

SYLLABUS DISTRIBUTION OF SEMESTER 6

Gushkara Mahavidyalaya

Department of Zoology

TEACHER: DR. SUKHENDU ROY

6 TH SEM HONS	CC13	Unit4:PostEmbryonicDevelopment 1. Development of brain and Eye in Vertebrate 2. Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each)
	Practical	1. Identification of whole mounts of developmental stages of chick through permanent slides: Primitive streak (13 to 18 hours), 21-33h, 36-48h and 72-96 hours of incubation (Hamilton and Hamburger stages)
	CC14	Unit5 1. Population genetics: Hardy-Weinberg Law (statement and derivation of equation, application of law to biallelic Population); 2. Evolutionary forces upsetting H-W equilibrium; Natural selection (concept of fitness, types of selection, selection coefficient, mode of selection heterozygous superiority). 3. Genetic Drift mechanism (founder's effect, bottleneck phenomenon) Role of Migration and Mutation in changing allele frequencies. Unit8 Origin and Evolution of Man, Unique Hominin characteristics contrasted with primate characteristic Molecular analysis of human origin
	Practical	3. Study and verification of Hardy-Weinberg Law by chi-square analysis 4. Graphical representation and interpretation of data of height /weight of a sample of 100 humans in relation to the age and sex.
	DSE3	Unit2:Patterns of Behaviour Stereotyped Behaviours (Orientation, Reflexes); 2. Individual Behavioural patterns; Instinct vs. Learnt Behaviour; 3. Associative learning, classical and operant conditioning, Habituation, Imprinting. Unit3: Social and Sexual Behaviour 1. Social Behaviour: Concept of Society; Communication and the senses 2. Altruism; Insects' society with Honeybee as example; Foraging in honeybee and advantages of the waggle dance. 3. Sexual Behaviour: Asymmetry of sex, Sexual dimorphism, Mate choice, Intra-sexual selection (male rivalry), Inter-sexual selection (female choice), Sexual conflict in parental care.
	Practical	1. Study of nests and nesting habits of the birds and social insects. 2. Study of the behavioral responses of woodlice to dry and humid conditions. 6. Study and actogram construction of locomotor activity of suitable animal models.
	DSE4	Unit4:Regulation of Hormone Action 1. Mechanism of action of steroidal, non-steroidal hormones with receptors 2. Bioassays of hormones using RIA &ELISA 3. Estrous cycle in rat and menstrual cycle in human 4. Multifaceted role of Vasopressin &Oxytocin. 5. Hormonal regulation of parturition.
	Practical	3. Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland
6 TH SEM Gen	DSE1B	Unit-5 Working of the immune system 12 Structure and functions of MHC, exogenous and endogenous pathways of antigen presentation and processing, Basic properties and functions of cytokines, Complement system: Components and pathways Unit-6 Immune system in health and disease 10 Gell and Coombs' classification and brief description of various types of hypersensitivities, Introduction to concepts of autoimmunity and immunodeficiency
	Practical	3. Preparation of stained blood film to study various types of blood cells. 4. ABO blood group determination
DR. SAURABH SARKAR		
	CC13	Unit1:Introduction Basicconcepts:PhasesofDevelopment,Cellcellinteraction,Differentiationandgrowth,Differential gene expression

6 TH SEM HONS		Unit2:Early Embryonic Development 1. Gametogenesis, Spermatogenesis, Oogenesis; 2. Types of eggs, Egg membranes; 3. Fertilization(External and Internal): Changes in gametes, Blocks to polyspermy; 4. Planes and patterns of cleavage; 5. Types of Blastula; Fate maps(including Techniques); 6. Early development of frog and chick up to gastrulation; 7. Embryonic induction and organizers
	Practical	2. Study of the developmental stages and lifecycle of Drosophila from stock culture 4. Project report on Drosophila culture/chick embryo development
	CC14	Unit3 1. Geological time scale, 2. Fossil records of Hominids (from Australopithecus to Homo sapiens), evolution of horse 3. Neutral theory of molecular evolution, Molecular clock
	Practical	1. Study of fossils from models/pictures 2. Study of homology and analogy from suitable specimens
	DSE3	Unit1:Introduction to Animal Behaviour 1. Origin and history of Ethology, Brief profiles of Karl Von Frish, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen 2. Proximate and ultimate causes of behaviour, Methods and recording of a behaviour
	Practical	3. Study of geotaxis behaviour in earthworm. 4. Study of photo taxis behaviour in insect larvae. 5. Visit to Forest/Wildlife Sanctuary/Biodiversity Park/Zoological Park to study behavioural activities of animals and prepare a short report.
	DSE4	Unit3:Peripheral Endocrine Glands 1. Structure, Hormones, Functions and Regulation of Thyroid gland, Parathyroid, Adrenal, Pancreas, Ovary and Testis 2. Hormones in homeostasis 3. Disorders of endocrine glands
	Practical	1. Dissect and display of Endocrine glands in laboratory bred rat. 2. 4. Demonstration of hormone assay through ELISA from available teaching kit
6 TH SEM Gen	DSE1B	Unit-2 Cells and Organs of the Immune System Haematopoiesis, Cells of immune system and organs (primary and secondary lymphoid organs) of the immune system Unit-3 Antigens Basic properties of antigens, B and T cell epitopes, haptens and adjuvants Unit-4 Antibodies Structure, classes and function of antibodies, monoclonal antibodies, antigen antibody interactions as tools for research and diagnosis
	Practical	1. Demonstration of lymphoid organs in human through model/ photograph.
APARNITA NANDI ROY		
6 TH SEM HONS	CC13	Unit3:Late Embryonic Development 1. Fate of Germ Layers; 2. Extra-embryonic membranes in birds; 3. Implantation of embryo in humans, 4. Placenta(Structure, types and functions of placenta)
	Practical	3. Study and identification of different sections of placenta (through photo micrograph/slides)
	CC14	Unit2 Historical review of Evolutionary concepts, Lamarckism, Darwinism and Neo Darwinism Unit4 Sources of variations: Heritable variations and the its role in evolution
	DSE3	Unit5: Biological Rhythm 1. Types and characteristics of biological rhythms :Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; 2. Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual rhythms; 3. Photoperiod and regulation of seasonal reproduction of vertebrates; 4. Role of melatonin.
	Practical	Visit to Forest/Wildlife Sanctuary/Biodiversity Park/Zoological Park to study behavioural activities of animals and prepare a short report. (With Dr. Saurabh Sarkar)
	DSE4	Unit1:Introduction to Endocrinology 1. General idea of Endocrine systems, Classification, Characteristics and Transport of Hormones, 2. Neurosecretions and Neurohormones
	Practical	2. Study of the permanent slides of all the endocrine glands (Thyroid, Adrenal, Pancreas, Testis

		and Ovary)
6 TH SEM Gen	DSE1B	Unit-1 Overview of the Immune System Introduction to basic concepts in immunology, components of immune system, principles of innate and adaptive immune system Unit-7 Vaccines General introduction to vaccines, Types of vaccines
	Practical	2. Histological study of spleen, thymus and lymph nodes through slides/photographs
DR. NABYENDU RAKSHIT		
6 TH SEM HONS	CC14	Unit1 Life's Beginnings: Chemogeny, RNA world, Biogeny, Origin of photosynthesis, Evolution of eukaryotes Unit 7 Extinctions, Back ground and mass extinctions (causes and effects), detailed example of K-T extinction
	DSE4	Unit2: Epiphysis, Hypothalamo-hypophysial Axis 1. Structure of pineal gland, Secretions and their functions in biological rhythms and reproduction. 2. Structure and functions of hypothalamus and Hypothalamic nuclei, Regulation of neuroendocrine glands, Feedback mechanisms 3. Structure of pituitary gland, Hormones and their functions, Hypothalamo- hypophysial portal system, Disorders of pituitary gland.
POULOMI ROY		
6 TH SEM HONS	CC13	Unit5: Implications of Developmental Biology 8 1. Teratogenesis: Teratogenic agents and their effect on embryonic development; 2. In vitro fertilization, 3. Stem cell (ESC), 4. Amniocentesis
	CC14	Unit6 6 1. Species concept, 2. Isolating mechanisms, modes of speciation 3. Adaptive radiation/macroevolution (exemplified by Galapagos finches)
	DSE3	Unit4: Introduction to Chronobiology 1. Historical developments in chronobiology; 2. Biological oscillation :the concept of Average, amplitude, phase and period 3. Adaptive significance of biological clocks

6 th sem Hons	
COURSE CODE	COURSE TITLE
CC13	Developmental Biology
CC14	Evolutionary Biology
DSE3	Animal Behaviour
DSE4	Endocrinology
6 th sem Gen.	
COURSE CODE	COURSE TITLE
DSE1B/2B/3B	Immunology

Sukhendu Ray 9⁰²/₂₂

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15/02/2022

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