ZOOLOGY

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class :B.Sc **Section:** Zoology

Course/Paper: I Animal Diversity–Invertebrates

Unit: IAnimal Diversity–Invertebrates

No. of Hours Allotted: 15

Topics to be covered	No. of Hours
Brief historyof Invertebrates	1
Kingdom Animalia	2
Brief history of Invertebrates	1
Protozoa General characters	1
Classification uptoclasseswith examples	1
Type study -Elphidium	1
Life cycleof Plasmodium.	1
Locomotion, Reproductionand Diseases	2
PoriferaGeneral characters	1
PoriferaClassification of Poriferauptoclasseswith examples	1
Type study -Sycon	1
Sycon internal structure	1
Canal system in spongesand Spicules	1
	15hrs

Name of the Teacher: Dr. Apka. Nageswara Rao Head, Department of

ZoologySignature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : M.Sc **Section:** Previous

Course/PaperII: Animal Physiology

Unit I: Digestion-Respiration-Circulation **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Digestion in ruminants-cellulose digestion	1
Digestion in non-ruminants	1
Absorption in mammals-small and large intestine	1
Events of post absorptive states and their regulation-endocrine and neural	2
Respiration-cascade of oxygen transport to tissues at high altitude	1
Adaptation to diving-respiratory and circulatory modifications	1
Responses to oxygen rich environment –oxygen toxicity	1
Responses to co2 rich environment -hypercapnea	1
Control of respiration	1
Buffering mechanisms by body fluids	1
Cardiac cycle	1
Principles of Hemodynamics	1
Blood coagulation mechanism-extrinsic and intrinsic pathways-	1
Hematoma formation –anticoagulants-types	**1**

Name of the Teacher: Dr.B.Jyothi Head, Department of Zoology
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : M Sc **Section:** Previous

Course/Paper II: Animal Physiology

Unit IV: Endocrinology, Bioluminescence & Stress Physiology No. of Hours Allotted: 15

Topics to be covered	No. of Hours
Structure and Functions of Endocrine Glands of Invertebrates	2
Structure and Functions of Endocrine Glands of Vertebrates	7
Mechanism of action of Peptide Hormones	1
Mechanism of action of Steroid Hormones	1
Bioluminescent Organisms – Neural Control	1
Biochemistry and Significance of Bioluminescence	1
Stress – Resistance to Stress	1
Functions of Hormones and sympathetic nervous system in stress	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : M Sc **Section:** Final

Course/Paper III: Comparative Animal Physiology

Unit IV: Deranged Metabolism and Disorders **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Metabolic Disorders - Introduction	1
Beneficial and Harmful Effects of Colonic Bacteria	2
Lactose Intolerance	1
GERD	1
Liver Cirrhosis and its causative agents	2
Fatty Liver	1
COPD – Asthma and Sleep Apnea	2
Electrolyte Imbalances – Acidosis and Alkalosis	2
Dialysis	1
Heat Stroke	1
Thirst and its physiological mechanisms	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class : M Sc **Section:** Final

Course/Paper III: Comparative Animal Physiology

Unit III: **No. of Hours Allotted**: !5

Topics to be covered	No. of Hours
Major Types of Body Fluids and Fluid Compartments – ECF, ICF and Other Fluids	2
Classification of Circulatory Mechanisms – Open and Closed	1
Lymphatic System	1
Types of Vertebrate Hearts – Chambered, Tubular, Pulsating Vessels and Accessory ampullar Hearts	2
Heart Rate – Chemical and Nervous Control – Tachycardia and Bradycardia	2
Cardiac Output – factors affecting output	1
Invertebrate Hearts – Annelids and Scorpion	2
Insect and Crustacean Heart	2
Mollusca and Tunicate Heart	1
Regulation of Vertebrate Circulatory System	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

Class : B Sc **Section:** Final

Course/Paper V: Animal Physiology

Unit II: Physiology of Circulation and Excretion **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Circulatory System - Introduction	1
Open and Closed type of Circulatory System	1
Structure of Mammalian Heart and its Working Mechanism	1
Heartbeat - Pacemakers	1
Cardiac Cycle	1
Myogenic and Neurogenic Heart	1
Regulation of Heart Rate – Tachycardia and Bradycardia	1
Excretion – Definition and Significance	1
Different Forms of Nitrogenous Waste Materials	1
Classification of Animals on the basis of Excreted Products	1
Formation of Ammonia and Uric Acid	1
Formation of Urea – Urea Cycle	1
Mammalian Excretory System – Structure and Function of Kidney and Nephron	2
Countercurrent Mechanism of Urine Formation	**1**

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : M Sc **Section:** Final

Course/Paper IV: Applied Toxicology

Unit III: Systemic Toxicology **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Toxicology - Introduction	1
Basics of Organ Toxicity – Target Organs	1
Organ Selectivity and Specificity	2
Hepatotoxicity – Susceptibility of the Liver - Hepatotoxicants	2
Types of Liver injury and Biochemical Mechanisms	1
Pulmonary Toxicity – Lung Injury – systemic lung toxins	2
Lung Pathology	1
Renal Toxicity – Susceptibility of kidney to toxicants	1
Chemical induced renal injury	1
Neuro toxicity – Effect of toxic agents on neurons	1
Ion channel neurotoxins	1
Lesions of neural Tissue	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

Class : B.Sc.(III) **Section:** Zoology

Course/Paper: Clinical science and pathology

Unit: III Immunology **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction - Immunology	1
Innate immunity	1
Acquired immunity	1
Antigens and antibodies	2
Immunoglobulins- Classification	1
Immunoglobulins - Significance	1
Complement system	1
Lymphatic system and lymphoid organs - Thymus and lymphnodes	1
T-Cells, B-Cells & macrophages	1
Humoral immune response	1
Cell mediated immune response	1
Types of hypersensitivity	1
Vaccines	1
Vaccines - vaccination and schedule	1

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester VI)

Class : B.Sc.(III)

Section: Zoology

Course/Paper: Vermiculture and Vermicompostiong

Unit: 1 **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction to Vermiculture	2
Introduction to Vermicomposting	2
Difference between Vermiculture and Vermicomposting	1
Scope of vermin technology	1
Earthworm Diversity	2
Ecological groups of earthworms	1
Biology of composting earthworms	1
Biology of Eoisenafoetida	1
Biology of Eudriluseugeniae	1
Nutritive value of vermin compost	1
Storing of vermin compost	1
Packing of vermin compost	1

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

Class : M.Sc.FYIC III **Section:** Zoology

Course/Paper: Applied Zoology

Unit: II & III - Aquaculture and Clinical Science **No.of Hours Allotted**: 21

Topics to be covered	No. of Hours
Aquaculture systems	3
Induced breeding	2
Shrimp and prawn culture	2
Preservation and processing - Freezing, solar drying and Canning	1
Preservation and processing - salting, smoking	1
Fish by-product - Cod liver oil	1
Immunity introduction	1
Innate immunity	2
Acquired immunity	2
Antigens - Haptens and epitopes their properties	2
Structure of immunoglobulins	2
Biological properties of IgG	2

Name of the Teacher: Dr. D PriyaKumari Head,
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester VI)

Class : M.Sc. FYIC III **Section:** Zoology

Course/Paper:VIII - Immunology, Human parasitology and Animal biotechnology

Unit:I - Immunolgy and human parasitology **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction to Hypersensitivity	1
Immediate Hypersensitivity	2
Delayed Hypersensitivity	2
Blood parasite - Plasmodium structure	1
Plasmodium clinical significance	1
Structure and clinical significance of Entamoeba	1
Structure and clinical significance of Giardia	1
Structure and clinical significance ofTaenia	1
Structure and clinical significance of Ancylostoma	1
Structure and clinical significance of Enterobius	1
Animal cell lines	1
Stem cell culture techniques	2

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester III)

Class : M.Sc.(F) **Section:** Zoology

Course/Paper: Research Methodology

Unit:III: Use of inferential statistical tools in research **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Use of different statistical estimations depending on the type of data,	2
Hypothesis testing, and test of significance.	2
Student's 't' test – applications and importance in research data	2
Application of Chi-square test for the experimental data	2
Use of ANOVA – One-way ANOVA for the research data analysis	1
Use of ANOVA – Two-way ANOVA for the research data analysis	2
Application of correlation analysis for the data.	2
Application of regression analysis for the data.	2

Name of the Teacher: Dr. D.PriyaKumari
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Immunology

Unit:III Hypersensitivity reactions and autoimmune diseases **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Hypersensitivity - Introduction	1
Hypersensitivity - classification, Type I reaction	3
Hypersensitivity - Type II reaction	2
Hypersensitivity - Type III reaction	1
Hypersensitivity - Type IV reaction	1
Organ specific autoimmune diseases - Grave's disease	2
Organ specific autoimmune diseases - Type -I Diabetes	1
Systemic autoimmune diseases - SLE	1
Systemic autoimmune diseases - RA	1
Genetic factors, pathogenesis and treatment of autoimmune diseases	2

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Immunology

Unit:IVTransplantation and Tumour Immunology**No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Transplantation – Introduction	2
Transplantation – Barriers to transplantation.	1
Genetic predisposition for graft rejection, prevention of rejection.	2
Immunity to infection – viruses, nature of interaction; immunopathological considerations	1
Immunity to infection– bacteria, fungi, parasites, nature of interaction; immunopathological considerations	1
Immunity to infection– fungi parasites, nature of interaction; immunopathological considerations	2
Immunity to infection– Parasites, nature of interaction; immunopathological considerations	1
Tumor immunology – Immunity to tumors, tumor specific antigens..	3
Immunosurveillance	1

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester IV)

Class : M.Sc.(F) **Section:** Zoology

Course/Paper: Fish Biology

Unit: II - Fishes habits and habitats **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Buoyancy in Fishes	1
Dynamic lift and static lift	1
Swim bladder structure and function	2
Locomotion - Myotomal muscles	1
Caudal fin oscillation mechanism	1
Feeding Mechanisms - Food habits and feeding	1
Fish as predator and prey	1
Food chains and food webs	2
Osmoregulation and ion balance - Fresh water, brakish water and marine telosts	1
Kidney and salt balance	1
Fish migration	1
Migratory mechanisms	1
Mating and parental care	1

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester IV)

Class : M.Sc.(F) **Section:** Zoology

Course/Paper: P-I - Animal Biotechnology

Unit:I - Introduction and Animal improvement **No.of Hours Allotted**:15

Topics to be covered	No. of Hours
Introduction to biotechnology - Scope	1
Introduction to biotechnology - Importance and its applications	2
Mammalian reproductive systems	3
Gametogenesis	1
In vitro fertilization and ET	2
ICSI and sperm sexing	1
Cryopreservation and cryoprotection	1
Gamate banking	1
Biotechnology - Improvement of live stock herds	1
Biotechnology - Breeding of selected traits	2

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper:IV: Evolution and Functional Anatomy of Vertebrates [EFAV]

Unit:III – Functional Anatomy of Vertebrates – from fishes to mammals

No. of Hours Allotted: 15

Topics to be covered	No. of Hours
Integumentary system - Introduction	1
Integumentary system - Integument and its derivatives	1
Skeletal system ¬– Cranial and Post-Cranial - axial skeletal system	2
Skeletal system ¬– Cranial and Post-Cranial - appendicular skeletal system	2
Nervous system – Brain, spinal cord	1
Nervous system – Peripheral nerves; sense organs	2
Respiratory system	1
Circulatory system	1
Digestive system	1
Excretory system	1
Reproductive system – comparison of male reproductive systems from fishes to mammals	1
Reproductive system – comparison of female reproductive systems from fishes to mammals	1

Name of the Teacher: Dr. D.PriyaKumari
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)

Class : B.Sc. I year **Section:** Zoology

Course/Paper: II (Ecology, Zoogeography and Animal behavior)

Unit: I **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction of Ecology	1
Types of ecosystem Aquatic and Terrestrial	2
Biogeochemical cycles Introduction	1
Nitrogen cycle	1
Carbon cycle	1
Phosphorous and water cycles	1
Energy flow in Ecosystem	1
Food chain	1
Ecological pyramids	1
Animal association Introduction	1
Mutualism, Parasitism	1
Competition and predation	1

Name of the Teacher: Dr. G. Shailaja
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class: B.Sc. II year **Section:** Zoology

Course/Paper: IV

Unit: III. **No.of Hours Allotted**: 18

Topics to be covered	No. of Hours
Introduction of Biogeochemical cycles	2
Gaseous cycles - Nitrogen and Carbon cycle	2
Sedimentary cycle - Phosphorus cycle	2
Definition of community and introduction	1
Habitat and ecological niche	1
Community interactions - Competition and predation	2
Community interactions - Mutualism	2
Community interactions - Commensalism	1
Community interactions - Parasitism	2
Ecological succession - Primary & secondary seral changes	2
Climax community with examples	1

Name of the Teacher: Dr. G. Shailaja
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : B.Sc (II) **Section:** Zoology

Course/Paper: III - Biology of Chordates

Unit: III **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
General Characters of class Reptilia	1
Classification of Reptiles upto order level	2
Type study - Calotes Morphology of Calotes	1
Digestive system to Calotes	1
Respiratory system of Calotes	1
Circulatory system of Calotes	3
Nervous system of Calotes	1
Urinogenital system of Calotes	2
General characters of Aves	1
Classification of Aves upto order level	2

Name of the Teacher: Dr. G. Shailaja
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Structural Biology

Unit:I **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Biomolecules and their significance - Introduction, Carbhohydrates	2
Biomolecules and their significance - Proteins and Amino acids	1
Biomolecules and their significance - Lipids and Nucleic acids	1
Chemistry and structure of Carbhohydrates - Mono, oligo and polysaccharides	1
Chemistry and structure of Carbhohydrates - Deoxy sugars, amino sugars and glycosides	1
Classification and structure of proteins -Primary & Secondary	2
Classification and structure of proteins - Tertiary and quartarnary	1
Classification and structure of proteins -Fatty acids, triglycerides	1
Classification and structure of proteins - Phspholipds, cerebrosides and steroids	1
Structure of DNA and DNA polymorphism	2
Structure of RNA, types of RNA	2

Name of the Teacher: Dr. G. Shailaja
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Structural Biology

Unit:II - Enzymes and metabolism **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Classification nomenclature and properties of enzymes - Catalysis and energy of activation	1
Classification nomenclature and properties of enzymes - Enzyme kinetics	2
Classification nomenclature and properties of enzymes - Michaelif Menten constant	1
Classification nomenclature and properties of enzymes - Km value and LB plot	1
Classification nomenclature and properties of enzymes - mechanism of enzyme action and regulation of enzyme activity	1
Metabolism of carbhohydrates-glycolysis	1
Metabolism of carbhohydrates - TCA Cycle, Gluconeogenesis	1
Metabolism of carbhohydrates- Biological Oxidation, role of respiratory chain in energy capture.	2
Metabolism of carbhohydrates- ATP synthesis	1
Catabolism of amino acids - Transamination, deamination and Dcarboxilation	1
Oxidation and biosynthesis of fatty acids	1
Metabolic disorders of different biomolecules- Carbohydrates	1
Metabolic disorders of different biomolecules- Proteins, Lipids	1

Name of the Teacher: Dr. G. Shailaja
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester-I)

Class :M.Sc.(P) **Section:** Zoology

Course/Paper: III (Immunology)

Unit: II (Antigen-Antibody Nature and Complement System)
No.of Hours Allotted: 15

Topics to be covered	No. of Hours
Antigens nature, epitope, haptens, antigen presenting cells, adjuvants and antigenicity	2
Immunoglobulins - Structure	1
Function and classification of antibodies	2
Monoclonal antibodies and its applications	1
Antigen and antibody reaction	1
Immunological techniques	2
Complement system - Components of complement system	1
Complement system -Pathways	1
Biological consequences of complement activation and significance	1
Major histocompatibility complex - Structure and function, restriction	2
Genetic control of immune responses	1

Name of the Teacher: Dr. G. Shailaja
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester-II)

Class : M.Sc. **Section:** Zoology

Course/Paper: II (Animal Physiology)

Unit:II **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Osmoregulation -Introduction	1
Osmoregulatory problems in aquatic and terrestrial animals	3
Hormonal control of Osmoregulation	1
Excretion- Urine formation	1
Counter current effect mechanism	2
Hormonal control	1
Detoxification of nitrogen products	2
Temperature regulation in poikilotherms, Homeotherms and Heterotherms	2
Mechanism of survival (hibernation and aestivation)	1
Cold death and Heat death	1

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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester-II)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: III - Molecular Genetics and Developmental biology

Unit:I Introduction to Genetics **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Mendalism and mendilian inheritance	1
Modifications of medilian inheritance	2
Linkage studies	1
Crossing over	1
Extra chromosomal inheritance	1
Multiple alleles and blood group antigens	1
Chromosome structure and identification	1
Chromosome structure - Karyotype	1
Genetic disorders - Chromosomal disorders	1
Genetic disorders - Inborn errors of metabolism	2
Genetic disorders - Polygenic and environmental disorders	1
Bacterial genetics -Transformation, transduction and conjugation	2
Bacterial genetics - Viral lytic and lysogenic cycle	1

Name of the Teacher: Dr. G. Shailaja
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : M. Sc Previous **Section:** Zoology

Course/Paper: IV - (Taxonomy, Systematics and Functional Anatomy of Invertebrates)

Unit: III - Annelida to Echinodermata **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
General characteristics, broad classification of phylum Annelida	1
filter feeding in polychaetes; respiration and excretion in annelids	2
General characteristics, broad classification of phylum Mollusca	1
Types of shell in different molluscan classes, respiration and excretion in molluscs	2
General characteristics, broad classification of phylum Arthropoda	1
social life in insects, respiration and excretion in arthropods	2
General characteristics, broad classification of phylum Echinodermata	1
Endoskeleton and water vascular system; autotomy and regeneration	2
Overview of reproduction	1
Development and phylogenetic significance of the larval forms of Annelida, Mollusca, Arthropoda and Echinodermata	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : M. Sc Final **Section:** Zoology

Course/Paper: III - (Medical Entomology - I)

Unit: III - Annelida to Echinodermata **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Bacterial diseases - Plague	1
Rickettsiasis, Bartonellosis	2
Viral disease – Dengue,	1
Japanese Encephalitis, Chikungunya, Zika.	2
Protozoan diseases – Leishmaniasis	1
Malaria, Trypanosomiasis	2
Helminthic diseases – Filariasis	1
Wuchereria, Brugia, Loa	2
Direct injury, Annoyance,	1
Allergies, toxins, myasis and venomous arthropods	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : B.Sc, I Semister **Section:** Zoology

Course/Paper: I - (**Animal Diversity – Invertebrates**)

Unit: III – Mollusca**, Echinodermata,** Hemichordata **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
General characters, Classification of Mollusca up to classes with examples	1
Type study - *Pila*	5
Pearl formation, Torsion and detorsion in gastropods	2
General characters Classification of Echinodermata up to classes with examples	2
Water vascular system in star fish	1
Echinoderm larvae and their significance	1
General characters Classification of Hemichordata up to classes with examples	1
Balanoglossus - Structure and affinities	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : B.Sc, III Semester **Section:** Zoology

Course/Paper: **III - (BIOLOGY OF CHORDATES)**

Unit: III Aves and Mammals **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Type study – Pigeon(*Columbia livia*): Exoskeleton, respiratory system, circulatory system and excretory system.	6
Significance of migration of birds	2
Flight adaptation in birds	2
General characters and classification of Mammalia up to order level with examples	3
Dentition in Mammals	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : M. Sc Previous **Section:** Zoology

Course/Paper: IV - (Evolution and Functional Anatomy of Vertebrates)

Unit: **II -** – Evolution of Vertebrates **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Origin and salient features of Ostracoderm, Placoderm,	1
Acanthodii, ,Sarcopterygii and Actinopterygii	2
Origin, salient features and adaptive radiation in amphibians	1
Lepospondyli and Lissamphibia	2
Origin, salient features and adaptive radiation in early reptiles	1
Mesozoic reptiles	2
Origin, salient features and adaptive radiation in birds	1
Palaeognathae and Neognathae	2
Origin, salient features and adaptive radiation in mammals	1
Prototheria and Theriiformes	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class : M. Sc Final **Section:** Zoology

Course/Paper: III (Medical Entomology - II)

Unit: IV - Chemical Control **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Classification of Insecticides	1
mode of action; Antiquity of insecticides	2
Synthetic insecticides: Organochlorides, Organophosphates.	2
Carbamates, Pyrithroids	2
Toxicity of pesticides, Insecticide appliances.	2
safety precautions	1
Repellents & attractants	2
DEET, Semiochemicals	1
Methods of insecticide applications, and	1
development of a Module for Integrated Vector Management	1
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : B.Sc, II Semister **Section:** Zoology

Course/Paper: II - (**Ecology, Zoogeography and Animal Behavior**)

Unit: III – Zoogeography **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Zoogeographical regions – Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions - their Climatic and faunal peculiarities	8
Wallace line, Discontinuous distribution	4
Continental Drift	3
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class : B.Sc, IV Semester **Section:** Zoology

Course/Paper: **III - (EMBRYOLOGY, ECOLOGY AND ZOOGEOGRAPHY)**

Unit: IV : Zoogeography & Wildlife **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Zoogeographical realms and their characteristic fauna	4
Wild life importance, National parks.	3
wild life sanctuaries, endangered species	3
Conservation strategies, project tiger,	3
biodiversity	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV-ZOO_ 304 (Sericulture)

UNIT: III – **Silkworm rearing** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Rearing House and rearing appliances	2
Environmental conditions for silkworm rearing	1
Rearing of early stages (Chawki rearing) and late stages of silk worms	3
Mounting and harvesting of silkworm cocoons	3
Silkworm diseases	3
Silkworm pests	3
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV-ZOO_ 304 (Sericulture)

UNIT: IV – **Harvesting technology** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	**No. of. Hours**
Transport of cocoons to the cocoon markets.	1
Commercial characters of cocoons, defective cocoons and price fixation	3
Reeling technology – mulberry and vanya silk rearing	4
Seed technology – Grainage, DFLs	4
By-products- types and uses	3
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc.Previous **Section:** Zoology

Course/Paper: II – ZOO_102: **Environmental and Conservation Biology [ECB]**

UNIT: II – Community Organization and Structure **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Community analysis, species diversity, ecotone concept and edge effect; interaction between environment and biota Habitat and ecological niche and niche overlap; concept of biome	4
Concepts of productivity; eutrophication of lakes; biological indicator and water quality	3
Ecosystem dynamics and management; stability and complexity of ecosystem	3
Biogeochemical cycles; inorganic pollutants and their impact SO_2, NO_2, CO, Phosphates,heavy metals (Arsenic, Lead and Mercury); radioactive nucleotides and their impact on biological system	3
Acid rain sources and its impact on biological system; greenhouse effect and ozone depletion	2
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester V)**

Class: B.Sc.III Year **Section:** Zoology

Course/Paper: VI – Elective -I **CLINICAL SCIENCE AND PATHOLOGY**

UNIT - I: **HEAMOTOLOGY** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
introduction to Heamotology	1
structure, composition and functions of blood	2
origin of blood cells(RBC,WBC,PLATELETS)	3
blood coagulation and theories of blood coagulation and anticoagulants	2
blood groups and Rh factor	2
blood transfusion and blood banking	2
Blood associated disorders- Anemia, leucopenia, leucocytosis, Leukemia and Haemophilia.	3
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

Signature:

Head, DEpartment of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc.Previous **Section:** Zoology

Course/Paper: IV –Zoo_204 Evolution and Functional Anatomy of Vertebrates

UNIT –I Evolution **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Concept of evolution and theories of evolution	2
Variation, gene mutation and chromosomal aberrations in evolution; genetic drift	3
Speciation – species concepts, categories; Modes of speciation – Allopatric, parapatricand sympatric speciation	4
Natural selection; patterns of evolution – sequential, divergent, convergent, gradual,punctuated, monophyletic, polyphyletic and paraphyletic	4
Origin and evolution of primates and human	2
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

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Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: IV –Zoo_204 Evolution and Functional Anatomy of Vertebrates

UNIT – IV Functional Anatomy of Vertebrates – Evolutionary significance

No. of Hours Allotted: 15 Hrs

Topics to be covered	No. of. Hours
Evolutionary significance of internal fertilization, neoteny and paedogenesis	3
Amniotic egg ¬– structure and its evolutionary significance	1
Basic plan of skull; Temporal fossae and their evolutionary significance; Vertebrate Jaw suspension	3
Types and evolutionary significance of axial and appendicular joints	4
Types and evolutionary significance of placenta; evolutionary significance of opposable thumb and bipedalism in primates (both non-human and human	4
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester VI)**

Class: B.Sc. III Year **Section:** Zoology
Course/Paper: VII – **ANIMAL PHYSIOLOGY, GENETICS AND EVOLUTION**

UNIT - II: **Genetics** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Mendel's laws – Laws of segregation and Independent assortment Genetic interactions – Incomplete dominance codominance epistasis.	4
Identification of DNA as the genetic material – Griffith's experiment Hershey – Chase experiment.	2
Central dogma of molecular biology – Brief account of DNA replication (Semi-conservative method) Replication fork (Continuous and discontinuous synthesis); Transcription – Brief account of initiation,elongation and termination in eukaryotes Translation Genetic code Gene regulation as exemplified by Lac Operon.	9
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

Signature:
Head, Department of Zoology:
Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV-ZOO_ 301 (Systems Biology)

UNIT: I – – Introduction to Systems Biology **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
History, concept, prospects and applications of systems biology. .	3
Molecules to Organisms – Biomolecules, cell, tissue, organ and organisms.	3
Basic concepts of systems approach to biology.	3
Basic concepts of models and modeling, model behavior, classification.	3
Basic concepts of networks; types of networks	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: I – ZOO_ 101: **structural Biology [SB]**

UNIT: I V– Functional Biology of Nucleic Acids **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
DNA replication – semi conservative, enzymology of DNA replication, replication of circular DNA, initiation, elongation and termination of replication process. Proof reading function of DNA polymerases.	4
Enzymatic synthesis of RNA.	2
Protein synthesis – Events of protein synthesis; transcription in prokaryotes and eukaryotes; post transcriptional processing.	4
Regulation of genetic code – Wobble's concept, translation in prokaryotes and eukaryotes.	3
DNA repair mechanism – High fidelity of DNA sequence – Repair of damage caused by UV light, Eukaryotes repair systems	2
Total	**15 Hours**

Name of the Teacher: Dr. Dr. C.Sanat Kumar
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previuos **Section:** Zoology

Course/Paper: III – ZOO_103: **Immunology** **[IM]**

UNIT - I: **Introduction to Immune System** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Phylogeny of Immune system –invertebrates and vertebrates	2
Immune system – Innate and adaptive immunity , humoral mediated immunity and cellmediated immunity	3
Cells involved in immune system; role of macrophages in immunity	2
The Lymphoid tissues – primary and secondary lymphoid organs, lymphatic traffic	4
Activation of B– and T– Cells; production of effectors – antibodies and cytokines	4
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester V)**

Class: B.Sc. III Year **Section:** Zoology

Course/Paper: VI Clinical science and pathology

UNIT: II **– Techniques** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
2.1. Microscopy- light, phase contrast and Electron microscopy	3
2.2. Microtomy- Fixation, section cutting and staining procedures	3
2.3. Biopsy and Autopsy of normal and affected tissues.	3
2.4. Histopathological manifestation in tissues.	1
2.5. Principles of sterilization, autoclave, microbial plating and antibiotic sensitivity tests.	2
2.6. Immunological techniques- Agglutination, precipitation, complement fixation test and ELISA	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester VI)**

Class: B.Sc. III Year **Section:** Zoology

Course/Paper: VIII Vermiculture and Vermicomposting

UNIT: II – **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Soil- physical, chemical and biological features	5
Organic waste sources- problems in traditional xcomposting, vermicomposting	5
Types of small and large scale pit method, heap method.	5
Total	15 Hours

Name of the Teacher: Dr. C.Sanat Kumar
Assistant Professor ©

Signature:

Head, Department of Zoology:

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: I –Zoo_201Tools, Techniques and Biostatistics [TTB]

UNIT II - Separation and Diagnostic Techniques **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Spectroscopic techniques – principles and applications of visible, UV, fluorescence, IR,ESR, NMR and mass spectroscopy	3
Radioisotope techniques – principles and application of Geiger-Muller counter,scintillation counter, tracer studies, autoradiography	3
Electrophysiological techniques – principles and applications of single neuron recording,patch clamp recording.	3
Imaging techniques - ECG, PET, MRI, fMRI and CAT	3
Microarray techniques – principles and applications of DNA, RNA and Protein microarray Techniques	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar
Assistant Professor ©

Signature:
Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: III –Zoo_203 Molecular Genetics and Developmental Biology [MGDB]

UNIT II – Molecular Genetics **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Introduction of DNA technology – Restriction endonucleases, methods of ligation – DNA ligases, ligation of fragment with cohesive and blunt ends.	3
Features of vectors – cosmids, plasmids and shuttle vector with one example representing each class construction and characterization of new cloning vectors	3
Applied molecular biology – DNA sequences – Maxam and Gilbert methods, Sanger's method. Application of recombinant DNA technology with reference to the example of insulin, somatostatin, and interferon. DNA fingerprinting and its application	3
Cloning strategies – Shotgun cloning, construction of gene libraries, genomic library and DNA library	3
Hybridization techniques – Southern blot, Northern blot, R-loop mapping methods, Insitu hybridization	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester IV)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: Paper - I: Animal Biotechnology

UNIT II - In vitro culture of cells and tissues **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Cell culture - Equipment and materials for cell culture technology, principle of sterile techniques and cell propagation, primary and established cell line cultures.	3
Mammalian cell lines & their characteristics.	3
Basic techniques of mammalian cell culture in vitro, disaggregating of tissue and primary culture, maintenance of cell culture, cell separation.	3
Tissue culture system – cell tissue fragment, organ and embryo cultures, merits and demerits.	3
Scaling-up of animal cell culture, cell synchronization, cell cloning, micromanipulation, cell transformation	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019(Semester I)

Class :B.Sc I year **Section:** Zoology

Course/Paper: I Animal Diversity–Invertebrates

Unit: III, Phylum –Annelida and Arthropoda No. of Hours Allotted: 15

Topics to be covered	No. of Hours
3.1. Annelida	
3.1.1.General characters	1
3.1.2. Classification of Annelida up to orders with examples	1
3.1.3.Type study-*Hirudinaria granulosa*	4
3.1.4. Evolutionary significance of coelom and coelomoducts and metamerism	1
3.2. Arthropoda	
3.2.1. General characters	1
3.2.2. Classification of Arthropoda up to orders with examples	1
3.2.3. Type study-Prawn	4
3.2.4. *Peripatus* structure and affinities, mouth parts of insects and crustacean larve	2
	15hrs

Name of the Teacher : A.Murali

Head of the Department Signature:

Teacher Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: B.Sc I year **Section:** Zoology

Course/Paper: II- Ecology Zoogeography and Animal Behavior

Unit –IV Animal Behavior **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Types of Behaviors	1
Taxes, Reflexes	2
Tropism	1
Physiology and Phylogeny of learning	1
Instinct Behavior	1
Motivated Behavior	1
Classification of Taxes	1
Reflex Actions in Animals	2
Trial and Error Learning	1
Imprinting	1
Habituation	1
Classical conditioning (Ivan Pavlov)	1
Social Behavior, Communication, Pheromones	1
	15hrs

Name of the Teacher : A.Murali

Head of the Department Signature:

Teacher Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology
Course/Paper: IV-ZOO_ 304 (Sericulture)

UNIT: I **– Introduction** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Introduction - Sericulture as an agro industry	1
Mulberry cultivation - Varieties of Mulberry, Agroclimatic conditions for Moriculture, Agricultural practices - Tilling & systems of Planting, intercultivation. Mulching, Pruning, Manuring, Harvesting and Preservation of leaves	5
Diseases of Mulberry and their management – Bacterial diseases Viral diseases Fungal diseases	4
Mineral deficiency diseases and their management	2
Insect Pests of Mulberry and their management	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previous **Section:** Zoology
Course/Paper: II – ZOO_ 102: **Environmental and Conservation Biology [ECB]**

UNIT: I – UNIT I – Basic concepts of Ecology **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Laws of limiting factor, Laws of minimum, Laws of Tolerance and Tragedy of commons	2
Micronutrients and macronutrients	2
Types of ecosystem – freshwater, marine and terrestrial	4
Population characteristics and dynamics – conceptual approach	4
Growth curves and pyramids; sigmoid curve, J curve and hyperbola; logistic equation and concepts relating to growth	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previuos **Section:** Zoology

Course/Paper: II – ZOO_ 102: **Environmental and Conservation Biology [ECB]**

UNIT - III: **Biogeography of India, Habitats and Resources** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Classical concepts of biogeography – continental drift, endemism, refugia	3
Biogeographical regions of India and their salient features	2
Classification, function and values of habitats – Freshwater wetlands, deserts, grasslandsand forests	4
Concepts of natural resources – renewable and non-renewable resources	3
Overexploitation of resources – deforestation, water table depletion and landdegradation	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: Zoo_104 Taxonomy, Systematics and Functional Anatomy of Invertebrates [TSFAI)

UNIT: IV – **Minor and Other Phyla** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
UNIT IV - Systematic position, general organization and affinities of Ctenophora and Nemertea(Rhynchoceola)	3
Systematic position, general organization and affinities of Rotifera	3
Systematic position, general organization and affinities of Bryozoa (Ectoprocta)	3
Systematic position, general organization and affinities of Onychophora and Chaetognatha	3
Systematic position, general organization and affinities of Hemichordata	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV –Zoo_402Fish biology

UNIT – I **Introduction and Diversity of Fishes** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Introduction, general characteristics evolutionary succession fossil history of fishes.	3
The early evolution of fishes Chondrichthian fishes - Sharks, Skates and Rays.	3
Characterization and classification of: Ostracoderms, placoderms, acanthodians, holocephali, elasmobranchs.	3
Characterization and classification of cyclostomes, sarcopterygii dipnoi, actinopterygii.	3
Integumentary system - basic structure of skin, dermal and epidermal pigments, fins, andscales.	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: II –Zoo_402Fish Biology

UNIT – IV **Fish biology and Embryogenesis** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Nervous system- Central nervous system, brain and peripheral nervous system.	3
Sense organs – Olfactory, taste buds, touch receptors, photoreceptors, lateral line and internalear.	3
Endocrine system – Pituitary gland, urohypophysis, adrenal gland, gonads, and thyroid gland	3
Reproductive system- Male and female reproductive organs; role of hormones.	3
Embryogenesis - Early development and post embryonic development	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester VI)**

Class: B.Sc. III Year **Section:** Zoology

Course/Paper: VII – **ANIMAL PHYSIOLOGY, GENETICS AND EVOLUTION**

UNIT - III: Genetics and Organic Evolution **No. of Hours Allotted:** 15 Hrs

Topics to be covered	**No. of. Hours**
Human karyotyping barr bodies , Lyon hypothesis and amniocentesis, chromosomal disorders-autosomal and sex chromosomes	5
Genetic basis of Evolution, Gene pool and gene frequencies, Hardy-Weinberg's Law, Force of destabilization, natural selection, genetic drift, Mutation, Isolation Migration.	8
Speciation - Allopatry sympatry	2
Total	**15 Hours**

ZOOLOGY

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class :B.Sc **Section:** Zoology

Course/Paper: I Animal Diversity–Invertebrates

Unit: IAnimal Diversity–Invertebrates **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Brief historyof Invertebrates	1
Kingdom Animalia	2
Brief history of Invertebrates	1
Protozoa General characters	1
Classification uptoclasseswith examples	1
Type study -Elphidium	1
Life cycleof Plasmodium.	1
Locomotion, Reproductionand Diseases	2
PoriferaGeneral characters	1
PoriferaClassification of Poriferauptoclasseswith examples	1
Type study -Sycon	1
Sycon internal structure	1
Canal system in spongesand Spicules	1
	15hrs

Name of the Teacher: Dr. Apka. Nageswara Rao Head, Department of

ZoologySignature: Signature

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : M.Sc **Section:** Previous

Course/PaperII: Animal Physiology

Unit I: Digestion-Respiration-Circulation **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Digestion in ruminants-cellulose digestion	1
Digestion in non-ruminants	1
Absorption in mammals-small and large intestine	1
Events of post absorptive states and their regulation-endocrine and neural	2
Respiration-cascade of oxygen transport to tissues at high altitude	1
Adaptation to diving-respiratory and circulatory modifications	1
Responses to oxygen rich environment –oxygen toxicity	1
Responses to co2 rich environment -hypercapnea	1
Control of respiration	1
Buffering mechanisms by body fluids	1
Cardiac cycle	1
Principles of Hemodynamics	1
Blood coagulation mechanism-extrinsic and intrinsic pathways-	1
Hematoma formation –anticoagulants-types	**1**

Name of the Teacher: Dr.B.Jyothi Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : M Sc **Section:** Previous

Course/Paper II: Animal Physiology

Unit IV: Endocrinology, Bioluminescence & Stress Physiology No. of Hours Allotted: 15

Topics to be covered	No. of Hours
Structure and Functions of Endocrine Glands of Invertebrates	2
Structure and Functions of Endocrine Glands of Vertebrates	7
Mechanism of action of Peptide Hormones	1
Mechanism of action of Steroid Hormones	1
Bioluminescent Organisms – Neural Control	1
Biochemistry and Significance of Bioluminescence	1
Stress – Resistance to Stress	1
Functions of Hormones and sympathetic nervous system in stress	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : M Sc **Section:** Final

Course/Paper III: Comparative Animal Physiology

Unit IV: Deranged Metabolism and Disorders **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Metabolic Disorders - Introduction	1
Beneficial and Harmful Effects of Colonic Bacteria	2
Lactose Intolerance	1
GERD	1
Liver Cirrhosis and its causative agents	2
Fatty Liver	1
COPD – Asthma and Sleep Apnea	2
Electrolyte Imbalances – Acidosis and Alkalosis	2
Dialysis	1
Heat Stroke	1
Thirst and its physiological mechanisms	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class : M Sc **Section:** Final

Course/Paper III: Comparative Animal Physiology

Unit III: **No. of Hours Allotted**: !5

Topics to be covered	No. of Hours
Major Types of Body Fluids and Fluid Compartments – ECF, ICF and Other Fluids	2
Classification of Circulatory Mechanisms – Open and Closed	1
Lymphatic System	1
Types of Vertebrate Hearts – Chambered, Tubular, Pulsating Vessels and Accessory ampullar Hearts	2
Heart Rate – Chemical and Nervous Control – Tachycardia and Bradycardia	2
Cardiac Output – factors affecting output	1
Invertebrate Hearts – Annelids and Scorpion	2
Insect and Crustacean Heart	2
Mollusca and Tunicate Heart	1
Regulation of Vertebrate Circulatory System	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

Class : B Sc **Section:** Final

Course/Paper V: Animal Physiology

Unit II: Physiology of Circulation and Excretion **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Circulatory System - Introduction	1
Open and Closed type of Circulatory System	1
Structure of Mammalian Heart and its Working Mechanism	1
Heartbeat - Pacemakers	1
Cardiac Cycle	1
Myogenic and Neurogenic Heart	1
Regulation of Heart Rate – Tachycardia and Bradycardia	1
Excretion – Definition and Significance	1
Different Forms of Nitrogenous Waste Materials	1
Classification of Animals on the basis of Excreted Products	1
Formation of Ammonia and Uric Acid	1
Formation of Urea – Urea Cycle	1
Mammalian Excretory System – Structure and Function of Kidney and Nephron	2
Countercurrent Mechanism of Urine Formation	**1**

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : M Sc **Section:** Final

Course/Paper IV: Applied Toxicology

Unit III: Systemic Toxicology **No. of Hours Allotted**: 15

Topics to be covered	No. of Hours
Toxicology - Introduction	1
Basics of Organ Toxicity – Target Organs	1
Organ Selectivity and Specificity	2
Hepatotoxicity – Susceptibility of the Liver - Hepatotoxicants	2
Types of Liver injury and Biochemical Mechanisms	1
Pulmonary Toxicity – Lung Injury – systemic lung toxins	2
Lung Pathology	1
Renal Toxicity – Susceptibility of kidney to toxicants	1
Chemical induced renal injury	1
Neuro toxicity – Effect of toxic agents on neurons	1
Ion channel neurotoxins	1
Lesions of neural Tissue	1

Name of the Teacher: Dr B Jyothi Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

Class : B.Sc.(III) **Section:**
Zoology

Course/Paper: Clinical science and pathology

Unit: III Immunology **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction - Immunology	1
Innate immunity	1
Acquired immunity	1
Antigens and antibodies	2
Immunoglobulins- Classification	1
Immunoglobulins - Significance	1
Complement system	1
Lymphatic system and lymphoid organs - Thymus and lymphnodes	1
T-Cells, B-Cells & macrophages	1
Humoral immune response	1
Cell mediated immune response	1
Types of hypersensitivity	1
Vaccines	1
Vaccines - vaccination and schedule	1

Name of the Teacher: Dr. D.PriyaKumari
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Head, Department of Zoology
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester VI)

Class : B.Sc.(III)

Section: Zoology

Course/Paper: Vermiculture and Vermicompostiong

Unit: 1 **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction to Vermiculture	2
Introduction to Vermicomposting	2
Difference between Vermiculture and Vermicomposting	1
Scope of vermin technology	1
Earthworm Diversity	2
Ecological groups of earthworms	1
Biology of composting earthworms	1
Biology of Eoisenafoetida	1
Biology of Eudriluseugeniae	1
Nutritive value of vermin compost	1
Storing of vermin compost	1
Packing of vermin compost	1

Name of the Teacher: Dr. D.PriyaKumari

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Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester V)

Class : M.Sc.FYIC III **Section:** Zoology

Course/Paper: Applied Zoology

Unit: II & III - Aquaculture and Clinical Science **No.of Hours Allotted**: 21

Topics to be covered	No. of Hours
Aquaculture systems	3
Induced breeding	2
Shrimp and prawn culture	2
Preservation and processing - Freezing, solar drying and Canning	1
Preservation and processing - salting, smoking	1
Fish by-product - Cod liver oil	1
Immunity introduction	1
Innate immunity	2
Acquired immunity	2
Antigens - Haptens and epitopes their properties	2
Structure of immunoglobulins	2
Biological properties of IgG	2

Name of the Teacher: Dr. D PriyaKumari Head,
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester VI)

Class : M.Sc. FYIC III **Section:** Zoology

Course/Paper: VIII - Immunology, Human parasitology and Animal biotechnology

Unit: I - Immunolgy and human parasitology **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction to Hypersensitivity	1
Immediate Hypersensitivity	2
Delayed Hypersensitivity	2
Blood parasite - Plasmodium structure	1
Plasmodium clinical significance	1
Structure and clinical significance of Entamoeba	1
Structure and clinical significance of Giardia	1
Structure and clinical significance ofTaenia	1
Structure and clinical significance of Ancylostoma	1
Structure and clinical significance of Enterobius	1
Animal cell lines	1
Stem cell culture techniques	2

Name of the Teacher: Dr. D.PriyaKumari
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Head, Department of Zoology
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester III)

Class : M.Sc.(F) **Section:** Zoology

Course/Paper: Research Methodology

Unit:III: Use of inferential statistical tools in research **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Use of different statistical estimations depending on the type of data,	2
Hypothesis testing, and test of significance.	2
Student's 't' test – applications and importance in research data	2
Application of Chi-square test for the experimental data	2
Use of ANOVA – One-way ANOVA for the research data analysis	1
Use of ANOVA – Two-way ANOVA for the research data analysis	2
Application of correlation analysis for the data.	2
Application of regression analysis for the data.	2

Name of the Teacher: Dr. D.PriyaKumari Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Immunology

Unit:III Hypersensitivity reactions and autoimmune diseases No.of Hours Allotted: 15

Topics to be covered	No. of Hours
Hypersensitivity - Introduction	1
Hypersensitivity - classification, Type I reaction	3
Hypersensitivity - Type II reaction	2
Hypersensitivity - Type III reaction	1
Hypersensitivity - Type IV reaction	1
Organ specific autoimmune diseases - Grave's disease	2
Organ specific autoimmune diseases - Type -I Diabetes	1
Systemic autoimmune diseases - SLE	1
Systemic autoimmune diseases - RA	1
Genetic factors, pathogenesis and treatment of autoimmune diseases	2

Name of the Teacher: Dr. D.PriyaKumari
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Immunology

Unit:IVTransplantation and Tumour Immunology**No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Transplantation – Introduction	2
Transplantation – Barriers to transplantation.	1
Genetic predisposition for graft rejection, prevention of rejection.	2
Immunity to infection – viruses, nature of interaction; immunopathological considerations	1
Immunity to infection– bacteria, fungi, parasites, nature of interaction; immunopathological considerations	1
Immunity to infection– fungi parasites, nature of interaction; immunopathological considerations	2
Immunity to infection– Parasites, nature of interaction; immunopathological considerations	1
Tumor immunology – Immunity to tumors, tumor specific antigens..	3
Immunosurveillance	1

Name of the Teacher: Dr. D.PriyaKumari
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester IV)

Class : M.Sc.(F) **Section:** Zoology

Course/Paper: Fish Biology

Unit: II - Fishes habits and habitats **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Buoyancy in Fishes	1
Dynamic lift and static lift	1
Swim bladder structure and function	2
Locomotion - Myotomal muscles	1
Caudal fin oscillation mechanism	1
Feeding Mechanisms - Food habits and feeding	1
Fish as predator and prey	1
Food chains and food webs	2
Osmoregulation and ion balance - Fresh water, brakish water and marine telosts	1
Kidney and salt balance	1
Fish migration	1
Migratory mechanisms	1
Mating and parental care	1

Name of the Teacher: Dr. D.PriyaKumari Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester IV)

Class : M.Sc.(F) **Section:** Zoology

Course/Paper: P-I - Animal Biotechnology

Unit:I - Introduction and Animal improvement **No.of Hours Allotted**:15

Topics to be covered	No. of Hours
Introduction to biotechnology - Scope	1
Introduction to biotechnology - Importance and its applications	2
Mammalian reproductive systems	3
Gametogenesis	1
In vitro fertilization and ET	2
ICSI and sperm sexing	1
Cryopreservation and cryoprotection	1
Gamate banking	1
Biotechnology - Improvement of live stock herds	1
Biotechnology - Breeding of selected traits	2

Name of the Teacher: Dr. D.PriyaKumari Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper:IV: Evolution and Functional Anatomy of Vertebrates [EFAV]

Unit:III – Functional Anatomy of Vertebrates – from fishes to mammals

No. of Hours Allotted: 15

Topics to be covered	No. of Hours
Integumentary system - Introduction	1
Integumentary system - Integument and its derivatives	1
Skeletal system ¬– Cranial and Post-Cranial - axial skeletal system	2
Skeletal system ¬– Cranial and Post-Cranial - appendicular skeletal system	2
Nervous system – Brain, spinal cord	1
Nervous system – Peripheral nerves; sense organs	2
Respiratory system	1
Circulatory system	1
Digestive system	1
Excretory system	1
Reproductive system – comparison of male reproductive systems from fishes to mammals	1
Reproductive system – comparison of female reproductive systems from fishes to mammals	1

Name of the Teacher: Dr. D.PriyaKumari Head, Department of Zoology

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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : B.Sc. I year **Section:** Zoology

Course/Paper: II (Ecology, Zoogeography and Animal behavior)

Unit: I **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Introduction of Ecology	1
Types of ecosystem Aquatic and Terrestrial	2
Biogeochemical cycles Introduction	1
Nitrogen cycle	1
Carbon cycle	1
Phosphorous and water cycles	1
Energy flow in Ecosystem	1
Food chain	1
Ecological pyramids	1
Animal association Introduction	1
Mutualism, Parasitism	1
Competition and predation	1

Name of the Teacher: Dr. G. Shailaja
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Head, Department of Zoology
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class: B.Sc. II year **Section:** Zoology

Course/Paper: IV

Unit: III. **No.of Hours Allotted**: 18

Topics to be covered	No. of Hours
Introduction of Biogeochemical cycles	2
Gaseous cycles - Nitrogen and Carbon cycle	2
Sedimentary cycle - Phosphorus cycle	2
Definition of community and introduction	1
Habitat and ecological niche	1
Community interactions - Competition and predation	2
Community interactions - Mutualism	2
Community interactions - Commensalism	1
Community interactions - Parasitism	2
Ecological succession - Primary & secondary seral changes	2
Climax community with examples	1

Name of the Teacher: Dr. G. Shailaja
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : B.Sc (II) **Section:** Zoology

Course/Paper: III - Biology of Chordates

Unit: III **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
General Characters of class Reptilia	1
Classification of Reptiles upto order level	2
Type study - Calotes Morphology of Calotes	1
Digestive system to Calotes	1
Respiratory system of Calotes	1
Circulatory system of Calotes	3
Nervous system of Calotes	1
Urinogenital system of Calotes	2
General characters of Aves	1
Classification of Aves upto order level	2

Name of the Teacher: Dr. G. Shailaja
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Head, Department of Zoology
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Structural Biology

Unit:I **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Biomolecules and their significance - Introduction, Carbhohydrates	2
Biomolecules and their significance - Proteins and Amino acids	1
Biomolecules and their significance - Lipids and Nucleic acids	1
Chemistry and structure of Carbhohydrates - Mono, oligo and polysaccharides	1
Chemistry and structure of Carbhohydrates - Deoxy sugars, amino sugars and glycosides	1
Classification and structure of proteins -Primary & Secondary	2
Classification and structure of proteins - Tertiary and quartarnary	1
Classification and structure of proteins -Fatty acids, triglycerides	1
Classification and structure of proteins - Phspholipds, cerebrosides and steroids	1
Structure of DNA and DNA polymorphism	2
Structure of RNA, types of RNA	2

Name of the Teacher: Dr. G. Shailaja
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: Structural Biology

Unit:II - Enzymes and metabolism **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Classification nomenclature and properties of enzymes - Catalysis and energy of activation	1
Classification nomenclature and properties of enzymes - Enzyme kinetics	2
Classification nomenclature and properties of enzymes - Michaelif Menten constant	1
Classification nomenclature and properties of enzymes - Km value and LB plot	1
Classification nomenclature and properties of enzymes - mechanism of enzyme action and regulation of enzyme activity	1
Metabolism of carbhohydrates-glycolysis	1
Metabolism of carbhohydrates - TCA Cycle, Gluconeogenesis	1
Metabolism of carbhohydrates- Biological Oxidation, role of respiratory chain in energy capture.	2
Metabolism of carbhohydrates- ATP synthesis	1
Catabolism of amino acids - Transamination, deamination and Dcarboxilation	1
Oxidation and biosynthesis of fatty acids	1
Metabolic disorders of different biomolecules- Carbohydrates	1
Metabolic disorders of different biomolecules- Proteins, Lipids	1

Name of the Teacher: Dr. G. Shailaja
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester-I)

Class :M.Sc.(P) **Section:** Zoology

Course/Paper: III (Immunology)

Unit: II (Antigen-Antibody Nature and Complement System)
No.of Hours Allotted: 15

Topics to be covered	No. of Hours
Antigens nature, epitope, haptens, antigen presenting cells, adjuvants and antigenicity	2
Immunoglobulins - Structure	1
Function and classification of antibodies	2
Monoclonal antibodies and its applications	1
Antigen and antibody reaction	1
Immunological techniques	2
Complement system - Components of complement system	1
Complement system -Pathways	1
Biological consequences of complement activation and significance	1
Major histocompatibility complex - Structure and function, restriction	2
Genetic control of immune responses	1

Name of the Teacher: Dr. G. Shailaja
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester-II)

Class : M.Sc. **Section:** Zoology

Course/Paper: II (Animal Physiology)

Unit:II **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Osmoregulation -Introduction	1
Osmoregulatory problems in aquatic and terrestrial animals	3
Hormonal control of Osmoregulation	1
Excretion- Urine formation	1
Counter current effect mechanism	2
Hormonal control	1
Detoxification of nitrogen products	2
Temperature regulation in poikilotherms, Homeotherms and Heterotherms	2
Mechanism of survival (hibernation and aestivation)	1
Cold death and Heat death	1

Name of the Teacher: Dr. G. Shailaja
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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester-II)

Class : M.Sc.(P) **Section:** Zoology

Course/Paper: III - Molecular Genetics and Developmental biology

Unit:I Introduction to Genetics **No.of Hours Allotted**: 15

Topics to be covered	No. of Hours
Mendalism and mendilian inheritance	1
Modifications of medilian inheritance	2
Linkage studies	1
Crossing over	1
Extra chromosomal inheritance	1
Multiple alleles and blood group antigens	1
Chromosome structure and identification	1
Chromosome structure - Karyotype	1
Genetic disorders - Chromosomal disorders	1
Genetic disorders - Inborn errors of metabolism	2
Genetic disorders - Polygenic and environmental disorders	1
Bacterial genetics -Transformation, transduction and conjugation	2
Bacterial genetics - Viral lytic and lysogenic cycle	1

Name of the Teacher: Dr. G. Shailaja
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Head, Department of Zoology
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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : M. Sc Previous **Section:** Zoology

Course/Paper: IV - (Taxonomy, Systematics and Functional Anatomy of Invertebrates)

Unit: III - Annelida to Echinodermata **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
General characteristics, broad classification of phylum Annelida	1
filter feeding in polychaetes; respiration and excretion in annelids	2
General characteristics, broad classification of phylum Mollusca	1
Types of shell in different molluscan classes, respiration and excretion in molluscs	2
General characteristics, broad classification of phylum Arthropoda	1
social life in insects, respiration and excretion in arthropods	2
General characteristics, broad classification of phylum Echinodermata	1
Endoskeleton and water vascular system; autotomy and regeneration	2
Overview of reproduction	1
Development and phylogenetic significance of the larval forms of Annelida, Mollusca, Arthropoda and Echinodermata	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : M. Sc Final **Section:** Zoology

Course/Paper: III - (Medical Entomology - I)

Unit: III - Annelida to Echinodermata **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Bacterial diseases - Plague	1
Rickettsiasis, Bartonellosis	2
Viral disease – Dengue,	1
Japanese Encephalitis, Chikungunya, Zika.	2
Protozoan diseases – Leishmaniasis	1
Malaria, Trypanosomiasis	2
Helminthic diseases – Filariasis	1
Wuchereria, Brugia, Loa	2
Direct injury, Annoyance,	1
Allergies, toxins, myasis and venomous arthropods	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester I)

Class : B.Sc, I Semister **Section:** Zoology

Course/Paper: I - (**Animal Diversity – Invertebrates**)

Unit: III – Mollusca,**Echinodermata,** Hemichordata **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
General characters, Classification of Mollusca up to classes with examples	1
Type study - *Pila*	5
Pearl formation, Torsion and detorsion in gastropods	2
General characters Classification of Echinodermata up to classes with examples	2
Water vascular system in star fish	1
Echinoderm larvae and their significance	1
General characters Classification of Hemichordata up to classes with examples	1
Balanoglossus - Structure and affinities	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester III)

Class : B.Sc, III Semester **Section:** Zoology

Course/Paper: **III - (BIOLOGY OF CHORDATES)**

Unit: III Aves and Mammals **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Type study – Pigeon(*Columbia livia*): Exoskeleton, respiratory system, circulatory system and excretory system.	6
Significance of migration of birds	2
Flight adaptation in birds	2
General characters and classification of Mammalia up to order level with examples	3
Dentition in Mammals	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class : M. Sc Previous **Section:** Zoology

Course/Paper: IV - (Evolution and Functional Anatomy of Vertebrates)

Unit: **II -** – Evolution of Vertebrates **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Origin and salient features of Ostracoderm, Placoderm,	1
Acanthodii, ,Sarcopterygii and Actinopterygii	2
Origin, salient features and adaptive radiation in amphibians	1
Lepospondyli and Lissamphibia	2
Origin, salient features and adaptive radiation in early reptiles	1
Mesozoic reptiles	2
Origin, salient features and adaptive radiation in birds	1
Palaeognathae and Neognathae	2
Origin, salient features and adaptive radiation in mammals	1
Prototheria and Theriiformes	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class : M. Sc Final **Section:** Zoology

Course/Paper: III (Medical Entomology - II)

Unit: IV - Chemical Control **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Classification of Insecticides	1
mode of action; Antiquity of insecticides	2
Synthetic insecticides: Organochlorides, Organophosphates.	2
Carbamates, Pyrithroids	2
Toxicity of pesticides, Insecticide appliances.	2
safety precautions	1
Repellents & attractants	2
DEET, Semiochemicals	1
Methods of insecticide applications, and	1
development of a Module for Integrated Vector Management	1
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)

Class : B.Sc, II Semister **Section:** Zoology

Course/Paper: II - (**Ecology, Zoogeography and Animal Behavior**)

Unit: III – Zoogeography **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Zoogeographical regions – Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions - their Climatic and faunal peculiarities	8
Wallace line, Discontinuous distribution	4
Continental Drift	3
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

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NIZAM COLLEGE : DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester IV)

Class : B.Sc, IV Semester **Section:** Zoology

Course/Paper: **III - (EMBRYOLOGY, ECOLOGY AND ZOOGEOGRAPHY)**

Unit: IV : Zoogeography & Wildlife **No. of Hours Allotted** : 15

Topics to be covered	No. of Hours
Zoogeographical realms and their characteristic fauna	4
Wild life importance, National parks.	3
wild life sanctuaries, endangered species	3
Conservation strategies, project tiger,	3
biodiversity	2
TOTAL	**15hrs**

Name of the Teacher: Dr. V. Srinivasa Rao Head, Department of Zoology

Signature: Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV-ZOO_ 304 (Sericulture)

UNIT: III – **Silkworm rearing** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Rearing House and rearing appliances	2
Environmental conditions for silkworm rearing	1
Rearing of early stages (Chawki rearing) and late stages of silk worms	3
Mounting and harvesting of silkworm cocoons	3
Silkworm diseases	3
Silkworm pests	3
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV-ZOO_ 304 (Sericulture)

UNIT: IV – **Harvesting technology** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Transport of cocoons to the cocoon markets.	1
Commercial characters of cocoons, defective cocoons and price fixation	3
Reeling technology – mulberry and vanya silk rearing	4
Seed technology – Grainage, DFLs	4
By-products- types and uses	3
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally

Assistant Professor ©

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Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc.Previous **Section:** Zoology

Course/Paper: II – ZOO_102: **Environmental and Conservation Biology [ECB]**

UNIT: II – Community Organization and Structure **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Community analysis, species diversity, ecotone concept and edge effect; interaction between environment and biota Habitat and ecological niche and niche overlap; concept of biome	4
Concepts of productivity; eutrophication of lakes; biological indicator and water quality	3
Ecosystem dynamics and management; stability and complexity of ecosystem	3
Biogeochemical cycles; inorganic pollutants and their impact SO_2, NO_2, CO, Phosphates,heavy metals (Arsenic, Lead and Mercury); radioactive nucleotides and their impact on biological system	3
Acid rain sources and its impact on biological system; greenhouse effect and ozone depletion	2
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

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Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester V)**

Class: B.Sc.III Year **Section:** Zoology

Course/Paper: VI – Elective -I **CLINICAL SCIENCE AND PATHOLOGY**

UNIT - I: **HEAMOTOLOGY** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
introduction to Heamotology	1
structure, composition and functions of blood	2
origin of blood cells(RBC,WBC,PLATELETS)	3
blood coagulation and theories of blood coagulation and anticoagulants	2
blood groups and Rh factor	2
blood transfusion and blood banking	2
Blood associated disorders- Anemia, leucopenia, leucocytosis, Leukemia and Haemophilia.	3
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

Signature:

Head, Department of Zoology:
Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc.Previous **Section:** Zoology

Course/Paper: IV –Zoo_204 Evolution and Functional Anatomy of Vertebrates

UNIT –I Evolution **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Concept of evolution and theories of evolution	2
Variation, gene mutation and chromosomal aberrations in evolution; genetic drift	3
Speciation – species concepts, categories; Modes of speciation – Allopatric, parapatricand sympatric speciation	4
Natural selection; patterns of evolution – sequential, divergent, convergent, gradual,punctuated, monophyletic, polyphyletic and paraphyletic	4
Origin and evolution of primates and human	2
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: IV –Zoo_204 Evolution and Functional Anatomy of Vertebrates

UNIT – IV Functional Anatomy of Vertebrates – Evolutionary significance

No. of Hours Allotted: 15 Hrs

Topics to be covered	No. of. Hours
Evolutionary significance of internal fertilization, neoteny and paedogenesis	3
Amniotic egg ¬– structure and its evolutionary significance	1
Basic plan of skull; Temporal fossae and their evolutionary significance; Vertebrate Jaw suspension	3
Types and evolutionary significance of axial and appendicular joints	4
Types and evolutionary significance of placenta; evolutionary significance of opposable thumb and bipedalism in primates (both non-human and human	4
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
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Head, Department of Zoology:

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester VI)**

Class: B.Sc. III Year **Section:** Zoology
Course/Paper: VII – **ANIMAL PHYSIOLOGY, GENETICS AND EVOLUTION**

UNIT - II: **Genetics** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Mendel's laws – Laws of segregation and Independent assortment Genetic interactions – Incomplete dominance codominance epistasis.	4
Identification of DNA as the genetic material – Griffith's experiment Hershey – Chase experiment.	2
Central dogma of molecular biology – Brief account of DNA replication (Semi-conservative method) Replication fork (Continuous and discontinuous synthesis); Transcription – Brief account of initiation,elongation and termination in eukaryotes Translation Genetic code Gene regulation as exemplified by Lac Operon.	9
Total	**15 Hours**

Name of the Teacher: Dr. VasudhaLingampally
Assistant Professor ©

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Head, Department of Zoology:
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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV-ZOO_ 301 (Systems Biology)

UNIT: I – – Introduction to Systems Biology **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
History, concept, prospects and applications of systems biology. .	3
Molecules to Organisms – Biomolecules, cell, tissue, organ and organisms.	3
Basic concepts of systems approach to biology.	3
Basic concepts of models and modeling, model behavior, classification.	3
Basic concepts of networks; types of networks	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: I – ZOO_ 101: **structural Biology [SB]**

UNIT: I V– Functional Biology of Nucleic Acids **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
DNA replication – semi conservative, enzymology of DNA replication, replication of circular DNA, initiation, elongation and termination of replication process. Proof reading function of DNA polymerases.	4
Enzymatic synthesis of RNA.	2
Protein synthesis – Events of protein synthesis; transcription in prokaryotes and eukaryotes; post transcriptional processing.	4
Regulation of genetic code – Wobble's concept, translation in prokaryotes and eukaryotes.	3
DNA repair mechanism – High fidelity of DNA sequence – Repair of damage caused by UV light, Eukaryotes repair systems	2
Total	**15 Hours**

Name of the Teacher: Dr. Dr. C.Sanat Kumar
Assistant Professor ©

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Head, Department of Zoology:

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previuos **Section:** Zoology

Course/Paper: III – ZOO_ 103: **Immunology** **[IM]**

UNIT - I: **Introduction to Immune System** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Phylogeny of Immune system –invertebrates and vertebrates	2
Immune system – Innate and adaptive immunity , humoral mediated immunity and cellmediated immunity	3
Cells involved in immune system; role of macrophages in immunity	2
The Lymphoid tissues – primary and secondary lymphoid organs, lymphatic traffic	4
Activation of B– and T– Cells; production of effectors – antibodies and cytokines	4
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester V)**

Class: B.Sc. III Year **Section:** Zoology

Course/Paper: VI Clinical science and pathology

UNIT: II – **Techniques** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
2.1. Microscopy- light, phase contrast and Electron microscopy	3
2.2. Microtomy- Fixation, section cutting and staining procedures	3
2.3. Biopsy and Autopsy of normal and affected tissues.	3
2.4. Histopathological manifestation in tissues.	1
2.5. Principles of sterilization, autoclave, microbial plating and antibiotic sensitivity tests.	2
2.6. Immunological techniques- Agglutination, precipitation, complement fixation test and ELISA	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester VI)**

Class: B.Sc. III Year **Section:** Zoology

Course/Paper: VIII Vermiculture and Vermicomposting

UNIT: II – **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Soil- physical, chemical and biological features	5
Organic waste sources- problems in traditional xcomposting, vermicomposting	5
Types of small and large scale pit method, heap method.	5
Total	15 Hours

Name of the Teacher: Dr. C.Sanat Kumar

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: I –Zoo_201Tools, Techniques and Biostatistics [TTB]

UNIT II - Separation and Diagnostic Techniques **No. of Hours Allotted:** 15 Hrs

Topics to be covered	**No. of. Hours**
Spectroscopic techniques – principles and applications of visible, UV, fluorescence, IR,ESR, NMR and mass spectroscopy	3
Radioisotope techniques – principles and application of Geiger-Muller counter,scintillation counter, tracer studies, autoradiography	3
Electrophysiological techniques – principles and applications of single neuron recording,patch clamp recording.	3
Imaging techniques - ECG, PET, MRI, fMRI and CAT	3
Microarray techniques – principles and applications of DNA, RNA and Protein microarray Techniques	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar

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Head, Department of Zoology:

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: III –Zoo_203 Molecular Genetics and Developmental Biology[MGDB]

UNIT II – Molecular Genetics **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Introduction of DNA technology – Restriction endonucleases, methods of ligation – DNA ligases, ligation of fragment with cohesive and blunt ends.	3
Features of vectors – cosmids, plasmids and shuttle vector with one example representing each class construction and characterization of new cloning vectors	3
Applied molecular biology – DNA sequences – Maxam and Gilbert methods, Sanger's method. Application of recombinant DNA technology with reference to the example of insulin, somatostatin, and interferon. DNA fingerprinting and its application	3
Cloning strategies – Shotgun cloning, construction of gene libraries, genomic library and DNA library	3
Hybridization techniques – Southern blot, Northern blot, R-loop mapping methods, Insitu hybridization	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar
Assistant Professor ©

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Head, Department of Zoology:

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester IV)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: Paper - I: Animal Biotechnology

UNIT II - In vitro culture of cells and tissues **No. of Hours Allotted:** 15 Hrs

Topics to be covered	**No. of. Hours**
Cell culture - Equipment and materials for cell culture technology, principle of sterile techniques and cell propagation, primary and established cell line cultures.	3
Mammalian cell lines & their characteristics.	3
Basic techniques of mammalian cell culture in vitro, disaggregating of tissue and primary culture, maintenance of cell culture, cell separation.	3
Tissue culture system – cell tissue fragment, organ and embryo cultures, merits and demerits.	3
Scaling-up of animal cell culture, cell synchronization, cell cloning, micromanipulation, cell transformation	3
Total	**15 Hours**

Name of the Teacher: Dr. C.Sanat Kumar
Assistant Professor ©

Signature:
Head, Department of Zoology:

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019(Semester I)

Class :B.Sc I year **Section:** Zoology

Course/Paper: I Animal Diversity–Invertebrates

Unit: III, Phylum –Annelida and Arthropoda No. of Hours Allotted: 15

Topics to be covered	**No. of Hours**
3.1. Annelida	
3.1.1.General characters	1
3.1.2. Classification of Annelida up to orders with examples	1
3.1.3.Type study-*Hirudinaria granulosa*	4
3.1.4. Evolutionary significance of coelom and coelomoducts and metamerism	1
3.2. Arthropoda	
3.2.1. General characters	1
3.2.2. Classification of Arthropoda up to orders with examples	1
3.2.3. Type study-Prawn	4
3.2.4. *Peripatus* structure and affinities, mouth parts of insects and crustacean larve	2
	15hrs

Name of the Teacher : A.Murali

Head of the Department Signature:

Teacher Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: B.Sc I year **Section:** Zoology

Course/Paper: II- Ecology Zoogeography and Animal Behavior

Unit –IV Animal Behavior **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Types of Behaviors	1
Taxes, Reflexes	2
Tropism	1
Physiology and Phylogeny of learning	1
Instinct Behavior	1
Motivated Behavior	1
Classification of Taxes	1
Reflex Actions in Animals	2
Trial and Error Learning	1
Imprinting	1
Habituation	1
Classical conditioning (Ivan Pavlov)	1
Social Behavior, Communication, Pheromones	1
	15hrs

Name of the Teacher : A.Murali

Head of the Department Signature:

Teacher Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester III)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV-ZOO_ 304 (Sericulture)

UNIT: I **– Introduction** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Introduction - Sericulture as an agro industry	1
Mulberry cultivation - Varieties of Mulberry, Agroclimatic conditions for Moriculture, Agricultural practices - Tilling & systems of Planting, intercultivation. Mulching, Pruning, Manuring, Harvesting and Preservation of leaves	5
Diseases of Mulberry and their management – Bacterial diseases Viral diseases Fungal diseases	4
Mineral deficiency diseases and their management	2
Insect Pests of Mulberry and their management	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: II – ZOO_ 102: **Environmental and Conservation Biology [ECB]**

UNIT: I – UNIT I – Basic concepts of Ecology **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Laws of limiting factor, Laws of minimum, Laws of Tolerance and Tragedy of commons	2
Micronutrients and macronutrients	2
Types of ecosystem – freshwater, marine and terrestrial	4
Population characteristics and dynamics – conceptual approach	4
Growth curves and pyramids; sigmoid curve, J curve and hyperbola; logistic equation and concepts relating to growth	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor ©

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Head, Department of Zoology:

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previuos **Section:** Zoology

Course/Paper: II – ZOO_ 102: **Environmental and Conservation Biology [ECB]**

UNIT - III: **Biogeography of India, Habitats and Resources** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Classical concepts of biogeography – continental drift, endemism, refugia	3
Biogeographical regions of India and their salient features	2
Classification, function and values of habitats – Freshwater wetlands, deserts, grasslandsand forests	4
Concepts of natural resources – renewable and non-renewable resources	3
Overexploitation of resources – deforestation, water table depletion and landdegradation	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester I)**

Class: M.Sc. Previous **Section:** Zoology

Course/Paper: Zoo_104 Taxonomy, Systematics and Functional Anatomy of Invertebrates [TSFAI)

UNIT: IV **– Minor and Other Phyla** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
UNIT IV - Systematic position, general organization and affinities of Ctenophora and Nemertea(Rhynchoceola)	3
Systematic position, general organization and affinities of Rotifera	3
Systematic position, general organization and affinities of Bryozoa (Ectoprocta)	3
Systematic position, general organization and affinities of Onychophora and Chaetognatha	3
Systematic position, general organization and affinities of Hemichordata	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki
Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: IV –Zoo_402Fish biology

UNIT – I **Introduction and Diversity of Fishes** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Introduction, general characteristics evolutionary succession fossil history of fishes.	3
The early evolution of fishes Chondrichthian fishes - Sharks, Skates and Rays.	3
Characterization and classification of: Ostracoderms, placoderms, acanthodians, holocephali, elasmobranchs.	3
Characterization and classification of cyclostomes, sarcopterygii dipnoi, actinopterygii.	3
Integumentary system - basic structure of skin, dermal and epidermal pigments, fins, andscales.	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester II)**

Class: M.Sc. Final **Section:** Zoology

Course/Paper: II –Zoo_402Fish Biology

UNIT – IV **Fish biology and Embryogenesis** **No. of Hours Allotted:** 15 Hrs

Topics to be covered	No. of. Hours
Nervous system- Central nervous system, brain and peripheral nervous system.	3
Sense organs – Olfactory, taste buds, touch receptors, photoreceptors, lateral line and internalear.	3
Endocrine system – Pituitary gland, urohypophysis, adrenal gland, gonads, and thyroid gland	3
Reproductive system- Male and female reproductive organs; role of hormones.	3
Embryogenesis - Early development and post embryonic development	3
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

Lesson Plan for the academic year 2017- 2018 **(Semester VI)**

Class: B.Sc. III Year **Section:** Zoology

Course/Paper: VII – **ANIMAL PHYSIOLOGY, GENETICS AND EVOLUTION**

UNIT - III: Genetics and Organic Evolution **No. of Hours Allotted:** 15 Hrs

Topics to be covered	**No. of. Hours**
Human karyotyping barr bodies , Lyon hypothesis and amniocentesis, chromosomal disorders-autosomal and sex chromosomes	5
Genetic basis of Evolution, Gene pool and gene frequencies, Hardy-Weinberg's Law, Force of destabilization, natural selection, genetic drift, Mutation, Isolation Migration.	8
Speciation - Allopatry sympatry	2
Total	**15 Hours**

Name of the Teacher: Dr. VenkataRamanaiahSolanki

Assistant Professor ©

Signature:

Head, Department of Zoology:

Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: BSC **Section:** ZOOLOGY

Course/Paper: ENDOCRINOLOGY EVOLUTION

Unit: 1 **No. of Hours Allotted**: 15 hours

Topics to be covered	No. of Hours
Physiology of endocrine systems	1
Relationship between hypothalamus and pituitary gland	2
Hormones of hypothalamus	1
Hormones of adenohypophysis	2
Hormones of neurohypophsis	2
Hormones of pineal gland	1
Hormones of thyroid gland	1
Hormones of parathyroid gland	1
Hormones of thymus	1
Hormones of adrenal gland	2
Hormones of pancreas	1
Endocrine control of mammalian reproduction	1
Male and female hormones	1
Hormonal control of menstrual cycle	**1**

Name of the Teacher: DR S.Padmaja
Signature:

Head, Department of
Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP II

Unit: II **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Gland effectors for secretion	3
Mechanism of target tissue activation and mechanism of secretion	1
Types of muscle fibers fast and slow	1
Asynchronous flight muscles	2
Mechanism and chemistry of muscle contraction	2
Accessory movements	2
Skeletal levers, elastic movements	1
Effectors for movement cyclosis amoeboid movements	1
Ciliary and flagellar movements	1
Control of movements	1
	15

Name of the Teacher: DR S.Padmaja
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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)
Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP II

Unit: I **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
General receptor characteristics	1
Receptor potential and sensory coding	2
Adaptations in organ systems for reception chemo thermo	1
Mechano electro receptors: structure, function and distribution	1
Central nervous system- insect to vertebrate comparison	4
Integration of effective behaviors	3
Spinal reflex- learning and memory genetic basis	2
Stress biology and related disorders	1
	15

Name of the Teacher: DR S.Padmaja Head, Department of
Signature: Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: MSC **Section:** ZOOLOGY

Course/Paper: ANIMAL PHYSIOLOGY

Unit: III **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Types of muscle fibers	2
Ultra structure of muscle fibers	2
Molecular events during muscle contraction	1
Twitch tetanus summation	1
Neuron – ultra structure and axoplasmic flow	1
Synapse types of synapse- electrical and chemical	1
Molecular events during chemical synapse	2
Action potential	1
Resting potential significance of sodium and potassium pump	1
Threshold potential	1
All or none law	1
Types of neurotransmitters	1
	15

Name of the Teacher: DR S.Padmaja
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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)
Class: MSC **Section:** ZOOLOGY

Course/Paper:

Unit: III lipid metabolism **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Introduction to lipids nomenclature and types	1
Detailed classification of lipids	1
Fatty acid oxidation	2
Fatty acid bio synthesis	2
Cholesterol structure	1
Cholesterol bio synthesis	3
Cholesterol metabolism	1
Bile salts spingomyliens	1
Lipo proteins prostaglandins	1
Lipidosis	2
	15

Name of the Teacher: DR S.Padmaja Head, Department of
Signature: Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)
Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP I

Unit: I **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Scope and importance of comparative approach to physiology	1
Origin of nutritive types nomenclature definition and concepts	2
Special dietary requirements of animals, amino acid and vitamins	2
Mechanism of food intake and feeding mechanism	1
Digestive enzymes classification and nomenclature	2
Regulatory physiology of digestion	1
Coordination of digestive activities – visceral and g.i. hormones	2
Comparative aspects of carbohydrate path way	2
Glycolysis gluconeogenesis	1
Integration and regulation	1
	15

Name of the Teacher: Head, Department of
Signature: Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018 (Semester II)

Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP I

Unit: III **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Problems of osmoregulation and biological responses in different environments	1
Comparative aspects of osmoregulatory problems in different animal groups	2
Excretory organs and general mechanism of excretion in various animals	2
Freezing and winter hardening	3
Lethal limits and resistance adaptation	2
Behavioral and locomotary adaptations	3
Heat regulation Physical and Chemical	1
Temperature regulation in homeotherms neural mechanisms of thermal regulation	1
	15

Name of the Teacher: Head, Department of
Signature: Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: BSC **Section:** ZOOLOGY

Course/Paper: ENDOCRINOLOGY EVOLUTION

Unit: 1 **No. of Hours Allotted**: 15 hours

Topics to be covered	No. of Hours
Physiology of endocrine systems	1
Relationship between hypothalamus and pituitary gland	2
Hormones of hypothalamus	1
Hormones of adenohypophysis	2
Hormones of neurohypophsis	2
Hormones of pineal gland	1
Hormones of thyroid gland	1
Hormones of parathyroid gland	1
Hormones of thymus	1
Hormones of adrenal gland	2
Hormones of pancreas	1
Endocrine control of mammalian reproduction	1
Male and female hormones	1
Hormonal control of menstrual cycle	**1**

Name of the Teacher: DR S.Padmaja Head, Department of

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP II

Unit: II **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Gland effectors for secretion	3
Mechanism of target tissue activation and mechanism of secretion	1
Types of muscle fibers fast and slow	1
Asynchronous flight muscles	2
Mechanism and chemistry of muscle contraction	2
Accessory movements	2
Skeletal levers, elastic movements	1
Effectors for movement cyclosis amoeboid movements	1
Ciliary and flagellar movements	1
Control of movements	1
	15

Name of the Teacher: DR S.Padmaja Head, Department of
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LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)
Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP II

Unit: I **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
General receptor characteristics	1
Receptor potential and sensory coding	2
Adaptations in organ systems for reception chemo thermo	1
Mechano electro receptors: structure, function and distribution	1
Central nervous system- insect to vertebrate comparison	4
Integration of effective behaviors	3
Spinal reflex- learning and memory genetic basis	2
Stress biology and related disorders	1
	15

Name of the Teacher: DR S.Padmaja Head, Department of
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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: MSC **Section:** ZOOLOGY

Course/Paper: ANIMAL PHYSIOLOGY

Unit: III **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Types of muscle fibers	2
Ultra structure of muscle fibers	2
Molecular events during muscle contraction	1
Twitch tetanus summation	1
Neuron – ultra structure and axoplasmic flow	1
Synapse types of synapse- electrical and chemical	1
Molecular events during chemical synapse	2
Action potential	1
Resting potential significance of sodium and potassium pump	1
Threshold potential	1
All or none law	1
Types of neurotransmitters	1
	15

Name of the Teacher: DR S.Padmaja
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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)
Class: MSC **Section:** ZOOLOGY

Course/Paper:

Unit: III lipid metabolism **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Introduction to lipids nomenclature and types	1
Detailed classification of lipids	1
Fatty acid oxidation	2
Fatty acid bio synthesis	2
Cholesterol structure	1
Cholesterol bio synthesis	3
Cholesterol metabolism	1
Bile salts spingomyliens	1
Lipo proteins prostaglandins	1
Lipidosis	2
	15

Name of the Teacher: DR S.Padmaja Head, Department of
Signature: Signature:

NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP I

Unit: I **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Scope and importance of comparative approach to physiology	1
Origin of nutritive types nomenclature definition and concepts	2
Special dietary requirements of animals, amino acid and vitamins	2
Mechanism of food intake and feeding mechanism	1
Digestive enzymes classification and nomenclature	2
Regulatory physiology of digestion	1
Coordination of digestive activities – visceral and g.i. hormones	2
Comparative aspects of carbohydrate path way	2
Glycolysis gluconeogenesis	1
Integration and regulation	1
	15

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NIZAM COLLEGE: DEPARTMENT OF ZOOLOGY

LESSON PLAN FOR THE ACADEMIC YEAR 2018-2019 (Semester II)

Class: MSC **Section:** ZOOLOGY

Course/Paper: CAP I

Unit: III **No. of Hours Allotted**: 15

Topics to be covered	**No. of Hours**
Problems of osmoregulation and biological responses in different environments	1
Comparative aspects of osmoregulatory problems in different animal groups	2
Excretory organs and general mechanism of excretion in various animals	2
Freezing and winter hardening	3
Lethal limits and resistance adaptation	2
Behavioral and locomotary adaptations	3
Heat regulation Physical and Chemical	1
Temperature regulation in homeotherms neural mechanisms of thermal regulation	1
	15

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