DYAL SINGH COLLEGE KARNAL

DEPARTMENT OF ZOOLOGY

Lesson Plans

Session: 2019-20

ODD SEMESTERS

DYAL SINGH COLLEGE, KARNAL

LESSON PLAN (2019-20)

CLASS: BSc (Medical) Semester I & 5 Year Integrated MSc (Forensic Science) Semester I
SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
July	July 16-20, 2019	**Protozoa:** General characters and classification up to order level. Biodiversity and economic importance.
	July 22-27, 2019	Type study of *Plasmodium*, Parasitic protozoans: Life history, mode of infection and pathogenecity of *Entamoeba, Trypanosoma, Leishmania* and *Giardia*.
	July 29- Aug 3, 2019	**Porifera:** General characters and classification up to order level. Biodiversity and economic importance
August	Aug. 5- 10, 2019	Type study – *Sycon*, Canal system in sponges
	Aug. 12-17, 2019	Spicules in sponges, **Coelenterata:** General characters and classification up to order level. Biodiversity, economic importance of Coelenterata.
	Aug. 19-24, 2019	Type Study – *Obelia*, Corals and coral reefs.
	Aug. 26-31, 2019	Polymorphism in Siphonophores **Helminths:** General characters and classification up to order level, Biodiversity, Economic Importance
September	Sep. 2-7, 2019	Type study – *Fasciola hepatica*, Helminths parasites: Brief account of life history, mode of infection and pathogenesity of *Schistosoma, Ancylostoma, Trichinella, Wuchereria* and *Oxyuris*.
	Sep.9-14, 2019	**Plasma membrane:** Fluid mosaic model, various modes of transport across the membrane
	Sep.16-21, 2019	Mechanism of active and passive transport, endocytosis and excytosis, **Endoplasmic reticulum (ER)**: types, role of ER in protein synthesis and transportation in animal cell.
	Sep.24-28, 2019	**Golgi complex:** Structure, Associated enzymes and role of Golgi-complex in animal cell. **Ribosomes:** Types, biogenesis and role in protein synthesis.
October	Sep. 30- Oct.5, 2019	**Lysosomes:** structure, enzyme and their role; polymorphism. **Mitochondria:** Mitochondrial DNA; as semiautonomous body, biogenesis, mitochondrial enzymes (only names), role of mitochondria.
	Oct. 7-12, 2019	**Cytoskeleton:** Microtubules, microfilaments, centriole and basal body. Cilia and Flagella.
	Oct. 14-19, 2019	**Ultrastructure and functions of Nucleus:** Nuclear membrane, nuclear lamina, nucleolus, fine structure of chromosomes, nucleosome concept and role of histones. Euchromatin and heterochromatin, lampbrush chromosomes and polytene chromosomes.
	Oct. 21-23, 2019	**Mitosis. Meiosis** (Cell reproduction). Brief account of causes of cancer. An elementary idea of cellular basis of Immunity.
		Examination

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Lesson Plan (2019-20)

CLASS: BSc (Medical) Semester III & 5 Year Integrated MSc (Forensic Science) Semester III
SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
July	July 16-20, 2019	**Chordates**: Origin and Evolutionary tree. **Protochordates**: Systematic position, distribution, ecology, morphology and affinities.
	July 22-27, 2019	Urochordata: *Herdmania* - type study,
	July 29- Aug 3, 2019	Cephalochordata, *Amphioxus* – type study
August	Aug. 5- 10, 2019	**Cyclostomes**: Type study of *Petromyzon.*
	Aug. 12-17, 2019	**Pisces**: Scales & Fins, Parental care in fishes, fish migration.
	Aug. 19-24, 2019	Types study of *Labeo*
	Aug. 26-31, 2019	Introduction, Classification, Structure, function and general properties of proteins, carbohydrates and lipids.
September	Sep. 2-7, 2019	Nomenclature, Classification and mechanisms of enzyme action.
	Sep.9-14, 2019	Transport through Biomembrane (passive and active Transport), Buffers.
	Sep.16-21, 2019	**Nutrition**: Nutritional components; Carbohydrates, fats, lipids, Vitamins and Minerals.
	Sep.24-28, 2019	Types of nutrition & feeding, Digestion of dietary constituents, viz. lipids, proteins,
October	Sep. 30- Oct.5, 2019	Carbohydrates & nucleic acids; symbiotic digestion. Absorption of nutrients & assimilation; control of enzyme secretion
	Oct. 7-12, 2019	**Muscles:** Types of muscles, ultra-structure of skeletal muscle. Bio-chemical and physical events during muscle contraction; Single muscle twitch,
	Oct. 14-19, 2019	Tetanus, muscle fatigue muscle, tone, oxygen debt., Cori's cycle, Single unit smooth muscles, their physical and functional properties.
	Oct. 21-23, 2019	**Bones:** Structure and types, classification, Bone growth and resorption, Effect of ageing on Skeletal system and bone disorders.
		Examination

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Lesson Plan (2019-20)

CLASS: BSc (Medical) Semester V & 5 Year Integrated MSc (Forensic Science) Semester V
SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
July	July 16-20, 2019	**Basic concepts of ecology**: Definition, signification. Concepts of habitat and ecological niche.
	July 22-27, 2019	**Factors affecting environment**: Abiotic factors (light-intensity, quality and duration), temperature, humidity, topography; edaphic factors; Biotic factors.
	July 29- Aug 3, 2019	Introduction to major ecosystem of the world. **Ecosystem:** Concept, components, properties and functions.
August	Aug. 5- 10, 2019	Ecological energetics and energy flow-food chain, food web, Trophic structure; ecological pyramids concept of productivity.
	Aug. 12-17, 2019	**Biogeochemical cycles:** Concept, reservoir pool, gaseous cycles and sedimentary cycles.
	Aug. 19-24, 2019	**Population**: Growth and regulation. Concept of biodiversity and conservation of natural resources. Migration in fishes and birds.
	Aug. 26-31, 2019	Parental care in animals. **Population interactions:** Competition, predation, parasitism, commensalisms and mutualism.
September	Sep. 2-7, 2019	**Environmental Pollution:** Air, water, soil and management strategies.
	Sep.9-14, 2019	Origin of life. Concept and evidences of organic evolution.
	Sep.16-21, 2019	Theories of organic evolution. Concept of micro, macro-and mega-evolution.
	Sep.24-28, 2019	Concept of species. Phylogeny of horse. Evolution of man.
October	Sep. 30- Oct.5, 2019	Historical perspectives, aims and scope of developmental biology. Generalized structure of mammalian ovum & sperm, spermatogenesis and Oogenesis
	Oct. 7-12, 2019	Fertilization, parthenogenesis, different types of eggs and patterns of cleavage.
	Oct. 14-19, 2019	Process of blastulation and fate-map construction in grog and chick. Gastrulation in frog and chick up to the formation of three germinal layers.
	Oct. 21-23, 2019	Elementary knowledge of primary organizers. Elementary knowledge of extra embryonic membranes. Concepts of competence, determination and differentiation. Concept of regeneration.
		Examination

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EVEN SEMESTERS

DYAL SINGH COLLEGE, KARNAL

LESSON PLAN (2019-20)

CLASS: BSc (Medical) Semester II & 5 Year Integrated MSc (Forensic Science) Semester II
SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
January	Jan. 1-4, 2020	**Annelida:** General characters and classification up to order level, Biodiversity and economic importance, Type study *Pheretima* (Earthworm)
	Jan. 6-11, 2020	Metamerism in Annelida, Trochophore larva **Arthropoda:** General characters and classification up to order level,
	Jan. 13-18, 2020	Biodiversity and economic importance of insects, Type study – *Grasshopper*
	Jan. 20-25, 2020	**Mollusca:** General characters and classification up to order level, Biodiversity and economic importance,
	Jan. 27 - Feb 1, 2020	Type study of *Pila*, Torsion and Detorsion of Gastropodes, Respiration and foot
February	Feb 3-8, 2020	**Enchinodermata**: General Character and classification up to order level, Biodiversity and economic importance,
	Feb. 10-15, 2020	Type Study of sea star, Echinoderm Larvae, Aristotle Lanterns
	Feb.17-22, 2020	**Hemichordate:** General Character; Type Study of *Ballanglosus*
	Feb. 24-29, 2020	Elements of **Heredity and variations**. The varieties of gene interactions. **Linkage and Recombination:** Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.
March	March 2-7, 2020	**Sex determination and its mechanism:** male and female heterozygous systems, genetic balance system; role of Y-chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination
	March 16-21, 2020	**Sex linked inheritance:** Haemophilia and colour blindness in man, eye colour in Drosophila, Non-disjunction of sex-chromosome in Drosophila; Sex-linked and sex-influenced inheritance
	March, 23-28, 2020	**Extra chromocomal and cytoplasmic inheritance:** Kappa particles in Paramecium, Shell coiling in snails.Milk factor in mice. **Multiple alleslism:** Eye colour in Drosophila; A, B, O blood group in man.
	March 30 - April 4, 2020	**Human genetics:** Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.**Inborn errors of metabolism** (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia).
April	April 6-11, 2020	**Nature and function of genetic material:** Structure and type of nucleic acids; Protein synthesis. Eugenics, euthenics and euphenics; spontaneous and induced (chemical and radiations).
	April 13-18, 2020	Mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation);
	April 20-25, 2020	Numerical aberrations (autoploidy, euploidy and polyploidy in animals), **Applied genetics:** genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals.
	April 27-30, 2020	**Revision**
		Examination

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LESSON PLAN (2019-20)

CLASS: BSc (Medical) Semester IV & 5 Year Integrated MSc (Forensic Science) Semester IV
SUBJECT: Zoology (Papers I & II)

Month	Date	Topics to be covered
January	Jan. 1-4, 2020	**Amphibia**: Origin, Evolutionary tree.
	Jan. 6-11, 2020	Type study of frog (*Rana tigrina),* Parental Care in Amphibia,
	Jan. 13-18, 2020	**Reptilia:** Type study of Lizard (Hemidactylus),
	Jan. 20-25, 2020	Origin, Evolutionary tree. Extinct reptiles;Poisonous and non-poisonous snakes; Poison apparatus in snakes.
	Jan. 27 - Feb 1, 2020	**Aves:** Type study of Pigeon (*Columba livia)*; Flight adaptation,
February	Feb 3-8, 2020	Principles of aerodynamics in Bird flight, migration in birds.
	Feb. 10-15, 2020	**Mammals:** Classification, type study of Rat;
	Feb.17-22, 2020	Adaptive radiations of mammals, Dentition.
	Feb. 24-29, 2020	**Circulation**: 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;
March	March 2-7, 2020	Mechanism of coagulation of blood, coagulation factors; anticoagulants, haempoiesis. **Respiration**: Exchange of respiratory gases, transport of gases, lung air volumes,
	March 16-21, 2020	Oxygen dissociation curve of hemoglobin, Bohr's effect, Haburger's phenomenon (Chloride shift), control / regulation of respiration.
	March, 23-28, 2020	Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.
	March 30 - April 4, 2020	**Excretion:** Patterns of excretory products viz. Amonotelic, ureotlic, uricotelic, ornithine cycle (Kreb's – Henseleit cycle) for urea formation in liver.
April	April 6-11, 2020	**Chemical integration of Endocrinology:** Structure and mechanism of hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads.
	April 13-18, 2020	**Reproduction:** Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human; fertilization, implantation and gestation.
	April 20-25, 2020	**Neural Integration:** Nature, origin and propagation of nerve impulse along with meddullated &non-medullated nerve fibre, conduction of nerve impulse across synapse.
	April 27-30, 2020	**Revision**
		Examination

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LESSON PLAN (2019-20)

CLASS: BSc (Medical) Semester VI & 5 Year Integrated MSc (Forensic Science) Semester VI
SUBJECT: Zoology (Papers I & II)

MONTH	DATE	TOPICS TO BE COVERED
January	Jan. 1-4, 2020	**Introduction to world fisheries**: Production, utilization and demand. **Fresh Water fishes of India:** River system, reservoir, pond, tank fisheries; captive and culture fisheries, cold water fisheries.
	Jan. 6-11, 2020	Fishing crafts and gears. Fin fishes, Crustaceans, Molluscs and their culture.
	Jan. 13-18, 2020	Study of important insect pests of crops and vegetables: **Pests of Sugarcane:** 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 *Pyrilla perpusilla* only.
	Jan. 20-25, 2020	**Pests of Cotton:** Pink bollworm, Red cotton bug, Cotton grey weevil, with their systematic position, habits and nature of damage caused.
	Jan. 27 - Feb 1, 2020	**Pests of Cotton:** Cotton jassid, with their systematic position, habits and nature of damage caused. Life cycle and control of *Pectinophore gossypiella.*
February	Feb 3-8, 2020	**Pests of Paddy:** Gundhi bug, Rice Grasshopper, Rice Stem borer, Rice Hispa. Their systematic position, habits and nature of damage caused.
	Feb. 10-15, 2020	**Pests of Vegetables:** Red pumpkin beetle, The pumpkin Fruit fly, The vegetables mites, The Hadda beetle. Their systematic position, habits and nature of damage caused.
	Feb.17-22, 2020	Life cycle and control of *Aulacophora faveicollis.* **Seed production**: Natural seed resources – its assessment, collection, Hatchery production.
	Feb. 24-29, 2020	**Nutrition**: Sources of food (Natural, Artificial) and feed composition (Calorie and Chemical ingredients).
March	March 2-7, 2020	**Field Culture:** Ponds-running water, recycled water, cage, culture; poly culture.Biotechnology, gene manipulation and cryopreservation of gametes.
	March 16-21, 2020	**Stored Grain:** Pulse beetle, The rice weevil, Wheat weevil, Rust Red flour beetle. Their systematic position, habits and nature of damage caused.
	March, 23-28, 2020	**Stored Grain:** Lesser Grain borer, Grain and Flour moth. Their systematic position, habits and nature of damage caused. Life cycle and control of *Trogoderma granarium*.
	March 30 - April 4, 2020	**Insect control:** Biological control, its history, requirement and precautions and feasibility of biological agents for control.
April	April 6-11, 2020	**Chemical control:** History, Categories of pesticides. Important pesticides from each category to pests against which they can be used.
	April 13-18, 2020	Insect repellants and attractants. Integrated pest management. Integrated pest management.
	April 20-25, 2020	Important bird and rodent pests of agriculture & their management.
	April 27-30, 2020	Revision
		Examination

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