



TEACHING PLAN DEPARTMENT OF ZOOLOGY JULY 2022 - JUNE 2023



NAME OF THE TEACHER: DR. PRIMILY LANGHASA DESIGNATION: ASSISTAN PROFESSOR SESSION: JULY - DECEMBER 2022

GARGAON COLLEGE TEACHING PLAN Course: B. Sc. Subject: ZOOLOGY

SESSION: ODD SEMESTER 2022

Name of the Teacher: Dr. Pimily Langthasa

Methods to be applied: Lecture and presentation method along with interaction and discussion. Teaching Materials: Green & White Board, Chalk Pencil, Marker, Duster, Books, Journal, Laptop, Projector.

	(CORE COURSE I)
Allotted Unit No	2
Unit Name	Unit 2:Porifera
No. of Class required	7
Detail of the topics to	General characteristics (1), Classification up to classes (2)
be taught (Classes required)	Canal system (2) and spicules in sponges (2)
No. of Tutorials	2
Allotted Unit No	3
Unit Name	Unit 3: Cnideria
No. of Class required	10
Detail of the topics to be taught (Classes required)	General characteristics (1), Classification up to classes (1) Metagenesis in <i>Obelia (2)</i> , Polymorphism in Cnidaria (2) Corals (1) and coral reefs (2)
No. of Tutorials	3
	E): ANIMAL PHYSIOLOGY: CONTROLLING AND NATING SYSTEM (CORE COURSE VI)
Allotted Unit No	1
Unit Name	Unit 1: Tissues
No. of lass required	6
Detail of the topics to be taught (Classes required)	Structure, location, classification and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue
No. of Tutorials	2
Allotted Unit No	2
Unit Name	Unit 2: Bone and Cartilage
No. of lass required	6
Detail of the topics to be taught (Classes required)	Structure and types of bones and cartilages (3) Ossification (2), bone growth and resorption (1)
No. of Tutorials	2
Allotted Unit No	3
Unit Name	Unit 3: Nervous System
No. of Class required	13
Detail of the topics to be taught (Classes required)	Structure of neuron (1), resting membrane potential, Origin of action potential (1) and its propagation across the myelinated and unmyelinated nerve fibers (2); Types of synapse (1), Synaptic transmission (1) and, Neuromuscular junction (2); Reflex action and its types - reflex arc (1); Physiology of hearing (2) and vision (2).
No. of Tutorials	neuring (2) and vision (2).



Allotted Unit No.	4
Unit Name	Unit 4: Muscle
No. of Class required	12
Detail of the topics to be taught (Classes required)	Histology of different types of muscle (2); Ultra structure of skeletal muscle (2); Molecular and chemical basis of muscle contraction (4); Characteristics of muscle twitch (1); Motor unit
No. of Tutorials	(1), summation and tetanus (2) 3
Allotted Unit No.	5
Unit Name	Unit 5: Reproductive System
No. of Class required	11
Detail of the topics to be taught (Classes required)	Histology of testis (1) and ovary (2); Physiology of male and female reproduction (3); Puberty (1), Methods of contraception in male (2) and female (2)
No. of Tutorials	5

PAPER TITLE (CODE): FUNDAMENTALS OF BIOCHEMISTRY (CCVII)

Allotted Unit No.	3
Unit Name	Unit 3: Proteins
No. of Class required	15
Detail of the topics to be taught (Classes required)	Amino acids: Structure, Classification and General properties of α -amino acids (3); Physiological importance of essential and non-essential α -amino acids (2)
	Proteins: Bonds stabilizing protein structure (2); Levels of organization in proteins; Denaturation (3); Introduction to simple and conjugate proteins (2)
	Immunoglobulins: Basic Structure (1), Classes and Function (1), Antigenic Determinants (1)
No. of tutorials	6
Allotted Unit No.	4
Unit Name	Unit 4: Nucleic Acids
No. of Class required	12
Detail of the topics to be taught (Classes required)	Structure: Purines and pyrimidines (2), Nucleosides, Nucleotides, Nucleic acids (2) Cot Curves: Base pairing, Denaturation and Renaturation of DNA (3), Types of DNA and RNA (2), Complementarity of DNA (1), Hpyo- Hyperchromaticity of DNA (2)
No. of tutorials	4

PAPER TITLE (CODE): MOLECULAR BIOLOGY (XI)

Allotted Unit No.	1
Unit Name	Unit 1: Nucleic Acids
No. of Class required	4
Detail of the topics to be taught (Classes required)	Salient features of DNA and RNA (2), Watson and Crick model of DNA (2)
No. of Tutorials	3
Allotted Unit No.	2
Unit Name	Unit 2: DNA Replication
No. of Class required	12



Detail of the topics to	DNA Replication in prokaryotes and eukaryotes (4), mechanism
be taught (Classes	of DNA replication (3), Semi-conservative, bidirectional and
required)	semi-discontinuous replication (3), RNA priming (1),
7	Replication of circular and linear ds-DNA(1)
No. of Tutorials	3
Allotted Unit No.	3
Unit Name	Unit 3: Transcription
No. of Class required	10
Detail of the topics to	RNA polymerase and transcription Unit (2), mechanism of
be taught (Classes	transcription in prokaryotes and eukaryotes (5), synthesis of
required)	rRNA and mRNA (2), transcription factors (1)
No. of Tutorials	2
Allotted Unit No.	4
Unit Name	Unit 4: Translation
No. of Class required	13
Detail of the topics to	Genetic code, Degeneracy of the genetic code and Wobble
be taught (Classes	Hypothesis (3); Process of protein synthesis in prokaryotes:
required)	Ribosome structure and assembly in prokaryotes, fidelity of
	protein synthesis, aminoacyl tRNA synthetases and charging of
	tRNA (6); Proteins involved in initiation, elongation and
	termination of polypeptide chain (2); Inhibitors of protein
	synthesis (1); Difference between prokaryotic and eukaryotic
	translation (1)
No. of Tutorials	4
Allotted Unit No.	5
Unit Name	Unit 5: Post Transcriptional Modifications and Processing of Eukaryotic RNA
No. of Class required	8.
Detail of the topics to	Structure of globin mRNA (1); Split genes: concept of introns
be taught (Classes	and exons, splicing mechanism, alternative splicing (4), exon
required)	shuffling (1), and RNA editing (1), Processing of tRNA (2)
No. of Tutorials	3
Allotted Unit No.	6
Unit Name	Unit 6: Gene Regulation
No. of Class required	10
Detail of the topics to	Transcription regulation in prokaryotes: Principles of
be taught (Classes	transcriptional regulation with examples from lac operon (4)
required)	and trp operon (2); Transcription regulation in eukaryotes:
	Activators, repressors, enhancers, silencer elements; Gene
	silencing, Genetic imprinting (4)
No. of Tutorials	4
Allotted Unit No.	7
Unit Name	Unit 7: DNA Repair Mechanisms
No. of Class required	3
Detail of the topics to be taught	Pyrimidine dimerization and mismatch repair (3)
(Classes required)	a second s
No. of Tutorials	Nil
Allotted Unit No.	8
Unit Name	Unit 8: Regulatory RNAs
No. of Class required	3
Detail of the topics to	Concept of Ribo-switches, RNA interference, miRNA, siRNA
be taught (Classes required)	
be taught (Classes required)	(3)



No. of Tutorials	1
PAPER TITLE	E (CODE): PRINCIPLE OF GENETICS (XII)
Allotted Unit No.	3
Unit Name	Unit 3: Mutations
No. of Class required	10
Detail of the topics to	Types of gene mutations (Classification) (2), Types of
be taught (Classes	chromosomal aberrations (Classification, figures and with on
required)	suitable example of each) (3), Molecular basis of mutations in relation to UV light and chemical mutagens(3); Detection of
	mutations: CLB method, attached X method.(2)
No. of Tutorials	3
Allotted Unit No.	4
Unit Name	Unit 4: Sex Determination
No. of Class required	4
Detail of the topics to be taught	Chromosomal mechanisms of sex determination in Drosophila
(Classes required)	(2) and Man (2)
No. of Tutorials	1
PAPER TITLE (CODE): A	ANIMAL BEHAVIOUR AND CHRONOBIOLOG (DSEI)
Allotted Unit No.	1
Unit Name	Unit 1. Introduction to Animal Behavior
No. of Class required	7
Detail of the topics to	Origin and history of Ethology; Brief profiles of Karl Von Frish
be taught (Classes	Ivan Pavlov, Konrad Lorenz, Niko Tinbergen, Proximate an
required)	ultimate causes of behavior.
No. of Tutorials	Nil
Allotted Unit No.	2
Unit Name	Unit 2: Patterns of Behaviour
No. of Class required	10
Detail of the topics to	Stereotyped Behaviours (Orientation, Reflexes); Individua
be taught (Classes	Behavioural patterns; Instinct vs. Learnt Behaviour; Associativ
required)	learning, classical and operant conditioning, Habituation Imprinting.
No. of Tutorials	1
Allotted Unit No.	3
Unit Name	Unit 3: Social and Sexual Behaviour
No. of Class required	14
Detail of the topics to	Social Behaviour: Concept of Society; Communication and th
be taught (Classes	senses; Altruism; Insects' society with Honey bee as example Foraging in honey bee and advantages of the waggle dance.
required)	Sexual Behaviour: Asymmetry of sex, Sexual dimorphism
	Mate choice, Intra-sexual selection (male rivalry), Inter-sexual
	selection (female choice), Sexual conflict in parental care.
	selection (remaie choice), sexual connict in parental care.
No. of Tutorials	2
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Allotted Unit No.	4
Allotted Unit No. Unit Name	4 Unit 4: Introduction to Chronobiology
Allotted Unit No. Unit Name No. of Class required	4 Unit 4: Introduction to Chronobiology 9
Allotted Unit No. Unit Name No. of Class required Detail of the topics to	4 Unit 4: Introduction to Chronobiology 9 Historical developments in chronobiology; Biologica
Allotted Unit No. Unit Name No. of Class required Detail of the topics to be taught (Classes	4 Unit 4: Introduction to Chronobiology 9 Historical developments in chronobiology; Biologic: oscillation: the concept of Average, amplitude, phase an
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Allotted Unit No. Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of Tutorials Allotted Unit No. Unit Name No. of Class required	4 Unit 4: Introduction to Chronobiology 9 Historical developments in chronobiology; Biologic oscillation: the concept of Average, amplitude, phase ar period. Adaptive significance of biological clocks 1 5 Unit 5: Biological Rhythm 13

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No. of Class required	13
Detail of the topics to be taught (Classes required)	Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin.
No. of Tutorials	2
Allotted Unit No.	Unit 6
Unit Name	Unit 6: Biological Clocks
No. of Class required	7
Detail of the topics to be taught (Classes required)	Relevance of biological clocks; Chronopharmacology, Chronomedicine, Chronotherapy.
No. of Tutorials	Nil



NAME OF THE TEACHER: DR. PRIMILY LANGHASA DESIGNATION: ASSISTAN PROFESSOR SESSION: JAN - JUNE 2023

SESSION: EVEN SEMESTER 2023

PAPER TITLE (CODE): CELL BIOLOGY (CORE COURSE IV)	
Allotted Unit No	1
Unit Name	Unit 1: Overview of Cells
No. of lass required	4
Detail of the topics to be taught	Prokaryotic and Eukaryotic cells (3)
(Classes required)	Virus, Viroids, Mycoplasma, Prions (1)
No. of Tutorials	1
Allotted Unit No	2
Unit Name	Unit 2: Plasma Membrane
No. of lass required	8
Detail of the topics to be taught	Various models of plasma membrane structure (3)
(Classes required)	Transport across membranes: Active and Passive transport,
	Facilitated transport (2), Cell junctions: Tight junctions,
	Desmosomes, Gap junctions (2)
No. of Tutorials	3
Allotted Unit No	3
Unit Name	Unit 3: Endomembrane System
No. of Class required	7
Detail of the topics to be taught	Structure and Functions: Endoplasmic Reticulum(4), Golgi
(Classes required)	Apparatus(2), Lysosomes(1)
No. of Tutorials	2
Allotted Unit No.	4
Unit Name	Unit 4: Mitochondria and Peroxisomes
No. of Class required	9
Detail of the topics to	Mitochondria: Structure (2), Semi-autonomous nature (1),
be taught (Classes	Endosymbiotic hypothesis (2), Mitochondrial Respiratory
required)	Chain (2), Chemi-osmotic hypothesis(1), Peroxisomes(1)
No. of Tutorials	Nil
Allotted Unit No.	5



Unit Name	Unit 5: Cytoskeleton
No. of Class required	4
Detail of the topics to be taught (Classes required)	Structure and Functions: Microtubules, Microfilaments and Intermediate filaments (4)
No. of Tutorials	Nil
Allotted Unit No.	6
Unit Name	Unit 6: Nucleus
No. of Class required	9
Detail of the topics to be taught (Classes required)	Structure of Nucleus (2) Nuclear envelope, Nuclear pore complex, Nucleolus (2) Chromatin: Euchromatin and Hetrochromatin (2) packaging (nucleosome) (3)
No. of Tutorials	3

PAPER TITLE (CODE): ANIMAL PHYSIOLOGY: LIFE SUSTAINING SYSTEMS (CORE COURSE IX)

Allotted Unit No	1
Unit Name	Unit 1: Physiology of Digestion
No. of Class required	14
Detail of the topics to be taught (Classes required)	Structural organization and functions of gastrointestinal
(Classes required)	tract and associated glands; Mechanical and chemical digestion of food; Absorptions of carbohydrates, lipids,
	proteins, water, minerals and vitamins; Hormonal control of
	secretion of enzymes in Gastrointestinal tract.
No. of tutorials	3
Allotted Unit No	2
Unit Name	Unit 2: Physiology of Respiration
No. of Class required	15
Detail of the topics to be taught	Histology of trachea and lung (3); Mechanism of respiration
(Classes required)	(2), pulmonary ventilation; Respiratory volumes and capacities(2); Respiratory pigments(1), Transport of oxygen and carbon
	dioxide in blood(3); Dissociation curves and the factors influencing it (2); Carbon monoxide poisoning (1); Control of respiration (1)
No. of tutorials	5
Allotted Unit No	3
Unit Name	Unit 3: Renal Physiology
No. of Class required	8
Detail of the topics to be taught	Structure of kidney (1) and its functional unit (2); Mechanism
(Classes required)	of urine formation (3);
	Regulation of water balance (1); Regulation of acid-base
	balance (1)
No. of tutorials	3

PAPER TITLE (CODE): BIOCHEMISTRY OF METABOLIC PROCESSES (CORE COURSE X)

Allotted Unit No	4
Unit Name	Unit 4: Protein Metabolism
No. of Class required	10
Detail of the topics to be taught	Catabolism of amino acids (2): Transamination, Deamination,



(Classes required)	Urea cycle (4); Fate of C-skeleton of Glucogenic and Ketogenic amino acids (4)
No. of tutorials	2
Allotted Unit No	5
Unit Name	Unit 5: Oxidative Phosphorylation
No. of Class required	10
Detail of the topics to be taught (Classes required)	Redox systems (2); Review of mitochondrial respiratory chain (3), Inhibitors and un-couplers of Electron Transport System (3)
No. of tutorials	2

PAPER TITLE (CODE): DEVELOPMENTAL BIOLOGY (CORE COURSE XIII)

Allotted Unit No	1
Unit Name	Introduction
No. of Class required	4
Detail of the topics to be taught	Historical perspective and basic concepts: Phases of
(Classes required)	development, Cell-Cell interaction, Pattern formation
	Differentiation and growth, Differential gene expression,
	Cytoplasmic determinants and asymmetric cell division
No. of tutorials	1
Allotted Unit No	2
Unit Name	Unit 2: Early Embryonic Development
No. of Class required	28
Detail of the topics to be taught	Gametogenesis (1), Spermatogenesis (2), Oogenesis (2); Types
(Classes required)	of eggs (2), Egg membranes (1); Fertilization (External and
	Internal): Changes in gametes, Blocks to polyspermy (6);
	Planes and patterns of cleavage (2); Types of Blastula (2); Fate
	maps (including Techniques) (2); Early development of frog
	and chick up to gastrulation (6); Embryonic induction and
	organizers (2)
No. of tutorials	6
Allotted Unit No	3
Unit Name	Late Embryonic Development
No. of Class required	8
Detail of the topics to be taught	Fate of Germ Layers; Extra-embryonic membranes in birds
(Classes required)	Implantation of embryo in humans, Placenta (Structure
	types and functions of placenta)
No. of tutorials	4
Allotted Unit No	4
Unit Name	Post Embryonic Development
No. of Class required	12
Detail of the topics to be taught	Metamorphosis: Changes in amphibians and insects
(Classes required)	Regeneration: Modes of regeneration, epimorphosis
	morphallaxis and compensatory regeneration (with one
	example each); Ageing: Concepts and Theories
No. of tutorials	2
Allotted Unit No	5
	Implications of Developmental Biology
Unit Name	Implications of Developmental Biology
	8
Unit Name No. of Class required Detail of the topics to be taught	



	(ESC), Amniocentesis
No. of tutorials	1
	EVOLUTIONARY BIOLOGY (CORE COURSE XIV)
Allotted Unit No	3
Unit Name	Unit 3: Evidences of Evolution:
No. of Class required	14
Detail of the topics to be taught (Classes required)	Fossil record (types of fossils, transitional forms (2), geological time scale, (3), evolution of horse (3), three domains of life, (2) neutral theory of molecular evolution, (2), molecular clock (1) example of globin gene family (1)
No. of tutorials	3
Allotted Unit No	7

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Unit 7: Extinctions
5
Back ground of Extinctions and mass extinctions (causes and effects), (4) detailed example of K-T extinction (1)
2
8
Unit 8: Origin and evolution of man
8
Origin and Evolution of Man (2) Unique hominin characteristics contrasted with primate, Characteristics (2) primate phylogeny from <i>Dryopithecus</i> leading to <i>Homo</i> <i>sapiens</i> (2) molecular analysis of human origin (2)
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Separtment of Zooloan ARGAON COLLEGE



NAME OF THE TEACHER: DR. RASHMI DUTTA DESIGNATION: ASSISTAN PROFESSOR SESSION: JULY - DECEMBER 2022

Detail of the topics to be taught (Classes

required)

GARGAON COLLEGE TEACHING PLAN Course: B. Sc. Session: Odd semester 2022

Subject: ZOOLOGY Name of the Teacher: Dr. Rashmi Dutta Methods to be applied: Lecture and presentation method along with interaction and discussion. Teaching Materials: Green & White Board, Chalk Pencil, Marker, Duster, Books, Journal, Newspaper, Magazine, Periodicals, Laptop, Projector.

Paper	Title (Code): Principle of Ecology (CCII)
Allotted Unit No	1
Unit Name	Unit 1: Introduction to Ecology
No. of Class required	6
Detail of the topics to be taught (Classes required)	History of ecology, Autecology and synecology (1); Levels of organization, Laws of limiting factors (2); Study of abiotic factors (3)
No. of Tutorials	2
Allotted Unit No	2
Unit Name	Unit 2: Population
No. of Class required	18
Detail of the topics to be taught (Classes required)	Unitary and Modular populations (1); Unique and group attributes of population (1); Density, natality, mortality (1); Life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion (2); Exponential and logistic growth, equation and patterns (2); r and K strategies (1); Population regulation - density-dependent and independent factors (2); Population interactions (1); Gause's Principle with laboratory and field examples (3); Lotka-Volterra equation for competition and Predation (3) functional and numerical responses; (1)
No. of Tutorials	4
Allotted Unit No	3
Unit Name	Unit 3: Community
No. of class required	8
Detail of the topics to be taught (Classes required)	Community characteristics: species richness, dominance, diversity, abundance, vertical stratification (4); Ecotone and edge effect; (1); Ecological succession with Hydrosere (2); Theories pertaining to climax community (1)
No. of Tutorials	3
Allotted Unit No	4
Unit Name	Unit 4: Ecosystem
No. of Class required	10
Detail of the topics to be taught (Classes required)	Types of ecosystems with one example in detail (Forest ecosystem) (2); Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, (2); Energy flow through the ecosystem, (2); Ecological pyramids and Ecological efficiencies (1); Nutrient and biogeochemical cycle with Nitrogen cycle as an example (2); Human modified ecosystem (1)
Alloted Unit No	5
Unit Name	Unit 5: Applied Ecology
No. of class required	4
Detail of the topics to be taught (Classes required)	Concept of wildlife conservation (Usefulness, causes and consequences of degradation) (2); Management strategies (2)
No. of tutorials	1
Paper Title /	Code): DIVERSITY OF CHORDATA (CCV)
Allotted Unit No	
Unit Name	Unit 1: Introduction to Chordates
No. of lass required	2
Patril of the testing to be tended (Classe	2 Consultation of a stational station of Charles (2)

General characteristics and outline classification of Chordates (2)



No. of Tutorials	Nil
Allotted Unit No	2
Unit Name	Unit 2: Protochordata
No. of lass required	
Detail of the topics to be taught (Classes	General characteristics of Hemichordata (1); Urochordata and Cephalochordata (2)
required)	Study of larval forms in protochordates; (2); Retrogressive metamorphosis in
	Urochordata (1)
No. of Tutorials	2
Allotted Unit No	3
Unit Name	Unit 3: Origin of Chordata
Detail of the topics to be taught (Classes	Dipleurula concept and the Echinoderm theory of origin of chordates (1)
required) No. of Tutorials	Advanced features of vertebrates over Protochordata (1)
	2 4
Allotted Unit No.	
Unit Name	Unit 4: Agnatha 2
No. of Class required	
Detail of the topics to be taught (Classes required)	General characteristics and classification of cyclostomes up to class (2)
No. of Tutorials	Nil
Allotted Unit No.	5
Unit Name	5 Unit 5: Pisces
No. of Class required	7
Detail of the topics to be taught (Classes	General characteristics of Chondrichthyes and Osteichthyes (2); Classification u
required)	to order (2); Migration, Osmoregulation and (1); Parental care in fishes (2)
No. of Tutorials	1
Allotted Unit No.	6
Unit Name	Unit 6: Amphibia
No. of Class required	4
Detail of the topics to be taught (Classes	Origin of Tetrapoda (Evolution of terrestrial ectotherms) (1); General
required)	characteristics and classification up to order (1); Parental care in Amphibians (2)
No. of Tutorials	2
Allotted Unit No.	7
Unit Name	Unit 7: Reptilia
No. of Class required	6
Detail of the topics to be taught (Classes	General characteristics and classification up to order (3); Affinities of Sphenodol
required)	(1); Poison apparatus and (1); Biting mechanism in snakes (1)
No. of Tutorials	2
Allotted Unit No.	8
Unit Name	Unit 8: Aves
No. of class required	10
Detail of the topics to be taught (Classes	General characteristics and classification up to order (3); Archaeopteryx-
required)	connecting link (1); Principles and aerodynamics of flight, (2); Flight adaptation
	(2); and Migration in birds (2)
No. of Tutorials	2
Allotted Unit No.	9
Unit Name	Unit 9: Mammals
No. of Class required	6
Detail of the topics to be taught (Classes	General characters and classification up to order; (2); Affinities of Prototheria (1)
required) No. of Tutorials	Adaptive radiation with reference to locomotory appendages (3) 3
Allotted Unit No.	10
Unit Name	Unit 10: Zoogeography
No. of Class required	7
Detail of the topics to be taught (Classes	Zoogeographical realms (2); Theories pertaining to distribution of animals (2);
	Plate tectonic and Continental drift theory (1); Distribution of vertebrates i
required)	different realms (2)
required)	
	2
	2
required) No. of Tutorials Paper Title (Code):	2 FUNDAMENTALS OF BIOCHEMISTRY (CCVII)
No. of Tutorials	



Detail of the topics to be taught (Classes Structure and Biological importance of carbohydrates (1); Nonosacchardes (1): Disacchardes (1); Polysacchardes and Glycoconjugates (2) No. of Tuorials 2 No. of Class required 6 No. of Class required 6 No. of Class required 5 No. of Class required 15 No. of Class required 15 No. of tuorials 2 Alietted Cuit No. 5 Variable Code): Principle of Earsyme (1); Cofactors; Specificity of eractors, 3fecting rate of enzyme-catalyzed reactions (1) Enzyma kinetic Factors affecting rate reactions (1) Enzyme and kinetics (1); Regulation of enzyme action (1): Concept of Km and Vmax (1): Lineveaver-Burk pla multi-substrate reactions (1): Enzyme inhibition (1); Allosteric enzymes and kinetics (1); Regulation of enzyme action (1) No. of tuorials 5 No. of Class required 10 No. of Class required 10 <th></th> <th>-</th>		-
required) Disaccharides (1); Polysaccharides and Glycoconjugates (2) 2 Allotted Unit No. 2 Allotted Unit No. 2 Allotted Unit No. 2 Construction 2 Allotted Unit No. 3 Allotted Unit No. 4 Class required 5 No. of Luorials 3 Allotted Unit No. 4 Class required 5 No. of Luorials 3 Allotted Unit No. 4 Class required 5 No. of Luorials 3 Allotted Unit No. 4 Class required 5 No. of Luorials 3 Allotted Unit No. 4 Class required 5 No. of Luorials 3 Allotted Unit No. 4 Class required 5 Class requ	No. of Class required	5
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heredity in Paramecium and Maternal effects (1)	Detail of the topics to be taught (Classes required) No. of Tutorials Allotted Unit No. Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of Tutorials Allotted Unit No. Unit Name No. of Class required	 (2) (Classification, figures and with one suitable example of each); Molecular basis of mutations in relation to UV light and chemical mutagens (2); Detection of mutations: CLB method, attached <i>X</i> method (2) 2 4 Unit 4: Sex Determination 2 Chromosomal mechanisms of sex determination in Drosophila and Man (2) Nil 5 Unit 5: Extra-chromosomal Inheritance 4
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Allotted Unit No.	6
Unit Name	Unit 6: Polygenic Inheritance
No. of Class required	3
Detail of the topics to be taught (Classes	Polygenic inheritance with suitable examples; (1); simple numericals based on it
required)	(2)
No. of Tutorials	Nil
Allotted Unit No.	7
Unit Name	Unit 7: Recombination in Bacteria and Viruses
No. of Class required	3
Detail of the topics to be taught (Classes	Conjugation, Transformation, Transduction, (2); Complementation test in
required)	Bacteriophage (1)
No. of Tutorials	1
Allotted Unit No.	8
Unit Name	Unit 8: Transposable Genetic Elements
No. of Class required	4
Detail of the topics to be taught (Classes	Transposons in bacteria (1); Ac-Ds elements in maize and P elements in Drosophila
required)	; Transposons in humans (3)
No. of Tutorials	1
Paner Tit	e (Code): BIOLOGY OF INSETA (DSEII)
Allotted Unit No.	1
Unit Name	Unit I: Introduction of Insects
No. of Class required	4
Detail of the topics to be taught (Classes	General Features of Insects (1); Distribution and Success of Insects on the Earth (3)
required)	
No. of Tutorials	1
Allotted Unit No.	2
Unit Name	Unit II: Insect Taxonomy
No. of Class required	4
Detail of the topics to be taught (Classes	Basis of insect classification; (1); Classification of insects up to orders (3)
required)	basis of fiscer classification, (1), classification of fiscers up to orders (5)
No. of Tutorials	1
Allotted Unit No.	3
Unit Name	Unit III: General Morphology of Insects
No. of Class required	9
	5
Detail of the topics to be taught (Classes	External Features; Head – Eyes, Types of antennae, (2); Mouth parts w.r.t. feeding habits (1); Thorax: Wings and wing articulation, (2); Types of Legs adapted to
required)	diverse habitat (2); Abdominal appendages and genitalia (2)
No. of Tutorials	2
Allotted Unit No.	4
Unit Name	Unit IV: Physiology of Insects
No. of Class required	13
Detail of the topics to be taught (Classes	Structure and physiology of Insect body systems - Integumentary System, (2);
required)	Digestive system, (1); Excretory system, (1); Circulatory system, (1); Respiratory
	system, (3); Endocrine system and (1); Reproductive system. (1); Sensory receptors
	and nervous system (2); Growth and metamorphosis (1)
No. of Tutorials	4
	5
Allotted Unit No.	Unit V: Insect Society
Unit Name	
Unit Name No. of Class required	5
Unit Name No. of Class required Detail of the topics to be taught (Classes	5 Group of social insects and their social life (2); Social organization and social
Unit Name No. of Class required	

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NAME OF THE TEACHER: DR. RASHMI DUTTA DESIGNATION: ASSISTAN PROFESSOR SESSION: JAN - JUNE 2023

GARGAON COLLEGE <u>TEACHING PLAN</u> Course: B. Sc. Session: Even semester 2023

Subject: ZOOLOGY Name of the Teacher: Dr. Rashmi Dutta Methods to be applied: Lecture and presentation method along with interaction and discussion. Teaching Materials: Green & White Board, Chalk Pencil, Marker, Duster, Books, Journal, Newspaper, Magazine, Periodicals, Laptop, Projector.

	N-CHORDATES II: COELOMATES (Core Course III)
Allotted Unit No	1
Unit Name	Unit 1: Introduction to Coelomates
No. of Class required	5
Detail of the topics to be taught (Classes required)	Evolution of coelom and metamerism (3); Theory of Metamerism (1); Theory of Coelom (1)
No. of tutorials	2
Allotted Unit No	2
Unit Name	Unit 2: Annelida
No. of Class required	5
Detail of the topics to be taught (Classes required)	General characteristics and Classification up to classes (3); Excretion in Annelida (2)
No. of tutorials	1
Allotted Unit No	3
Unit Name	Unit 3: Arthropoda
No. of Class required	10
Detail of the topics to be taught (Classes required)	General characteristics and Classification up to classes (3); Vision and Respiration in Arthropoda (3); Metamorphosis in Insects (1); Social life in bees and termites (3)
No. of tutorials	3
Allotted Unit No	4
Unit Name	Unit 4: Onychophora
No. of Class required	3
Detail of the topics to be taught (Classes required)	General characteristics and (1) Evolutionary significance (2)
No. of tutorials	Nil
Allotted Unit No	5
Unit Name	Unit 5: Mollusca
No. of Class required	8
Detail of the topics to be taught (Classes required)	General characteristics and (1); Classification up to classes (1); Respiration in Mollusca (1); Torsion and detorsion in Gastropoda (2); Pearl formation in bivalves (1); Evolutionary significance of trochophore larva (2)
No. of tutorials	2
Allotted Unit No	6



Unit Name	Unit 6: Echinodermata
No. of Class required	
Detail of the topics to be taught (Classes required)	General characteristics and (1); Classification up to classes (1); Water-vascular system in Asteroidea (1); Larval forms in Echinodermata (2); Affinities with
	Chordates (1)
No. of tutorials	2
	TIVE ANATOMY OF VERTEBRATES (CORE COURSE VIII)
Allotted Unit No Unit Name	1 Finite & Entermonitory Contemp
No. of Class required	Unit 1: Integumentary System
Detail of the topics to be taught (Classes	Structure of Integument in Vertebrates, (3); functions of Integuments in
required)	Vertebrates and (2); Derivatives of integument (2)
No. of tutorials	2
Allotted Unit No	2
Unit Name	Unit 2: Skeletal System
No. of Class required	9
Detail of the topics to be taught (Classes required)	Overview of axial and appendicular skeleton of different Vertebrates (4); Jaw suspensorium in Vertebrates, (3); Visceral arches in Different Vertebrates (2)
No. of tutorials	3
Allotted Unit No	3
Unit Name	Unit 3: Digestive System
No. of Class required	5
Detail of the topics to be taught (Classes required)	Alimentary canal of Different Vertebrates (1); and associated glands, (2) dentition of Vertebrates (2)
No. of tutorials Allotted Unit No	2
Unit Name	4 Unit 4: Respiratory System
No. of Class required	7
Detail of the topics to be taught (Classes	Skin of Vertebrates (2); Gills of Vertebrates (1); Lungs of Vertebrates (1); and air
required)	sacs of Vertebrates (1); Accessory respiratory organs of Vertebrates (2)
No. of tutorials	2
Allotted Unit No	5
Unit Name	Unit 5: Circulatory System
No. of Class required	5
Detail of the topics to be taught (Classes required)	General plan of circulation of Vertebrates (3); evolution of heart and aortic arches of Vertebrates (2)
No. of tutorials	1
Allotted Unit No	6
Unit Name	Unit 6: Urinogenital System
No. of Class required	6 Suggestion of hidrony of Vertebrates (7): Publisher of uningential dusts of
Detail of the topics to be taught (Classes required)	Succession of kidney of Vertebrates (2); Evolution of urinogenital ducts of Vertebrates (3); Types of mammalian uteri (1)
No. of tutorials	2
Allotted Unit No	7
Unit Name	Unit 7: Nervous System
No. of Class required	7
Detail of the topics to be taught (Classes required)	Comparative account of brain of Vertebrates (2); Autonomic nervous system of Vertebrates (2); Spinal cord of Vertebrates (2); Cranial nerves in mammals (1)
No. of tutorials	2
Allotted Unit No	8
Unit Name	Unit 8: Sense Organs
No. of Class required	
Detail of the topics to be taught (Classes required)	Classification of receptors (2); Brief account of visual and (1); Auditory receptors in man (1)
No. of tutorials	1
	SIOLOGY: LIFE SUSTAINING SYSTEMS (CORE COURSE IX)
Allotted Unit No	
Unit Name	Unit 1: Physiology of Digestion
No. of Class required Detail of the topics to be taught (Classes	12 Structural organization and (1); Functions of gastrointestinal tract and associated
required)	glands (2); Mechanical and chemical digestion of food (2); Absorptions of



	carbohydrates (1); Absorption of lipids, (1); Absorption of proteins, (1);
	Absorption of water, (1); Absorption of minerals and vitamins (1); Hormonal control of secretion of enzymes in Gastrointestinal tract (2)
No. of tutorials	5
Allotted Unit No	4
Unit Name	Unit 4: Blood
No. of Class required	14
Detail of the topics to be taught (Classes required)	Components of blood and their functions (2); Structure and functions of haemoglobin (1); Haemostasis: Blood clotting system, (3); Kallikrein-Kinninogen system, (2); Complement system & Fibrinolytic system, (3); Haemopoiesis (1); Blood groups: Rh factor, (1); ABO and MN blood group (1)
No. of tutorials	3
Allotted Unit No	5
Unit Name	Unit 5: Physiology of Heart
No. of Class required	14
Detail of the topics to be taught (Classes required)	Structure of mammalian heart (2); Coronary circulation (2); Structure and working of conducting myocardial fibers (2) Origin and conduction of cardiac impulses (1); Cardiac cycle; (2); Cardiac output and its regulation, (1); Frank- Starling Law of the heart, (1); Nervous and chemical regulation of heart rate (1) Electrocardiogram (1); Blood pressure and its regulation (1)
No. of tutorials	5
	MISTRY OF METABOLIC PROCESSES (Core Course X)
Allotted Unit No	1 Unit to Occurring of Marchallers
Unit Name	Unit 1: Overview of Metabolism 10
No. of Class required Detail of the topics to be taught (Classes	Catabolism vs Anabolism, (1); Compartmentalization of metabolic pathways, (1)
required)	Shuttle systems and membrane transporters; (2); ATP as "Energy Currency of cell" (1); Coupled reactions; (1); Use of reducing equivalents and cofactors;(2) Intermediary metabolism and regulatory mechanisms (2)
No. of tutorials	3
Allotted Unit No	2
Unit Name	Unit 2: Carbohydrate Metabolism
No. of Class required	10
Detail of the topics to be taught (Classes required)	Sequence of reactions and regulation of glycolysis, (4); Citric acid cycle, (2) Phosphate pentose pathway (1); Gluconeogenesis (1); Glycogenolysis and (1) Glycogenesis (1)
No. of tutorials	5
Allotted Unit No	3
Unit Name	Unit 3: Lipid Metabolism
No. of Class required	10
Detail of the topics to be taught (Classes required) No. of tutorials	β-oxidation and (2); omega -oxidation of saturated fatty acids with even and odd number of carbon atoms; (4); Biosynthesis of palmitic acid; (3); Ketogenesis (1)
	VELOPMENTAL BIOLOGY (CORE COURSE XIII)
Allotted Unit No	1
Unit Name	Unit 1: Introduction
No. of Class required	10
Detail of the topics to be taught (Classes	Historical perspective and basic concepts: (1); Phases of development; Cell-Cell
required)	interaction, (2); Pattern formation, (2); Differential gene expression, (2); Cvtoplasmic determinants and (1); Asymmetric cell division (2)
	interaction, (2); Pattern formation, (2); Differential gene expression, (2); Cytoplasmic determinants and (1); Asymmetric cell division (2) 4
required)	Cytoplasmic determinants and (1); Asymmetric cell division (2)
required) No. of tutorials	Cytoplasmic determinants and (1); Asymmetric cell division (2) 4
required) No. of tutorials Allotted Unit No	Cytoplasmic determinants and (1); Asymmetric cell division (2) 4 3 Unit 3: Late Embryonic Development 7 Fate of Germ Layers; (2); Extra-embryonic membranes in birds; (2); Implantation of Embryo in humans, (1); Placenta (Structure, types and functions of placenta)
required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required)	Cytoplasmic determinants and (1); Asymmetric cell division (2) 4 3 Unit 3: Late Embryonic Development 7 Fate of Germ Layers; (2); Extra-embryonic membranes in birds; (2); Implantation of Embryo in humans, (1); Placenta (Structure, types and functions of placenta) (2)
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required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No	Cytoplasmic determinants and (1); Asymmetric cell division (2) 4 3 Unit 3: Late Embryonic Development 7 Fate of Germ Layers; (2); Extra-embryonic membranes in birds; (2); Implantation of Embryo in humans, (1); Placenta (Structure, types and functions of placenta) (2) 2 4
required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of tutorials	Cytoplasmic determinants and (1); Asymmetric cell division (2) 4 3 Unit 3: Late Embryonic Development 7 Fate of Germ Layers; (2); Extra-embryonic membranes in birds; (2); Implantation of Embryo in humans, (1); Placenta (Structure, types and functions of placenta) (2) 2



one example each); (1) Ageing: Concepts and Theories (1) 2 5 Unit 5: Implications of Developmental Biology 5 Teratogenesis: Teratogenic agents and their effects on embryonic development (2); <i>In vitro</i> fertilization, (2); Stem cell (ESC), (1); Amniocentesis (1) 2 DLUTIONARY BIOLOGY (CORE COURSE XIV) 1 Unit 1: Life's Beginnings 12 Chemogeny (4); RNA world (2); Biogeny (1); Origin of photosynthesis, (2) Evolution of eukaryotes (3) 5 2 Unit 2: Historical review of evolutionary concept 7 Lamarckism, (2); Darwinism, (3); Neo Darwinism (2) 3 Unit 3: Evidences of Evolution: 14 Fossil record (types of fossils, transitional forms (2); geological time scale, (3) Evolution of horse (3); Three domains of life, (2); Neutral theory of molecular
5 Unit 5: Implications of Developmental Biology 6 Teratogenesis: Teratogenic agents and their effects on embryonic development (2); <i>In vitro</i> fertilization, (2); Stem cell (ESC), (1); Amniocentesis (1) 2 DLUTIONARY BIOLOGY (CORE COURSE XIV) 1 Unit 1: Life's Beginnings 12 Chemogeny (4); RNA world (2); Biogeny (1); Origin of photosynthesis, (2) Evolution of eukaryotes (3) 5 2 Unit 2: Historical review of evolutionary concept 7 Lamarckism, (2); Darwinism, (3); Neo Darwinism (2) 3 3 Unit 3: Evidences of Evolution: 14 Fossil record (types of fossils, transitional forms (2); geological time scale, (3)
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12 Chemogeny (4); RNA world (2); Biogeny (1); Origin of photosynthesis, (2) Evolution of eukaryotes (3) 5 2 Unit 2: Historical review of evolutionary concept 7 Lamarckism, (2); Darwinism, (3); Neo Darwinism (2) 3 3 Unit 3: Evidences of Evolution: 14 Fossil record (types of fossils, transitional forms (2); geological time scale, (3)
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Fossil record (types of fossils, transitional forms (2); geological time scale, (3)
Evolution of horse (3): Three domains of life, (2): Neutral theory of molecular
evolution, (2); Molecular clock (1); Example of globin gene family (1)
3
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Unit 4: Sources of variations:
3
Heritable variations and their role in evolution (3)
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5
Unit 5: Basic concept of Population genetics:
20
Hardy-Weinberg Law (statement and derivation of equation, application of law to
human Population); Evolutionary forces upsetting H-W equilibrium; (5)
Natural selection (concept of fitness, mechanism of working, types of selection
(3); Density dependent selection (1); Heterozygous superiority (1); Kin selection
(2); Adaptive resemblances, (1); Sexual selection. (1); Genetic Drift (mechanism
founder's effect, bottleneck phenomenon) (3); Role of Migration and (1)
Mutation in changing allele frequencies (2)
5
5
Unit 6: Product of evolution:
7
Micro evolutionary changes (inter-population variations, clines, races (2); Species
concept, (1); Isolating mechanisms, (1); Modes of speciation— allopatric
sympatric, Adaptive radiation (2) Macroevolution (exemplified by Galapago
finches) (1)
2
7
Unit 7: Extinctions
5
Back ground of Extinctions and mass extinctions (causes and effects), (4)
Detailed example of K-T extinction (1)
2
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Unit Name	Unit 8: Origin and evolution of man
No. of Class required	8
Detail of the topics to be taught (Classes	Origin and Evolution of Man (2); Unique hominin characteristics contrasted with
required)	primate Characteristics (2); Primate phylogeny from Dryopithecus leading to
	Homo sapiens (2); Molecular analysis of human origin (2)
No. of tutorials	2
Allotted Unit No	9
Unit Name	Unit 9: Phylogenetic trees
No. of Class required	7
Detail of the topics to be taught (Classes	Phylogenetic trees (2); Multiple sequence alignment, (2); Construction of
	phylogenetic trees (2); Multiple sequence angiment, (2); Construction of phylogenetic trees (2); Interpretation of trees (1)
required) No. of tutorials	phylogenetic trees (2); interpretation of trees (1)
President Active Conditional Active Section 1	Title (Code): IMMUNOLOGY (DSE 3)
Allotted Unit No	1
Unit Name	Unit 1: Overview of Immune System
No. of Class required	6
Detail of the topics to be taught (Classes	Historical perspective of Immunology, (1); Early theories of Immunology (2);
required)	Cells and organs of the Immune system (3)
No. of tutorials	2
Allotted Unit No	2
Unit Name	Unit 2: Innate and Adaptive Immunity
No. of Class required	17
Detail of the topics to be taught (Classes	Anatomical barriers, (1); Inflammation, (1); Cell and molecules involved in
required)	innate immunity, (2); Adaptive immunity (Cell mediated and humoral) (3)
	Passive: Artificial and natural Immunity (2); Active: Artificial and natural
	Immunity (2); Immune dysfunctions (1); Brief account of autoimmunity with
	reference to Rheumatoid Arthritis and tolerance (2); AIDS (2)
No. of tutorials	4
Allotted Unit No	3
Unit Name	Unit 3: Antigens
No. of Class required	8
Detail of the topics to be taught (Classes	Antigenicity and immunogenicity (2); Immunogens, Adjuvants and haptens, (2)
required)	Factors influencing immunogenicity (2); B and T-Cell epitopes (2)
No. of tutorials	3
Allotted Unit No	4
Unit Name	Unit 4: Immunoglobulins
No. of Class required	13
Detail of the topics to be taught (Classes	Structure and functions of different classes of immunoglobulins (2); Antigen-
required)	antibody interactions (3); Immunoassays (ELISA and RIA) (3); Polyclonal sera
	(2); Hybridoma technology (1); Monoclonal antibodies in therapeutics and
A. P	diagnosis (2)
No. of tutorials	3
Allotted Unit No	5
Unit Name	Unit 5: Major Histocompatibility Complex
No of Class required	5
No. of Class required	
Detail of the topics to be taught (Classes	
	Structure and functions of MHC molecules (2); Endogenous and exogenous pathways of antigen processing and presentation (3)
Detail of the topics to be taught (Classes	
Detail of the topics to be taught (Classes required)	pathways of antigen processing and presentation (3)
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No	pathways of antigen processing and presentation (3) 1 6
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name	pathways of antigen processing and presentation (3) 1
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines 4
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required)	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines 4 Properties and functions of cytokines (2); Therapeutics Cytokines (2)
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of tutorials	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines 4 Properties and functions of cytokines (2); Therapeutics Cytokines (2) 1
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines 4 Properties and functions of cytokines (2); Therapeutics Cytokines (2) 1 7
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines 4 Properties and functions of cytokines (2); Therapeutics Cytokines (2) 1 7 Unit 7: Complement System
Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines 4 Properties and functions of cytokines (2); Therapeutics Cytokines (2) 1 7 Unit 7: Complement System 5
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Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of tutorials Allotted Unit No Unit Name No. of tutorials Allotted Unit No Unit Name Detail of the topics to be taught (Classes required) Detail of the topics to be taught (Classes required)	pathways of antigen processing and presentation (3) 1 6 Unit 6: Cytokines 4 Properties and functions of cytokines (2); Therapeutics Cytokines (2) 1 7 Unit 7: Complement System 5 Complement System (2); Components and pathways of complement activation (3)
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Unit Name	Unit 8: Vaccines
No. of Class required	3
Detail of the topics to be taught (Classes required)	Vaccines (1) Various types of vaccines (2).
No. of tutorials	1
Paper Title	(Code): FISH AND FISHERIES (DSE 4)
Allotted Unit No	1
Unit Name	UNIT 1: Introduction and Classification:
No. of Class required	9
Detail of the topics to be taught (Classes required)	General description of fish; (1); Account of systematic classification of fishes (up to classes); (3); Classification based on feeding habit, (2); Habitat and manner or reproduction. (3)
No. of tutorials	3
Allotted Unit No	2
Unit Name	UNIT 2: Morphology and Physiology:
No. of Class required	26
Detail of the topics to be taught (Classes required)	Types of fins and their modifications (2); Locomotion in fishes (2) Hydrodynamics (1); Types of Scales (1); Use of scales in Classification and determination of age of fish (2); Gills and gas exchange (2); Swim Bladder Types and role in Respiration (2); Buoyancy (1); Communication in teleosts (2) Reproductive strategies (special reference to Indian fishes) (2); Electric organ (2); Bioluminiscience (2); Mechanoreceptors (2); Schooling (1); Parental can
	(1); Migration (1)

Head

Department of Zoology



NAME OF THE TEACHER: DR. ANURAG PROTIM DAS DESIGNATION: ASSISTAN PROFESSOR SESSION: JULY - DECEMBER 2022

GARGAON COLLEGE TEACHING PLAN Course: B. Sc. Session: Odd semester 2022

Subject: ZOOLOGY

Name of the Teacher: DR. ANURAG PROTIM DAS

Methods to be applied: Lecture and presentation method along with interaction and discussion. Teaching Materials: Green & White Board, Chalk Pencil, Marker, Duster, Books, Journal, Newspaper, Magazine, Periodicals, Laptop, Projector.

COURSE I)	
Allotted Unit No	1
Unit Name	Unit 1: Protista, Parazoa and Metazoa
No. of Class required	19
Detail of the topics to be taught (Classes required)	General characteristics and Classification up to Classes Structural organization & nutrition of Euglena, Amoeba and Paramecium Life cycle and pathogenicity of <i>Plasmodium vivax</i> Locomotion and Reproduction in Animal protista (Protozoa) Evolution of symmetry and segmentation of Metazoa
No. of Tutorials	2
Allotted Unit No	4
Unit Name	Unit 4: Ctenophora
No. of class required	3
Detail of the topics to be taught (Classes required)	General characteristics (1), Evolutionary significance (2)
No. of Tutorials	1
Allotted Unit No	5
Unit Name	Unit 5: Platyhelminthes
No. of Class required	9
Detail of the topics to be taught (Classes required)	General characteristics (1), Classification up to classes (2) Life cycle and pathogenicity of <i>Fasciola hepatica</i> (3), Life cycle and pathogenicity of <i>Taenia solium</i> (3)
No. of Tutorials	2
Alloted Unit No	6
Unit Name	Unit 6: Nemathelminthes
No. of class required	10
Detail of the topics to be taught (Classes required)	General characteristics (1), Classification up to classes (1), Life cycle, and pathogenicity of Ascaris lumbricoides (3), Life cycle, and pathogenicity of Wuchereria bancrofti (3), Parasitic adaptations in helminthes (2)
No. of tutorials	2
	Course Code: ZC306T CORE COURSE VI: OLOGY: CONTROLLING AND COORDINATING SYSTEMS
Allotted Unit No	1
Unit Name	Unit 3: Nervous System
No, of Class required	13
Detail of the topics to be taught (Classes required)	Structure of neuron (1), resting membrane potential, Origin of action potential (1) and its propagation across the myelinated and unmyelinated nerve fibers (2); Types of synapse (1), Synaptic transmission (1) and, Neuromuscular junction (2); Reflex action and its types - reflex arc (1); Physiology of hearing (2) and vision (2).
No. of Tutorials	4
Allotted Unit No.	4
Unit Name	Unit 4: Muscle





No. of Class required	12
Detail of the topics to	12 Histology of different types of muscle (2); Ultra structure of skeletal muscle
be taught (Classes	(2); Molecular and chemical basis of muscle (2); Onra structure of skeletal muscle
required)	muscle twitch (1); Motor unit (1), summation and tetanus (2)
No. of Tutorials	3
Allotted Unit No.	5
Unit Name	Unit 6: Endocrine System
No. of Class required	18
Detail of the topics to be	Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid,
taught (Classes required)	pancreas, adrenal; hormones secreted by them and their mechanism of action;
	Classification of hormones; Regulation of their secretion; Mode of hormone
	action, Signal transduction pathways for steroidal and non- steroidal
	hormones; Hypothalamus (neuroendocrine gland) - principal nuclei involved
	in neuroendocrine control of anterior pituitary and endocrine system;
	Placental hormones
No. of Tutorials	6
No. of tutorials	4
PAPER TITLE (C	ODE): ANIMAL BEHAVIOUR AND CHRONOBIOLOG (DSEI)
Allotted Unit No.	1
Unit Name	Unit 1. Introduction to Animal Behavior
No. of Class required	7
Detail of the topics to	Origin and history of Ethology; Brief profiles of Karl Von Frish, Ivan Pavlov,
be taught (Classes required)	Konrad Lorenz, Niko Tinbergen, Proximate and ultimate causes of behavior.
AL (19)	
No. of Tutorials	Nil
Allotted Unit No. Unit Name	2 Unit 2: Patterns of Palavieur
	Unit 2: Patterns of Behaviour 10
No. of Class required Detail of the topics to	
be taught (Classes	Stereotyped Behaviours (Orientation, Reflexes); Individual Behavioural patterns; Instinct vs. Learnt Behaviour; Associative learning, classical and
required)	operant conditioning, Habituation, Imprinting.
No. of Tutorials	1
Allotted Unit No.	3
Unit Name	Unit 3: Social and Sexual Behaviour
No. of Class required	14
Detail of the topics to	Social Behaviour: Concept of Society; Communication and the senses;
be taught (Classes	Altruism; Insects' society with Honey bee as example; Foraging in honey bee
required)	and advantages of the waggle dance. Sexual Behaviour: Asymmetry of sex,
	Sexual dimorphism, Mate choice, Intra-sexual selection (male rivalry), Inter-
	sexual selection (female choice), Sexual conflict in parental care.
No. of Tutorials	2
Allotted Unit No.	4
Unit Name	Unit 4: Introduction to Chronobiology
No. of Class required	9 Ultracial dealers are in the ability of the first set of the intervention of the set of the intervention of the set of
Detail of the topics to be taught (Classes required)	 Historical developments in chronobiology; Biological oscillation: the concept of Average, amplitude, phase and period. Adaptive significance of biological
be taught (Classes required)	clocks
No. of Tutorials	
1407 01 1 01011010	1
Allotted Unit No.	1
Allotted Unit No. Unit Name	5
Unit Name	5 Unit 5: Biological Rhythm
Unit Name No. of Class required	5 Unit 5: Biological Rhythm 13
Unit Name	5 Unit 5: Biological Rhythm
Unit Name No. of Class required Detail of the topics to	5 Unit 5: Biological Rhythm 13 Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual
Unit Name No. of Class required Detail of the topics to be taught (Classes	5 Unit 5: Biological Rhythm 13 Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking: Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates;
Unit Name No. of Class required Detail of the topics to be taught (Classes required)	5 Unit 5: Biological Rhythm 13 Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking: Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin.
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Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of Tutorials Allotted Unit No. Unit Name	S Unit 5: Biological Rhythm 13 Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking: Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin. 2 Unit 6 Unit 6: Biological Clocks
Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of Tutorials Allotted Unit No. Unit Name No. of Class required Detail of the topics to be taught (Classes	5 Unit 5: Biological Rhythm 13 Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin. 2 Unit 6 Unit 6: Biological Clocks 7
Unit Name No. of Class required Detail of the topics to be taught (Classes required) No. of Tutorials Allotted Unit No. Unit Name No. of Class required Detail of the topics to be taught (Classes required)	S Unit 5: Biological Rhythm 13 Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin. 2 Unit 6 Unit 6: Biological Clocks 7 Relevance of biological clocks; Chronopharmacology, Chronomedicine, Chronotherapy.
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NAME OF THE TEACHER: DR. ANURAG PROTIM DAS DESIGNATION: ASSISTAN PROFESSOR SESSION: JAN - JUNE 2023

GARGAON COLLEGE <u>TEACHING PLAN</u> Course: B. Sc. Session: Even semester 2023

Subject: ZOOLOGY

Name of the Teacher: DR. ANURAG PROTIM DAS

Methods to be applied: Lecture and presentation method along with interaction and discussion.

Teaching Materials: Green & White Board, Chalk Pencil, Marker, Duster, Books, Journal, Newspaper, Magazine, Periodicals, Laptop, Projector.

	Course Code: ZC203T CORE COURSE III
	NON-CHORDATES II: COELOMATES
Allotted Unit No	1
Unit Name	Unit 1: Introduction to Coelomates
No. of class required	2
Detail of the topics to be taught (Classes required)	Evolution of coelom and metamerism
No. of Tutorials	1
Allotted Unit No	2
Unit Name	Unit 2: Annelida
No, of lass required	10
Detail of the topics to be taught (Classes required)	General characteristics and Classification up to classes, Excretion in Annelida
No. of Tutorials	
Allotted Unit No	3
Unit Name	Unit 3: Arthropoda
No. of Class required	17
Detail of the topics to be taught (Classes required)	General characteristics and Classification up to classes, Vision and Respiration in Arthropoda Metamorphosis in Insects Social life in bees and termites
No. of Tutorials	2
Allotted Unit No.	4



Unit Name	Unit 4: Onychophora
No. of Class required	4
Detail of the topics to be taught (Classes required)	General characteristics and Evolutionary significance
No. of Tutorials	Nil
Allotted Unit No.	5
Unit Name	Unit 5: Mollusca
No. of Class required	14
Detail of the topics to be taught (Classes required)	Respiration in Mollusca, Torsion and detorsion in Gastropoda Pearl formation in bivalves
No. of Tutorials	Nil
Allotted Unit No.	6
Unit Name	Unit 6: Echinodermata
No, of Class required	12
Detail of the topics to be taught (Classes required)	General characteristics and Classification up to classes , Water-vascular system in Asteroidea Larval forms in Echinodermata Affinities with Chordates

Course Code: ZC408T CORE COURSE VIII: COMPARATIVE ANATOMY OF VERTEBRATES

Allotted Unit No	2
Unit Name	Unit 1: Integumentary System
No. of Class required	8
Detail of the topics to	Structure, functions and derivatives of integument
be taught (Classes required)	
No. of tutorials	2
Allotted Unit No	3
Unit Name	Unit 2: Skeletal System
No. of Class required	8
Detail of the topics to	Overview of axial and appendicular skeleton, Jaw suspensorium, Viscera
be taught (Classes required)	arches
No. of tutorials	2
Allotted Unit No	3
Unit Name	Unit 3: Digestive System
No. of Class required	8
Detail of the topics to	Alimentary canal and associated glands, dentition
be taught (Classes required)	,,
No. of tutorials	2
Allotted Unit No	4
Unit Name	Unit 4: Respiratory System
No. of Class required	8
Detail of the topics to	Skin, gills, lungs and air sacs; Accessory respiratory organs
be taught (Classes required)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
No. of tutorials	2
Allotted Unit No	5
Unit Name	Unit 5: Circulatory System
No. of Class required	8
Detail of the topics to	General plan of circulation, evolution of heart and aortic arches
Detail of the topics to be taught (Classes required)	General plan of circulation, evolution of heart and aortic arches
Detail of the topics to be taught (Classes required) No. of tutorials	General plan of circulation, evolution of heart and aortic arches
be taught (Classes required)	
be taught (Classes required) No. of tutorials	2
be taught (Classes required) No. of tutorials Allotted Unit No Unit Name	2 6
be taught (Classes required) No. of tutorials Allotted Unit No Unit Name No. of Class required	2 6 Unit 6: Urinogenital System 6
be taught (Classes required) No. of tutorials Allotted Unit No Unit Name	2 6 Unit 6: Urinogenital System



Allotted Unit No	6
Unit Name	Unit 7: Nervous System
No. of Class required	8
Detail of the topics to be taught (Classes required)	Comparative account of brain, Autonomic nervous system, Spinal cord, Cranial nerves in mammals
No. of tutorials	3
Allotted Unit No	8
Unit Name	Unit 8: Sense Organs
No. of Class required	6
Detail of the topics to	Classification of receptors
be taught (Classes required)	Brief account of visual and auditory receptors in man
No. of tutorials	

PAPER TITLE (CODE): BIOCHEMISTRY OF METABOLIC PROCESSES (CORE COURSE X)

Allotted Unit No	1
Unit Name	Unit 1: Overview of Metabolism
No. of Class required	10
Detail of the topics to be taught (Classes required)	Catabolism vs Anabolism, Stages of catabolism, Compartmentalization of metabolic pathways, Shuttle systems and membrane transporters; ATP as "Energy Currency of cell"; coupled reactions; Use of reducing equivalents and cofactors; basics of intermediary metabolism and overview of regulatory strategies
No. of tutorials	3

PAPER TITLE (CODE): EVOLUTIONARY BIOLOGY (CORE COURSE XIV)

Allotted Unit No	1
Unit Name	Unit 1: Life's Beginnings:
No. of Class required	7
Detail of the topics to	Life's Beginnings: Chemogeny, RNA world, Biogeny, Origin of
be taught (Classes required)	photosynthesis, Evolution of eukaryotes
No. of tutorials	3
Allotted Unit No	7
Unit Name	Unit 2: Historical review of evolutionary concept:
No. of Class required	4
Detail of the topics to	Historical review of evolutionary concept: Lamarckism, Darwinism, Neo-
be taught (Classes required)	Darwinism
No. of tutorials	2
Allotted Unit No	8
Unit Name	Unit 3: Evidences of Evolution:
No. of Class required	10
Detail of the topics to be taught (Classes required)	Evidences of Evolution: Fossil record (types of fossils, transitional forms, geological time scale, evolution of horse, three domains of life, neutral theory of molecular evolution, molecular clock, example of globin gene family
No. of tutorials	2
Allotted Unit No	8
Unit Name	Unit 4: Sources of variations:
No. of Class required	8
Detail of the topics to	Sources of variations: Heritable variations and their role in evolution
be taught (Classes required)	
No. of tutorials	2
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rio. of turorials	Course Code: ZD607T
	Course Code: ZD607T DSE Course - VII: FISH AND FISHERIES





Unit Name	Unit 1: Introduction and Classification:
No. of Class required	6
Detail of the topics to	General description of fish; Account of systematic classification of fishes
be taught (Classes	(up to classes); Classification based on feeding habit, habitat and manner of
required)	reproduction,
No. of Tutorials	Nil
Allotted Unit No.	2
Unit Name	Unit 2: Morphology and Physiology:
No. of Class required	18
Detail of the topics to be taught (Classes required)	Types of fins and their modifications; Locomotion in fishes; Hydrodynamics; Types of Scales, Use of scales in Classification and determination of age of fish; Gills and gas exchange; Swim Bladder: Types and role in Respiration, buoyancy; Communication in teleosts; Reproductive strategies (special reference to Indian fishes); Electric organs; Bioluminiscience; Mechanoreceptors; Schooling; Parental care; Migration
No. of Tutorials	5
Allotted Unit No.	3
Unit Name	UNIT 3: Fisheries
No. of Class required	12
Detail of the topics to be taught (Classes required)	Inland Fisheries; Marine Fisheries; Environmental factors influencing the seasonal variations in fish catches in the Arabian Sea and the Bay of Bengal; Fishing crafts and Gears; Depletion of fisheries resources Application of remote sensing and GIS in fisheries; Fisheries law and regulations
No. of Tutorials	3
Allotted Unit No.	5
Unit Name	Unit 5. Fish in research
No. of Class required	4
Detail of the topics to be taught (Classes required)	Transgenic fish, Zebrafish as a model organism in research
No. of Tutorials	Nil

1 Separtment of Zoology IARGAON COLLEGE Simaluguri

(Dr. Rina Handique) Head, Department of Zoology Gargaon College