		
	Titration of an acid with conjugated base.		
	Developmental Biology		
	Identification of developmental stages of chick embryo using		
	HH classification.		
	In vitro culture of chick embryo.		
	Effect of proline / retinoic acid in early development of chick	11 x 2 lab	
	embryo (In vivo as well as in vitro).	hours	

	Effect pesticides on the ossification process of chick embryo			
	by dual staining method.			
	Ecology			
	Study of Pond, Grassland, and Forest Ecosystem			
	Habitat Preferences of Stream Invertebrates			
	Abundance and Distribution of Birds/Butterflies/Snakes etc			
	Landscape Ecology			
	Communities: Measuring Diversity	12 x 2 lab		
	Basic concepts of cartography	hours		
Pedagogy:	Practicals/ Mini projects/ Group Activities			
References/	M.J.F. Barresi and S.F. Gilbert, Developmental Biology (12th edition),			
Readings:	Oxford University Press, UK, 2019.			
	2. B.M. Carlson, Pattern's Foundation of Embryology, Mc Grav	v Hill Inc.,		
	USA,2003.			
	3. S.F. Gilbert, Developmental Biology (10th edition), Sinauer A	S.F. Gilbert, Developmental Biology (10th edition), Sinauer Associates		
	Inc., Sunderland, USA, 2016.			
	4. T.J. Fahey, and A.K. Knapp, Principles and Standards for Mea	asuring		
	Primary Production. UK: Oxford University Press, 2007.			
	5. W.E. Grant, and T.M. Swannack, Ecological Modeling. Black	well <i>,</i> 2008.		
	6. E.P. Odum and G.W. Barrett, Basic Ecology: Fundamentals of	E.P. Odum and G.W. Barrett, Basic Ecology: Fundamentals of Ecology, 5th		
	ed. Oxford and IBH Publishing Co. Pvt, 2004.			
	7. J. Berg, J. Tymoczko, and L. Stryer, Biochemistry. New York:	W. H.		
	Freeman and Company, 2002.			
	8. D.L. Nelson, and M.M. Cox, Lehninger's Principles of Bioche	mistry, USA:		
	Freeman WH and Co, USA, 2010.			
Course	The learner will	learner will		
Outcomes:	1. Interpret the functions of different systems of chordates.			
	2. Create observational and technical skills to invest	tigate and		
	communicate concepts in developmental biology.			
	3. Construct the outcome of teratogenic effects whi	ch inhibits		
	organogenesis and the process of ossification in the chick en	mbryo.		
	4. Test for the presence or absence of various biomolecules i	in biological		
	samples.			
	5. Estimate the diversity and assess the abundance and dis	tribution of		
	different populations.			
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