

GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 1st SEMESTER

Name of Teacher: Mr. D. K. Bhardwaj

Course Title: PAPER –I
 (BIOSYSTEMATICS,
 TAXONOMY AND
 BIODIVERSITY)

Course Type: Theory/Practical (Both)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1 & Unit – 2 (Few Topics)	UNIT -1 Definition and basic concepts of biosystematics and taxonomy <ul style="list-style-type: none"> • Concept of taxonomy • Chemotaxonomy • Cytotaxonomy • Molecular taxonomy and mapping of phylogenetic tree UNIT -2 Dimensions of speciation and taxonomic characters <ul style="list-style-type: none"> • Species, types of species and mechanism of speciation. • Species concepts and species category. 	22	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit – 2 & Unit-3	UNIT -2 <ul style="list-style-type: none"> • Theories of biological classification. • Taxonomic characters and different kinds. Unit-3 Procedure keys in taxonomy :Taxonomic procedures-taxonomic collections, preservation, curation <ul style="list-style-type: none"> • Taxonomic keys-different kinds of 	18	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

		taxonomic keys, their merits and demerits.		
OCTOBER	Unit-3 & Unit-4	Process of typification and different Zoological types. • International code of Zoological Nomenclature (ICZN) UNIT-4 Biodiversity • Concept and types of Biodiversity • Methods of study of terrestrial, aquatic and aerial biodiversity • Significance of wetland biodiversity	17	■ Use of ICT ■ Chalk and talk method ■ Problem solving ■ Group discussion ■ Test ■ Notes
NOVEMBER	Unit –4	Conservation methods of biodiversity • Climate change and biodiversity • Biosphere reserves • Threat to biodiversity and IUCN Red list Hot spots of Biodiversity- Biodiversity legislation of India, USA, UK, Canada.	15 Classes, 04 + Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	■ Use of ICT ■ Chalk and talk method ■ Problem solving ■ Group discussion ■ Test ■ Notes
DECEMBER	-	• Preparation Leave • Practical Examination & • Semester Examination, 2023	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

SIGNATURE OF TEACHER

SIGNATURE OF H.O.D

SIGNATURE OF PRINCIPAL

GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 1st SEMESTER

Name of Teacher: Mrs. Preeti Deshmukh

Course Title: PAPER –II

Course Type: Theory/Practical (Both)

(STRUCTURE AND
FUNCTION OF
INVERTEBRATES)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1	Organization of coelom <ul style="list-style-type: none"> • Acoelomates and Pseudocoelomates. • Coelomates: Protostomia and Deuterostomia. Locomotion <ul style="list-style-type: none"> • Flagellar and ciliary movement in Protozoa. • Hydrostatic movement in Coelenterata, Annelida and Echinodermata. 	10	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit – 2 & Unit – 3	<ul style="list-style-type: none"> • Nutrition and Digestion Patterns of feeding and digestion in Protozoa Filter feeding in polychaeta. • Respiration Organs of respiration: Gills, lungs and trachea. Respiratory pigments. Unit-3 <ul style="list-style-type: none"> • Excretion <ul style="list-style-type: none"> • Organs of excretion. • Excretion and osmoregulation 	18	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

OCTOBER	Unit – 3	Nervous System <ul style="list-style-type: none"> • Primitive nervous system: Coelenterata and Echinodermata. • Advanced Nervous system: Arthropoda (Crustacea and insecta) and Mollusca (<i>Cephalopoda</i>) 	15	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test
NOVEMBER	Unit-4	<ul style="list-style-type: none"> • Invertebrate larvae Larval forms of free-living and parasitic invertebrates • Minor Phyla Organization and general characters of (<i>Ctenophore, Rotifera, Ectoprocta</i>) 	12 Classes 02 + Extra/Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test
DECEMBER	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 1st SEMESTER

Name of Teacher: Ms. Monika Verma

Course Title: PAPER –III

Course Type: Theory/Practical
(Both)

(POPULATION
GENETIC &
EVOLUTION)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1	<ul style="list-style-type: none"> • Concepts of evolution and theories of organic evolution: Lamarckism, Darwinism and Synthetic theory of evolution • Evidences of evolution: anatomical, embryological, palaeontological, physiological and Bio-chemical 	12	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit – 2	<ul style="list-style-type: none"> • Hardy-Weinberg law of genetic equilibrium • Detailed account of destabilizing forces. • Natural selection <ul style="list-style-type: none"> (i) Mutation (ii) Genetic drift (iii) Meiotic drive • Calculation of genotypic frequency • Calculation of allelic frequency • Molecular variation 	15	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
OCTOBER	Unit – 3	<ul style="list-style-type: none"> • Patterns and mechanisms of reproductive isolation • Phylogenetic and biological concepts of species 	16	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

		<ul style="list-style-type: none"> • Gene Evolution, Evolution of gene families • Factors affecting human disease • Genetic alterations and human diseases 		
NOVEMBER	Unit –4	<ul style="list-style-type: none"> • Origin of higher categories • Micro-and Macro-evolution • Evolution of horse, elephant, camel, man • Ethical legal and social issues in human genetics. 	12 Classes 02 + Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
DECEMBER	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 1st SEMESTER

Name of Teacher: Mrs. Preeti Deshmukh
 Course Type: Theory/Practical (Both)

Course Title: PAPER –IV
 (TOOLS & TECHNIQUES
 IN BIOLOGY)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1	<ul style="list-style-type: none"> • Principles and Application of : - Ultracentrifugation • Electrophoresis • Chromatography (various types) • Colorimetry and spectrophotometry • Flow cytometry. 	08	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit – 2, Unit-3	Principles and Application of : - <ul style="list-style-type: none"> • Light Microscopy and micrometry • Phase Contrast microscopy • Interference microscopy • Fluorescence microscopy • Transmission Electron microscopy. • Scanning Electron microscopy. Unit-3 <ul style="list-style-type: none"> • ELISA • PCR • Biological assays-in vivo and invitro • Principles of cytological and cytochemical techniques 	15+ 05 extra classes	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

OCTOBER	Unit – 3, Unit –4	<ul style="list-style-type: none"> • Fixation: chemical basis of fixation by formaldehyde, glutaraldehyde, chromium salts, mercury salts, osmium salts, alcohol and acetone • Chemical basis of staining of carbohydrate, protein lipids and nucleic acids. <p>Principle and techniques of Nucleic acid hybridization</p> <ul style="list-style-type: none"> • Sequencing of proteins and nucleic acids 	15	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
NOVEMBER	Unit –4	<ul style="list-style-type: none"> • Cryopreservation • Chromosomal isolation and preparation of Cladogram • Separation of DNA from animal/human sample 	08 classes + 02 extra classes 02 + Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
DECEMBER	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 2nd SEMESTER

Name of Teacher: Dr. Shubhi Mishra &
 Mr. Gokul Ram
 Verma

Course Title: PAPER –I
 (MOLECULAR CELL BIOLOGY
 AND BIOTECHNOLOGY)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	<ul style="list-style-type: none"> • DNA replication-Enzymes of DNA replication, Mechanism of DNA replication, Regulation of DNA replication. • DNA damage and repair, causes consequences of DNA damage • Mutation- Mutagen, molecular basis of mutation & types of mutation. • DNA repair- Direct, Excision, Mismatch, Recombination and SOS repair. 	22	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
FEBRUARY	Unit – 2 & Unit-3	Unit-2 <ul style="list-style-type: none"> • Transcription- RNA polymerase, prokaryotic and eukaryotic mechanism, post transcriptional modification • Translation- Process of translation, regulation and post translation modification • DNA recombination-types and models of homologous recombination, biological importance of recombination Unit-3 Maintenance of DNA sequence role of methylation, phosphorylation, acetylation and deacetylation. cDNA library- Mechanism and applications	21	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

		<ul style="list-style-type: none"> • Molecular markers- RAPD, RFLP, AFLP, SSR etc. 		
MARCH	Unit-3	Unit-3 <ul style="list-style-type: none"> • Genome sequencing- techniques and applications, human genome projects, ethical, legal and social issues . Gene therapy – gene delivery, gene replacement, augmentation and application. Unit-4 <ul style="list-style-type: none"> • Application of molecular biology in health sectors. • Application of molecular biology in agricultural sector 	20	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
APRIL	Unit –4	<ul style="list-style-type: none"> • Application of molecular biology in environment • Embryonic stem cell technology and its application 	08 Classes + 05 Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & Semester Examination, 2023 	Lab Course I- 15/05/2023 Lab Course II- 09/05/2023	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 2nd SEMESTER

Name of Teacher: Mr. D. K. Bharadwaj
 & Mrs. Savita Paikra

Course Title: PAPER –II
 (GENERAL PHYSIOLOGY
 & ENDOCRINOLOGY)

Course Type: Theory/Practical (Both)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	Digestion and Metabolism <ul style="list-style-type: none"> • General organization of alimentary canal • Mechanism of digestion • Mechanism of absorption Gas Exchange and Acid-base Balance <ul style="list-style-type: none"> • Oxygen and Carbon dioxide transport in blood • Structure and Significance haemoglobin • Regulation of body pH Thermoregulation and Cold Tolerance	21	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
FEBRUARY	Unit – 1 Unit-2	Unit – 1 Heat balance and exchange Endotherms Vs Ectotherms Torpor, hibernation and aestivation Unit-2 Muscle Function and Movement <ul style="list-style-type: none"> • Anatomy of muscle • Mechanism of muscle contraction • Regulation of muscle contraction Nervous System • Neurons and membrane excitation • Resting Membrane & Action Potential Nerve Impulse 	23	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

MARCH	Unit – 3	<ul style="list-style-type: none"> • Synapses and neurotransmitters • Synaptic transmission Sensory Transduction • Auditory receptors • Chemoreceptor: taste and smell • Vision and Photoreception – Photo Chemistry of vision <p>Endocrinology</p> <ul style="list-style-type: none"> • Structure and functions of endocrine glands (Pituitary, pineal, pancreas, adrenal, thyroid etc.) • Some New Hormones : Ghrelin, Leptin, Amylin, Renin, ANF. Biosynthesis of hormones (thyroid and gonads) <p>Unit –4 Hormones and Reproduction -Pregnancy, Parturition, Lactation</p> <p>Hormonal Control - Estrous Cycle, menstrual cycle, Menarche Puberty Menopause</p>	24	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
APRIL	Unit –4	<p>Mechanism of Hormone action</p> <ul style="list-style-type: none"> • Hormone receptors • Endocrine disruptors • Hormones & Homeostasis 	08 Classes + 05 Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	<p>Lab Course I- 15/05/2023 Lab Course II- 09/05/2023</p>	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 2nd SEMESTER

Name of Teacher: Mr. Gokul Ram Verma

Course Title: PAPER –III

Course Type: Theory/Practical (Both)

(DEVELOPMENT
BIOLOGY)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	Oogenesis <ul style="list-style-type: none"> • Differentiation and growth of oocytes. • Organization of egg cytoplasm and egg cortex. • Vitellogenesis • Spermatogenesis • Differentiation and ultra-structure of sperm • Spermatocytogenesis Spermiation	22	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
FEBRUARY	Unit – 2	Fertilization <ul style="list-style-type: none"> • Biological role of fertilization • Basic requirements of fertilization. • Activation of egg metabolism Capacitation Biochemistry of fertilization <ul style="list-style-type: none"> • Cleavage Characteristics and mechanisms of cleavage, Egg types	23	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

MARCH	Unit – 3	Formative movements <ul style="list-style-type: none"> • Fate maps - Organogenesis • Utility and comparative topographical relationship of the Presumptive areas in early embryos of- Amphioxus, Fishes, Amphibian and Birds • Organogenesis of eye, heart and brain Unit –4 Differentiation <ul style="list-style-type: none"> • Cell and tissue interactions in development • Primary embryonic induction • Competence 	24	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
APRIL	Unit –4	<ul style="list-style-type: none"> • Concept of organizer • Metamorphosis • Teratology 	08 Classes + 04 Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 15/05/2023 Lab Course II- 09/05/2023	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 2nd SEMESTER

Name of Teacher: Dr. Shubhi Mishra

Course Title: PAPER –IV

Course Type: Theory/Practical (Both)

(QUANTITATIVE BIOLOGY
AND COMPUTER
APPLICATION)

MONTH	TITLE UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	Introduction to digital computer and application <ul style="list-style-type: none"> • Basic knowledge of hardware and software • CPU (Central Processing Unit) • Input and Output devices • Auxiliary storage system • Operating system and Binary number system 	10+05 extra classes	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
FEBRUARY	Unit-2	Computer application <ul style="list-style-type: none"> • Introduction to MS Office • Word • Excel • Power point • Computer application in biostatistics • Simple computation and elementary knowledge of flow chart. 	17	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

MARCH	Unit – 3	Unit – 3 <ul style="list-style-type: none"> • Organization of data • Presentation of data • Measures of central tendency • Measures of dispersion Unit-4 Tests of significance <ul style="list-style-type: none"> • Chi-square test • Student's t-test • Analysis of Variance 	22	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test & Notes
APRIL	Unit –4	<ul style="list-style-type: none"> • Regression • Correlation • Probability 	08 Classes 04 + Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 15/05/2023 Lab Course II- 09/05/2023	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 3rd SEMESTER

Name of Teacher: Mr. D. K. Bharadwaj

Course Title: PAPER –I

Course Type: Theory/Practical (Both)

(COMPARATIVE
ANATOMY OF
VERTEBRATES)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1	<ul style="list-style-type: none"> • Origin of vertebrates • Origin of fish & Amphibian. • Origin of reptiles, Birds and Mammals. • Classification of Vertebrates and specialty of respective classes • Amphibians, Gymnophiona, Neotony, Parental case • Reptiles – Extinct reptiles 	08	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit-1 Unit – 2	<ul style="list-style-type: none"> • Birds – Palate in Birds • Mammals. – New world and old-world Monkeys Unit-2 Comparative studies of Integument system in vertebrates <ul style="list-style-type: none"> • Comparative study of derivatives of integuments in vertebrates • Skeletal system in vertebrates. • Comparative study of Jaw suspensorium, • Comparative study of Limbs and Girdles in vertebrates 	23	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

OCTOBER	Unit – 3 & Unit-4	<ul style="list-style-type: none"> Comparative study of Respiratory system among vertebrates. Comparative study of respiratory pigments among vertebrates Comparative study of heart in vertebrates Comparative study of Aortic arch in vertebrates. Unit-4 <ul style="list-style-type: none"> Comparative studies of digestive system in vertebrates Comparative study of brain among vertebrates Comparative study of sense organs among vertebrates. 	16	<ul style="list-style-type: none"> Use of ICT Chalk and talk method Problem solving Group discussion Test Notes
NOVEMBER	Unit-4	<ul style="list-style-type: none"> Comparative study of urinogenital system among vertebrates 	08 Classes + 04 + Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	<ul style="list-style-type: none"> Use of ICT Chalk and talk method Problem solving Group discussion Test Notes
DECEMBER	-	<ul style="list-style-type: none"> Preparation Leave Practical Examination & Semester Examination, 2023 	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 3rd SEMESTER

Name of Teacher: Mrs. Preeti Deshmukh

Course Title: PAPER –II

(ANIMAL BEHAVIOUR)

Course Type: Theory/Practical (Both)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1	Ethology <ul style="list-style-type: none"> • Historical perspectives of ethology • Behavioural patterns • Innate behaviour • Biological rhythms <ul style="list-style-type: none"> • Types of biological rhythm • Biological clock 	08	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit – 2	Communications <ul style="list-style-type: none"> • Auditory • Visual • Chemical Learning and Memory <ul style="list-style-type: none"> • Conditioning • Habituation • Reasoning • Reproductive behaviour. 	20	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
OCTOBER	Unit – 3	Orientation <ul style="list-style-type: none"> • Echolocation in bats • Bird migration and navigation. • Fish migration. • Neural and hormonal control of behaviour 	12	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

NOVEMBER	Unit-4	<ul style="list-style-type: none"> • Hormonal effect on behavioural patterns. • Social behaviour • Social organization in insects and primates 	08 Classes 04 + Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
DECEMBER	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 3rd SEMESTER

Name of Teacher: Ms. Monika Verma

Course Title: PAPER –III

Course Type: Theory/Practical (Both)

(ENVIRONMENTAL
PHYSIOLOGY AND
POPULATION ECOLOGY)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1 & Unit-2	Population dynamics: <ul style="list-style-type: none"> • Demography, life table, reproductive rates, reproductive values • Population growth, exponential, non-overlapping • Stochastic and time lag models of population growth • Population density • Population evolution • Community dynamics: Characteristics, development and classification Unit-2 <ul style="list-style-type: none"> • Terrestrial Adaptation in vertebrates 	20	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit – 2 & Unit-3	Aquatic adaptation in vertebrates <ul style="list-style-type: none"> • Aerial adaptation in vertebrates Cave adaptations in vertebrates Unit-3 Stress Physiology <ul style="list-style-type: none"> • Basic concepts of environmental stress and strain, Concept of elastic and plastic strain. • Stress avoidance, stress tolerance and stress resistance. 	15	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

OCTOBER	Unit-3 & Unit –4	Unit-3 Acclimatization, acclimation and adaptation. <ul style="list-style-type: none"> • Endothermic and physiological mechanism of regulation of body temperature. Unit-4 Stress physiology in different conditions <ul style="list-style-type: none"> • Osmoregulation in aqueous and terrestrial habitats. 	15	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
NOVEMBER	Unit –4	<ul style="list-style-type: none"> • Physiological response to oxygen deficient stress. • Physiological response to body exercise. • Effect of meditation and yoga 	08 Classes + 04 + Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
DECEMBER	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 3rd SEMESTER

Name of Teacher: Ms. Monika Verma

Course Title: PAPER –IV

Course Type: Theory/Practical (Both)

(IMMUNOLOGY AND
PARASITISM)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
AUGUST	Unit – 1 & Unit-2	<ul style="list-style-type: none"> • Cells and organs of immune system • Antigen and antibody structure • Antigen-Antibody interaction Monoclonal antibody • Primary and Secondary lymphoid organs Unit-2 <ul style="list-style-type: none"> • B-cell generation, activation and differentiation T-cell maturation, activation and differentiation 	12	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
SEPTEMBER	Unit – 2 & Unit – 3	T-cell receptors Complement system <ul style="list-style-type: none"> • Cytokines Unit-3 <ul style="list-style-type: none"> • Major histocompatibility organ • Cell mediated cytotoxic response Hypersensitivity reaction	15	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

OCTOBER	Unit-3 Unit –4	Autoimmune diseases. Transplantation immunology Unit-4 Vaccine development <ul style="list-style-type: none"> • Immune response in cancer, AIDS, SARS-Cov2 • Immune response to helminth parasite infection • Immune response to protozoan parasite infection 	15	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
NOVEMBER	Unit –4	<ul style="list-style-type: none"> • Immune response to bacterial infection • Immune response to viral infection 	08 Classes 05 + Remedial Classes, Internal Examination from 24-11-2022 to 30/11/2022	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
DECEMBER	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 03/12/2022 Lab Course II- 09/12/2022	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 4th SEMESTER

Name of Teacher: Dr. Shubhi Mishra

Course Title: PAPER –I
(BIOCHEMISTRY)

Course Type: Theory/Practical (Both)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	<ul style="list-style-type: none"> • Amino acids-Structure and classification • Structure of proteins • Biosynthesis of amino acids • Catabolism of protein 	10+ 5 extra classes	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
FEBRUARY	Unit – 2 & Unit-3	<ul style="list-style-type: none"> • Structure & classification of carbohydrate • Metabolism of carbohydrate • Structure & classification of lipid • Biosynthesis of fatty acid Unit-3 Vitamins • Water-and Fat-soluble vitamins, Chemistry, occurrence and physiological role	12+ 6 extra classes	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MARCH	Unit-3 & Unit-4	<ul style="list-style-type: none"> • . Enzymes Classification and nomenclature. Mechanism of enzyme action • Kinetics of enzymes • Enzyme immobilization Unit-4 • Vitamins- Structure and Classification • Metabolism of nucleic acid	20	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

APRIL	Unit –4	<ul style="list-style-type: none"> • Hormonal regulation of carbohydrate metabolism • Hormonal regulation of protein metabolism Hormonal regulation of lipid metabolism 	08 classes 04 + Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 15/05/2023 Lab Course II- 09/05/2023	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 4th SEMESTER

Name of Teacher: Shri. D.K. Bharadwaj

Course Title: PAPER –II
 (NEUROPHYSIOLOGY)

Course Type: Theory/Practical (Both)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	<ul style="list-style-type: none"> • Histogenesis and types of nerve cells • Histological structure of nerves system • Physiological properties of nerve fiber • Synapse and synaptic transmission 	22	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
FEBRUARY	Unit-2	<ul style="list-style-type: none"> • Spinal cord – arrangement of grey and white matter • The spinal nerves • The tract- ascending tract • The tract- descending tract 	21	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test Notes
MARCH	Unit-3	Cerebrum <ul style="list-style-type: none"> • Brain stem – mid brain, pons varolii, medulla oblongata • Cerebellum • Thalamus • Autonomic nervous system; sympathetic and para-sympathetic nervous system with special comparison to hormonal mechanism of transmission through autonomic nervous system 	21	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes

APRIL	Unit-4	<ul style="list-style-type: none"> • Reflex action; verities, characteristics, unconditional reflex, electrophysiology of spinal reflexes • Sensation • Electroencephalography and its physiological basis. 	08 04+ Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & • Semester Examination, 2023 	Lab Course I- 15/05/2023 Lab Course II- 09/05/2023	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 4th SEMESTER

Name of Teacher: Mr. Gokul Ram Verma

Course Title: PAPER –III
 (ICTHYOLOGY (FISH)
 STRUCTURE AND
 FUNCTION)

Course Type: Theory/Practical (Both)

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	<ul style="list-style-type: none"> • Origin and evolution of fishes • Classification of fishes as proposed by Berg • Fish integument • Locomotion • Alimentary canal and digestion 	22	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test Notes
FEBRUARY	Unit – 2	<ul style="list-style-type: none"> • Accessory respiratory organs • Air bladder and its functions • Weberian ossicles their homologies and functions • Excretion and osmoregulation Acoustico-lateral line system 	23	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MARCH	Unit – 3	<ul style="list-style-type: none"> • Luminous organs • Colouration in fishes • Sound producing organs • Deep sea adaptations • Hill stream adaptations <p>Unit-4</p> <ul style="list-style-type: none"> • Migration in fishes Sexual cycle and fecundity • Parental care in fishes • Early development and hatching 	24	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test Notes

APRIL	Unit-4	<ul style="list-style-type: none"> • Poisonous and venomous fishes. 	05 + 05 Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	<ul style="list-style-type: none"> • Preparation Leave • Practical Examination & Semester Examination, 2023 	Lab Course I- 15/05/2023 Lab Course II- 09/05/2023	

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GOVT. C.L.C COLLEGE PATAN, DIST. – DURG
2022-23
DEPARTMENT OF ZOOLOGY

Name of Department: Zoology

CLASS: M.Sc. 4th SEMESTER

Name of Teacher: Mrs. Savita Paikra

Course Title: PAPER –IV (Group II)
(OPTIONAL)

Course Type: Theory/Practical (Both)

(PISCI CULTURE AND ECONOMIC
IMPORTANCE OF FISHES (ICTHYOLOGY))

MONTH	TITLE OF UNIT	TOPIC OF LECTURE	NO. OF LECTURES	METHODS OF DELIVERY
JANUARY	Unit – 1	Collection of fish seed from natural resources and transportation of fish seed. • Breeding in fish, Bundh breeding and Induced breeding. • Types of ponds required for fresh water fish culture farms. • Management of fish farm. • Physiochemical factors of freshwater for fish farming.	21	■ Use of ICT ■ Chalk and talk method ■ Problem solving ■ Group discussion ■ Test ■ Notes
FEBRUARY	Unit – 2	• Composite fish culture • Prawn culture and pearl industries in India. Fisheries resources of C.G. Riverine fisheries. Unit-3 Costal fisheries in India • Offshore and deep sea fishery's in India • Role of fisheries in rural development	23	■ Use of ICT ■ Chalk and talk method ■ Problem solving ■ Group discussion ■ Test ■ Notes

MARCH	Unit – 3 & Unit-4	<ul style="list-style-type: none"> • Sewage fed fisheries • Methods of fish preservation • Marketing of fish in India. • Economic importance and by product of fishes 	24	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
APRIL	Unit – 4	<ul style="list-style-type: none"> • Fish disease, 	05 + 05 Remedial Classes, Internal Examination from 17-04-2023 to 24/04/2023	<ul style="list-style-type: none"> ▪ Use of ICT ▪ Chalk and talk method ▪ Problem solving ▪ Group discussion ▪ Test ▪ Notes
MAY	-	Practical Examination & Semester Examination, 2023	Lab Course I- 15/05/2023 Lab Course II- 09/05/2023	

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