

**DYAL SINGH COLLEGE  
KARNAL**

**DEPARTMENT OF ZOOLOGY**

**Lesson Plans**

**Session: 2021-22**

# **ODD SEMESTERS**


# DYAL SINGH COLLEGE, KARNAL

## LESSON PLAN (2021-22)

CLASS: BSc (Medical) Semester I & 5 Year Integrated MSc (Forensic Science) Semester I

SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
October	Oct 25-30, 2021	<b>Protozoa:</b> General characters and classification up to order level. Biodiversity and economic importance.
November	Nov. 8-13, 2021	Type study of <i>Plasmodium</i> , Parasitic protozoans: Life history, mode of infection and pathogenicity of <i>Entamoeba</i> , <i>Trypanosoma</i> , <i>Leishmania</i> and <i>Giardia</i> .
	Nov.15-20, 2021	<b>Porifera:</b> General characters and classification up to order level. Biodiversity and economic importance
	Nov. 22-27, 2021	Type study – <i>Sycon</i> , Canal system in sponges
	Nov. 29 - Dec. 4, 2021	Spicules in sponges, <b>Coelenterata:</b> General characters and classification up to order level. Biodiversity, economic importance of Coelenterata.
December	Dec.6-11, 2021	Type Study – <i>Obelia</i> , Corals and coral reefs.
	Dec.13-18, 2021	Polymorphism in Siphonophores <b>Helminths:</b> General characters and classification up to order level, Biodiversity, Economic Importance
	Dec.20- 24, 2021	Type study – <i>Fasciola hepatica</i> , Helminths parasites: Brief account of life history, mode of infection and pathogenicity of <i>Schistosoma</i> , <i>Ancylostoma</i> , <i>Trichinella</i> , <i>Wuchereria</i> and <i>Oxyuris</i> .
	Dec 27, 2021 - Jan 1, 2022	<b>Plasma membrane:</b> Fluid mosaic model, various modes of transport across the membrane
January	Jan 3-8, 2022	Mechanism of active and passive transport, endocytosis and exocytosis, <b>Endoplasmic reticulum (ER):</b> types, role of ER in protein synthesis and transportation in animal cell.
	Jan.10-15, 2022	<b>Golgi complex:</b> Structure, Associated enzymes and role of Golgi-complex in animal cell. <b>Ribosomes:</b> Types, biogenesis and role in protein synthesis.
	Jan. 17-22, 2022	<b>Lysosomes:</b> structure, enzyme and their role; polymorphism. <b>Mitochondria:</b> Mitochondrial DNA; as semiautonomous body, biogenesis, mitochondrial enzymes (only names), role of mitochondria.
	Jan. 24-29, 2022	<b>Cytoskeleton:</b> Microtubules, microfilaments, centriole and basal body. Cilia and Flagella.
February	Jan. 31 - Feb. 5, 2022	<b>Ultrastructure and functions of Nucleus:</b> Nuclear membrane, nuclear lamina, nucleolus, fine structure of chromosomes, nucleosome concept and role of histones.
	Feb. 7-12, 2022	Euchromatin and heterochromatin, lampbrush chromosomes and polytene chromosomes. Mitosis
	Feb. 14-19, 2022	<b>Meiosis</b> (Cell reproduction). Brief account of causes of cancer. An elementary idea of cellular basis of Immunity.
	Feb. 21-22, 2022	Revision
		Examination

  
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# DYAL SINGH COLLEGE, KARNAL

## Lesson Plan (2021-22)

CLASS: BSc (Medical) Semester III & 5 Year Integrated MSc (Forensic Science) Semester III

SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
October	Oct 25-30, 2021	<b>Chordates:</b> Origin and Evolutionary tree. <b>Protochordates:</b> Systematic position, distribution, ecology, morphology and affinities.
November	Nov. 8-13, 2021	Urochordata: <i>Herdmania</i> - type study,
	Nov.15-20, 2021	Cephalochordata, <i>Amphioxus</i> – type study
	Nov. 22-27, 2021	<b>Cyclostomes:</b> Type study of <i>Petromyzon</i> .
	Nov. 29 - Dec. 4, 2021	<b>Pisces:</b> Scales & Fins, Parental care in fishes, fish migration.
December	Dec.6-11, 2021	Types study of <i>Labeo</i>
	Dec.13-18, 2021	Introduction, Classification, Structure, function and general properties of proteins, carbohydrates and lipids.
	Dec.20- 24, 2021	Nomenclature, Classification and mechanisms of enzyme action.
	Dec 27, 2021 - Jan 1, 2022	Transport through Biomembrane (passive and active Transport), Buffers.
January	Jan 3-8, 2022	<b>Nutrition:</b> Nutritional components; Carbohydrates, fats, lipids, Vitamins and Minerals.
	Jan.10-15, 2022	Types of nutrition & feeding, Digestion of dietary constituents, viz. lipids, proteins,
	Jan. 17-22, 2022	Carbohydrates & nucleic acids; symbiotic digestion.
	Jan. 24-29, 2022	Absorption of nutrients & assimilation; control of enzyme secretion <b>Muscles:</b> Types of muscles, ultra-structure of skeletal muscle.
February	Jan. 31 - Feb. 5, 2022	Bio-chemical and physical events during muscle contraction; Single muscle twitch, tetanus, muscle fatigue muscle, tone, oxygen debt., Cori's cycle
	Feb. 7-12, 2022	Single unit smooth muscles, their physical and functional properties. <b>Bones:</b> Structure and types, classification,
	Feb. 14-19, 2022	Bone growth and resorption, Effect of ageing on Skeletal system and bone disorders.
	Feb. 21-22, 2022	Revision
		<b>Examination</b>

  
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# DYAL SINGH COLLEGE, KARNAL

## Lesson Plan (2021-22)

CLASS: BSc (Medical) Semester V & 5 Year Integrated MSc (Forensic Science) Semester V

SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
October	Oct 25-30, 2021	<b>Basic concepts of ecology:</b> Definition, signification. Concepts of habitat and ecological niche.
November	Nov. 8-13, 2021	<b>Factors affecting environment:</b> Abiotic factors (light-intensity, quality and duration), temperature, humidity, topography; edaphic factors; Biotic factors.
	Nov.15-20, 2021	Introduction to major ecosystem of the world. <b>Ecosystem:</b> Concept, components, properties and functions.
	Nov. 22-27, 2021	Ecological energetics and energy flow-food chain, food web, Trophic structure; ecological pyramids concept of productivity.
	Nov. 29 - Dec. 4, 2021	<b>Biogeochemical cycles:</b> Concept, reservoir pool, gaseous cycles and sedimentary cycles.
December	Dec.6-11, 2021	<b>Population:</b> Growth and regulation. Concept of biodiversity and conservation of natural resources. Migration in fishes and birds.
	Dec.13-18 , 2021	Parental care in animals. <b>Population interactions:</b> Competition, predation, parasitism, commensalisms and mutualism.
	Dec.20- 24, 2021	<b>Environmental Pollution:</b> Air, water, soil and management strategies.
	Dec 27, 2021 - Jan 1, 2022	Origin of life. Concept and evidences of organic evolution.
January	Jan 3-8, 2022	Theories of organic evolution. Concept of micro, macro-and mega-evolution.
	Jan.10-15, 2022	Concept of species. Phylogeny of horse.
	Jan. 17-22, 2022	Evolution of man. Historical perspectives, aims and scope of developmental biology.
	Jan. 24-29, 2022	Generalized structure of mammalian ovum & sperm, spermatogenesis and Oogenesis
February	Jan. 31 - Feb. 5, 2022	Fertilization, parthenogenesis, different types of eggs and patterns of cleavage.
	Feb. 7-12, 2022	Process of blastulation and fate-map construction in frog and chick. Gastrulation in frog and chick up to the formation of three germinal layers.
	Feb. 14-19, 2022	Elementary knowledge of primary organizers. Elementary knowledge of extra embryonic membranes. Concepts of competence, determination and differentiation. Concept of regeneration.
	Feb. 21-22, 2022	Revision
		<b>Examination</b>

  
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## LESSON PLAN (2021-22)

CLASS: BSc (Medical) Semester II & 5 Year Integrated MSc (Forensic Science) Semester II

SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
April	April 1-2, 2022	<b>Annelida:</b> General characters and classification up to order level, Biodiversity and economic importance, Type study <i>Pheretima</i> (Earthworm)
	April 4-9, 2022	Metamerism in Annelida, Trochophore larva <b>Arthropoda:</b> General characters and classification up to order level,
	April 11-16, 2022	Biodiversity and economic importance of insects, Type study – <i>Grasshopper</i>
	April 18-23, 2022	<b>Mollusca:</b> General characters and classification up to order level, Biodiversity and economic importance,
	April 25-30, 2022	Type study of <i>Pila</i> , Torsion and Detorsion of Gastropodes, Respiration and foot
May	May 2-7, 2022	<b>Echinodermata:</b> General Character and classification up to order level, Biodiversity and economic importance, Type Study of sea star
	May 9-14, 2022	Echinoderm Larvae, Aristotle Lanterns; <b>Hemichordate:</b> General Character; Type Study of <i>Ballanglosus</i>
	May 16-21, 2022	Elements of <b>Heredity and variations</b> . The varieties of gene interactions. <b>Linkage and Recombination:</b> Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.
	May 23-28, 2022	<b>Sex determination and its mechanism:</b> male and female heterozygous systems, genetic balance system; role of Y-chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination
June	May 30 - June 4, 2022	<b>Sex linked inheritance:</b> Haemophilia and colour blindness in man, eye colour in Drosophila, Non-disjunction of sex-chromosome in Drosophila; Sex-linked and sex-influenced inheritance
	June 6-11, 2022	<b>Extra chromosomal and cytoplasmic inheritance:</b> Kappa particles in Paramecium, Shell coiling in snails. Milk factor in mice. <b>Multiple allelism:</b> Eye colour in Drosophila; A, B, O blood group in man.
	June 13-18, 2022	<b>Human genetics:</b> Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins. <b>Inborn errors of metabolism</b> (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia).
	June 20-25, 2022	<b>Nature and function of genetic material:</b> Structure and type of nucleic acids; Protein synthesis. Eugenics, eugenics and euphenics; spontaneous and induced (chemical and radiations).
	June 27 - July 2, 2022	Mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation);
July	July 4- 9, 2022	Numerical aberrations (autopolyploidy, euploidy and polyploidy in animals), <b>Applied genetics:</b> genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals.
		<b>Examination</b>

  
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## LESSON PLAN (2021-22)

CLASS: BSc (Medical) Semester IV & 5 Year Integrated MSc (Forensic Science) Semester IV

SUBJECT: Zoology (Papers I & II)

Month	Date	Topics to be covered
April	April 1-2, 2022	<b>Amphibia:</b> Origin, Evolutionary tree, Parental Care in Amphibia.
	April 4-9, 2022	Type study of frog ( <i>Rana tigrina</i> )
	April 11-16, 2022	<b>Reptilia:</b> Type study of Lizard ( <i>Hemidactylus</i> ),
	April 18-23, 2022	Origin, Evolutionary tree. Extinct reptiles; Poisonous and non-poisonous snakes; Poison apparatus in snakes.
	April 25-30, 2022	<b>Aves:</b> Type study of Pigeon ( <i>Columba livia</i> ); Flight adaptation,
May	May 2-7, 2022	Principles of aerodynamics in Bird flight, migration in birds; Adaptive radiations of mammals, Dentition.
	May 9-14, 2022	<b>Mammals:</b> Classification, type study of Rat;
	May 16-21, 2022	<b>Circulation:</b> Origin, conduction and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system; Composition and functions of blood & lymph;
	May 23-28, 2022	Mechanism of coagulation of blood, coagulation factors; anticoagulants, haemopoiesis. <b>Respiration:</b> Exchange of respiratory gases, transport of gases, lung air volumes,
June	May 30 - June 4, 2022	Oxygen dissociation curve of hemoglobin, Bohr's effect, Haburger's phenomenon (Chloride shift), control / regulation of respiration.
	June 6-11, 2022	Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.
	June 13-18, 2022	<b>Excretion:</b> Patterns of excretory products viz. Amonotelic, ureotlic, uricotelic, ornithine cycle (Kreb's – Henseleit cycle) for urea formation in liver.
	June 20-25, 2022 June 27 - July 2, 2022	<b>Chemical integration of Endocrinology:</b> Structure and mechanism of hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads. <b>Reproduction:</b> Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human; fertilization, implantation and gestation.
July	July 4- 9, 2022	<b>Neural Integration:</b> Nature, origin and propagation of nerve impulse along with meddullated & non-medullated nerve fibre, conduction of nerve impulse across synapse.
		<b>Examination</b>

  
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## LESSON PLAN (2021-22)

CLASS: BSc (Medical) Semester VI & 5 Year Integrated MSc (Forensic Science) Semester VI

SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
April	April 1-2, 2022	<b>Introduction to world fisheries:</b> Production, utilization and demand. <b>Fresh Water fishes of India:</b> River system, reservoir, pond, tank fisheries; captive and culture fisheries, cold water fisheries. Fishing crafts and gears.
	April 4-9, 2022	Fin fishes, Crustaceans, Molluscs and their culture. <b>Seed production:</b> Natural seed resources – its assessment, collection, Hatchery production. <b>Nutrition:</b> Sources of food (Natural, Artificial) and feed composition (Calorie and Chemical ingredients).
	April 11-16, 2022	<b>Field Culture:</b> Ponds-running water, recycled water, cage, culture; poly culture. Biotechnology, gene manipulation and cryopreservation of gametes.
	April 18-23, 2022	Study of important insect pests of crops and vegetables: <b>Pests of Sugarcane:</b> Sugarcane leaf-hopper, Sugarcane Whitefly, Sugarcane top borer, Sugarcane root borer, Gurdaspur borer with their systematic position, habits and nature of damage cause. Life cycle and control of <i>Pyrilla perpusilla</i> only.
	April 25-30, 2022	<b>Pests of Cotton:</b> Pink bollworm, Red cotton bug, Cotton grey weevil, Cotton jassid, with their systematic position, habits and nature of damage caused. Life cycle and control of <i>Pectinophora gossypiella</i> .
May	May 2-7, 2022	<b>Pests of Paddy:</b> Gundhi bug, Rice Grasshopper, Rice Stem borer, Rice Hispa. Their systematic position, habits and nature of damage caused.
	May 9-14, 2022	<b>Pests of Vegetables:</b> Red pumpkin beetle, The pumpkin Fruit fly, The vegetables mites, The Hadda beetle. Their systematic position, habits and nature of damage caused. Life cycle and control of <i>Aulacophora faveicollis</i> .
	May 16-21, 2022	<b>Stored Grain:</b> Pulse beetle, The rice weevil, Wheat weevil, Rust Red flour beetle, Lesser Grain borer, Grain and Flour moth. Their systematic position, habits and nature of damage caused.
	May 23-28, 2022	Life cycle and control of <i>Trogoderma granarium</i> . <b>Insect control:</b> Biological control, its history, requirement and precautions and feasibility of biological agents for control.
June	May 30 - June 4, 2022	<b>Chemical control:</b> History, Categories of pesticides. Important pesticides from each category to pests against which they can be used.
	June 6-11, 2022	Insect repellants and attractants. Integrated pest management. Integrated pest management.
	June 13-16, 2022	Important bird and rodent pests of agriculture & their management.
		<b>Examination</b>

  
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