

Teaching Plan Year 2017

Name of the faculty member: Prof Seema Rashid

Designation: Assistant Professor

Department: Zoology

Subject: Zoology

Semester: 2ndSubject /Title Code: **COMPARATIVE ANATOMY AND
DEVELOPMENTAL BIOLOGY OF VERTEBRATES**

S. no.	Unit	Topics Covered	No. of Lectures	Subtopics/Lectures	Pedagogical aid
1	I	1. Integumentary System	06	Integument Components of integument Functions of integument. Soft derivatives of integument. Hard derivatives of integument.	
		2. Skeletal System	03	Skeleton & types of skeleton. Modification and evolution of visceral arches	
		3. Digestive System	03	Digestion and comparative account of alimentary canal in vertebrates Comparative account of digestive glands.	
		4. Respiratory System	07	Respiration and types of respiration. Respiratory system in vertebrates Brief account of Gills, Brief account of lungs, Brief account of Air-sacs Brief account of Swim bladder	
2	II	5. Circulatory System	05	Circulatory System, types & functions Evolution of heart Evolution of aortic arches	
		6. Urinogenital System	07	Urinogenital system brief account Evolution of kidney Evolution of urinogenital ducts	
		7. Nervous System	03	Nervous system brief account. Functions of nervous system Comparative account of brain	
		8. Sense Organs	05	Sense organs brief account Different types of receptors, based on different parameters. Comparative account of different special sensory receptors	
3.	III	9. Gametogenesis	04	Spermatogenesis oogenesis	
		10. Fertilization in mammals	06	Fertilization & its types	

		11. Types and patterns of cleavage	03	Cleavage, planes and patterns Types of cleavage	
		12. Blastulation and Gastrulation in frog	04	Blastulation & its types Gastrulation in frog	
4.	IV	13. Extra embryonic membranes	01	Four standard extra-embryonic membranes.	
		14. Types of Placenta	03	Types of placenta based on different parameters	
		15. Basic processes in development	04	Basic processes in development General account of gene activation, determination induction	
		16. Basic processes in embryonic development	03	Basic processes in embryonic development differentiation, intra cellular communications, cell movement cell death	

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Semester: **1st**

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3.	III	9. Protochordates	04	General features Phylogeny of Protochordates.	

		10. Urochordates and Cephalochordates.	06	General characters classification	
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Semester: 2nd

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Name of the faculty member: Seema Rashid

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Subject: Zoology

Semester: 3rd

Subject/Title Code: Physiology and Biochemistry

Unit	Topics Covered	No. of Lectures	Subtopics/Lectures	Pedagogical aid
I	1. Digestion Physiology of digestion, absorption of carbohydrates, proteins and lipids	07	Organs/Enzymes of digestion, Absorption of Glucose, Amino acids, Emulsification and Absorption of fats - Chylomicrons	
	2. Respiration Pulmonary respiration, Respiratory volumes and capacities, Transport of oxygen and carbon dioxide in blood, types of respiratory pigments, Oxygen Dissociation curve	05	Introduction to respiratory system Partial Pressure, diffusion of O ₂ and CO ₂ Transport in blood – role of RBC/plasma Hemoglobin/Myoglobin/Chlorocruorin/Hemocyanin Oxygen dissociation Curve – effect of pH, CO ₂ (Bohr Effect), Temperature, Acidity	

	3. Excretion Types of nitrogenous wastes, Structure of nephron, Urine formation	05	Ammonotelic. Ureotelic and Uricotelic Renal Corpuscle/PCT/Henl's Loop/DCT Role of nephron in urine formation – counter current mechanism	
	4. Circulatory system Conducting system of heart, Origin and conduction of cardiac impulse	04	Structure of heart/blood vessels/blood SA Node/Av Node/Purkinje fibres	
II	5. Structure of a typical motor neuron, Different types of potentials, Action Potential and its Propagation in different nerve fibres	05	Structure of neuron – Dendrites, axon, neurolemma Role of Sodium/potassium pump Resting/action potential, various ion channels Action potential propagation - saltatory	
	6. Molecular and chemical basis of muscle contraction	06	Structure of muscle fibre, role of calcium-actin-myosin-troponin-tropomyosin Sliding-filament theory	
	7. Physiology of vision	05	Structure of eye –brief idea Reception of light and production and propagation of action potential through optic nerve	
	8. Physiology of hearing	06	Structure of ear – brief idea Mechanism of hearing	

III	9. Hormonal control of gametogenesis	07	<p>Basic concept of signaling through hormones</p> <p>Spermatogenesis/oogenesis –basic description</p> <p>Role of LH/FSH/Estrogen/progesterone/testosterone in gametogenesis</p>	
	10. Hormonal control of menstrual cycle	03	Menstrual cycle – role of hormones/different stages of menstrual cycle	
	11. Hormones of pituitary, thyroid and parathyroid	04	<p>Structure/location –brief idea</p> <p>Various hormones secreted by pituitary/thyroid/parathyroid glands, their importance in regulation, various disorders</p>	
	12. Hormones of pancreas, adrenal	05	<p>Structure/location</p> <p>Hormones – their role in metabolism and associated disorders</p>	
IV	13. Carbohydrate metabolism Glycolysis, Krebs cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogen metabolism	04	Location, enzymes, substrates and Complete sequence of reactions, regulation	
	14. Lipid Metabolism Biosynthesis and Beta oxidation of palmitic acid	04	Lipid synthesis, beta oxidation of saturated and unsaturated lipids	

	15. Protein Metabolism Transamination, Deamination and urea cycle	05	Location, enzymes, substrates and regulation	
	16. Enzymes Introduction and classification of enzymes, Mechanism of action, enzyme Inhibition and regulation	02	Enzymes – characteristics Role of co-enzymes/cofactors Holoenzymes/apoenzymes Michaelis Menton equation Allosteric inhibition	

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