Lesson plan of Zoology Department (2021-22) Even sem

Lesson Plan (2021-22)
Subject- Applied Zoology (P- 602)
Class- Bsc Zoology (Hons) (6th semester)
Faculty Name- Sapna Yadav

Time period	Topics covered
April, week 1	Human diseases, transmission, prevention and control
April, week 2	Implantation, placenta, parturition, lactation
April, week 3	Infertility cause, diagnosis, and management
April, week 4	Assisted reproductive technology and modern contraceptive technologies
April, week 5	Bionomics and control of crop pests
May, week 1	Bionomics and management and control of stored grain pests
May, week 2	Classification of insect control with reference to chlori hydrocarbons, organophosphates, carbamates and syn pyrethroid
May, week 3	General aspects of integrated pest management
May, week 4	Zebrafish as a model for biotechnology
June, week 1	Genetic improvement in aquaculture industry
June, week 2	Induced breeding and transportation of fish seed and Outlines of apiculture, sericulture and lac culture
June, week 3	Revision

Lesson Plan (2021-22)

Subject- Genetics and Genomics II (P- 601)
Class- Bsc Zoology (Hons) (6th semester)
Faculty Name- Sapna Yadav

Time period	Topics covered
April, week 1	Genetic analysis, mapping in bacteria and bacteriophages
April, week 2	Genome dynamics, transposable genetic elements, eukaryotic viruses
April, week 3	Developmental genetics – drosophila, saccharomyces
April, week 4	c. elegans , Arabidopsis model
April, week 5	Xenopus laevis model and genomics
May, week 1	Human genome project, evolution and comparative genomics
May, week 2	Introduction to bioinformatics, gene and protein databases, sequence similarity and alignment
May, week 3	Gene feature identification, gene annotation
May, week 4	Post translation, transcription and translation analysis
June, week 1	Gene analysis using mutations, forward and reverse genetics, functional genomics and system biology
June, week 2	Allele frequencies, genotype frequencies, hardy-weinberg law, mutation, genetic drift, natural selection, genetic variation and speciation

June, week 3	**Revision**

Lesson Plan (2021-22)

Subject: LIFE AND DIVERSITY OF CHORDATES – II

Class- Bsc Passcourse (Medical) 4th sem

Faculty Name- Rakhee Chauhan

Time Period	**Topics covered**
April, week 1	**Amphibia: Origin, Evolutionary tree, Parental Care in Amphibia**

April, week 2	**Type study of frog (Rana tigrina)**
April, week 3	**Origin, Evolutionary tree. Extinct reptiles**
April, week 4	**Reptilia: Type study of Lizard (Hemidactylus),**
May, week 1	**Poisonous and non-poisonous snakes; Poison apparatus in snakes.**
May, week 2	**Aves: Type study of Pigeon (Columba livia)**
May, week 3	**Aves: Type study of Pigeon (Columba livia)**
May, week 4	**Principles of aerodynamics in Bird flight, migration in birds, Flight adaptations in birds**
May, week 5	**Mammals: Classification, Adaptive radiations of mammals and dentition.**
June, week 1	**Type study of Rat**
June, week 2	**Type study of Rat**
June, week 3	**Revision**

Lesson Plan (2021-22)

Subjects. Mammalian Physiology II

Class- Bsc Passcourse (Medical) 4th sem

Faculty Name- Rakhee Chauhan

Time Period	Topics covered
April, week 1	Circulation: Origin, conduction and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system;
April, week 2	Composition and functions of blood & lymph; Mechanism of coagulation of blood, coagulation factors; anticoagulants, haempoiesis
April, week 3	Respiration: Exchange of respiratory gases, transport of gases, lung air volumes, oxygen dissociation curve of hemoglobin
April, week 4	Bohr's effect, Haburger's phenomenon (Chloride shift), control / regulation of respiration.
May, week 1	Excretion: Patterns of excretory products viz. Amonotelic, ureotlic uricotelic,
May, week 2	ornithine cycle (Kreb's– Henseleit cycle) for urea formation in liver

May, week 3	**Excretion: Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.**
May, week 4	**Neural Integration: Nature, origin and propagation of nerve impulse along with medullated & non-medullated nerve fibre, conduction of nerve impulse across synapse.**
May, week 5	**Chemical integration of Endocrinology**
June, week 1	**Structure and mechanism of hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads.**
June, week 2	**Reproduction: Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human; fertilization, implantation and gestation.**
June, week 3	**Revision**

B.Sc Medical 4th Sem ,2021-22
Subject: LIFE AND DIVERSITY OF CHORDATES – II
Paper 4.1

Faculty name:Sapna Tanwar

WEEK 1(April)

Amphibia: Origin, Evolutionary tree. Type study of frog (Rana tigrina), Parental Care in Amphibia

WEEK 2 (April)

Reptilia: Type study of Lizard (Hemidactylus), Origin, Evolutionary tree. Extinct reptiles;

Poisonous and non-poisonous snakes; Poison apparatus in snakes.

WEEK 3 (April)

Aves: Type study of Pigeon (Columba livia); Flight adaptation, Principles of aerodynamics in

Bird flight, migration in birds.

WEEK 4 (April)

Mammals: Classification, Adaptive radiations of mammals and dentition.

WEEK 5 (May)

Type study of Rat

PAPER 4.2

MAMMALIAN PHYSIOLOGY – II

WEEK 6 (May)

Circulation: Origin, conduction and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system; Composition and functions of blood & lymph; Mechanism of coagulation of blood, coagulation factors; anticoagulants, haempoiesis

WEEK 7 (May)

Respiration: Exchange of respiratory gases, transport of gases, lung air volumes, oxygen dissociation curve of hemoglobin, Bohr's effect, Haburger's phenomenon (Chloride shift), control / regulation of respiration.

Excretion: Patterns of excretory products viz. Amonotelic, ureotlic uricotelic, ornithine cycle (Kreb's– Henseleit cycle) for urea formation in liver

WEEK 8 (May)

Excretion: Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.
Neural Integration: Nature, origin and propagation of nerve impulse along with medullated & non-medullated nerve fibre, conduction of nerve impulse across synapse.
WEEK 9 (June)
Chemical integration of Endocrinology: Structure and mechanism of hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads.
WEEK 10 (June)
Reproduction: Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human; fertilization, implantation and gestation.
WEEK 11
Revision

LESSON PLAN FOR ZOOLOGY
M.A GEOGRAPHY SEMESTER II
PAPER 16ENVO1
ENVIRONMENTAL ISSUES(OPEN ELECTIVE)

Faculty name:Sapna Tanwar
WEEK 1(April)
Air pollution:causes of air pollution,some important air pollutants-their sources and effect on living and non living organisms.

WEEK 2 (April)
Water pollution:sources of pollution of surface and groundwater,types of water pollutants.

WEEK 3 (April)
Solid waste-sources,characterization,disposal and management.Soil pollution,sources of soil pollution,pollution and residual toxicity from application of insecticide,pesticides and fertilizers,soil erosion.

WEEK 4 (April)
Green house effect:cause and associated hazards,ozone layer depletion-causes and associated hazards
WEEK 5 (May)
Deforestation,polulation growth forms,urbanization,industrialization and modernization of agriculture.
WEEK 6 (May)
Forest and wildlife management ,desertification
WEEK 7 (May)

Reclamation of degraded land,human intervention on wetland,siltation and eutrophication
WEEK 8 (May)
Reclamation of wetlands,mining and environment,open cast mining
WEEK 9 (June)
Oil exploration and transportation,deforestation and their impact on environment
WEEK 10 (June)
Revision.
WEEK 11 (June)
Revision

Lesson Plan (EVEN SEM, 2021-22)

Subject-Life and Diversity from Annelida to Hemichordata (2.1)

Class- BSc Medical pass course (2nd Sem)

Teacher name- Sanju Mohan

Time Period	Topics covered
April, week 1	Phylum - Annelida: i) General characters and classification up to order level

April , week 2	**ii) Biodiversity and economic importance of Annelida iii) Type study - Pheretima (Earthworm)**
April , week 3	**iv) Metamerism in Annelida v) Trochophore larva:. Affinities, evolutionary significance**
April , week 4	**Phylum - Arthropoda: i) General characters and classification up to order level**
April , week 5	**ii) Biodiversity and economic importance of insects iii) Type study – Periplaneta**
May , week 1	**iii) Type study – Periplaneta, Phylum - Mollusca: i) General characters and classification up to order level**
May , week 2	**ii) Biodiversity and economic importance iii) Type study - Pila**
May , week 3	**iv) Torsion and detorsion in gastropoda v) Respiration and foot**
May, week 4	**Phylum - Echinodermata: i) General characters and classification up to order level**
June , week 1	**ii) Biodiversity and economic importance iii) Type Study -Asteries (Sea Star)**
June , week 2	**iv) Echinoderm larvae v) Aristotle's Lantern**
June , week 3	**Phylum – Hemichordata: Type study:**

Lesson Plan (EVEN SEM, 2021-22)

Subject-Genetics (2.2)

Class- BSc Medical pass course (2nd Sem)

Teacher name- Sanju Mohan

Time Period	Topics covered
April, week 1	**Elements of Heredity and variations.**
April , week 2	**The varieties of gene interactions**
April , week 3	**Linkage and recombination: Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.**

April , week 4	**Sex determination and its mechanism: male and female heterozygous systems, genetic balance system; role of Y -chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination.**
April , week 5	**Sex linked inheritance: Haemophilia and colour blindness in man, eye colour in Drosophila, Nondisjunction of sex-chromosome in Drosophila; Sex-linked and sex influenced inheritance.**
May , week 1	**Extra chromosomal and cytoplasmic inheritance: i) Kappa particles in Paramecium. ii) Shell coiling in snails. iii) Milk factor in mice.**
May , week 2	**Multiple allelism: Eye colour in Drosophila; A, B, 0 blood group in man.**
May , week 3	**Human genetics: Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.**
May , week 4	**Inborn errors of metabolism (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia).**
June , week 1	**Nature and function of genetic material; Structure and type of nucleic acids; Protein synthesis**
June , week 2	**spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation); Numerical aberrations (autoploidy, euploidy and polyploidy in animals)**
June , week 3	**Applied genetics: Eugenics, euthenics and euphenics; genetic counseling, pre- natal diagnostics, DNA-finger printing, transgenic animals Revision**

Lesson Plan (EVEN SEM, 2021-22)

Subject-Immunology-II

Class- BSc Zoology Honors(6thsem),

Paper-603

Teacher name- Sanju Mohan

ne Period	Topics covered
ril, week 1	it I Major Histocompatibility Complex Structure
ril , week 2	ajor Histocompatibility Complex polymorphism and functions
ril , week 3	HC and immune responsiveness.
ril , week 4	e cytosolic pathway: endogenous pathway and the endocytic pathway l exogenous pathway.
ril , week 5	tokines: properties and functions, the general structure of cytokine eptors
y , week 1	mplement system: components, activation and functions.
y , week 2	persensitivity Gell and Coombs classification, IgE mediated (type I)
y , week 3	persensitivity Antibody-mediated (type II), Immune complex diated (type III) and T- DTH mediated hypersensitivity (type IV).
y , week 4	ccines: bacterial, viral, toxoid and III generation vaccines.
e , week 1	munodeficiency-SCID, AIDS etc,
e , week 2	toimmunity
e , week 3	vision.

LESSON PLAN FOR EVEN SESSION, 2022

Faculty Name: Bharti Khurana

Comparative Anatomy of Chordates P-202

Week 1 (4April- 9 April)

Structure and Derivatives of Integument

Bone Structure

Week 2 (11 April- 16 April)

Types of Bones, Ossification

Bone Growth

Week 3 (18 April- 23 April)

Digestive system: Comparative Study of Alimentary Canal and Associated Glands

Week 4 (25 April- 30 April)

Respiratory System

Skin, Gills, Lungs, Air sacs And Voice Apparatus, Air Bladder

Week 5 (2 May-7 May)

Accessory Breathing organs in Fishes

Circulatory System: Evolution of Heart

Aortic Arches

Week 6 (9 May-14 May)

Venous System

Lymphatic System

Axial Skeleton

Week 7 (16 May-21 May)

Appendicular Skeleton

Jaw Suspensorium

Visceral arches

Week 8 (23 May- 28May)

Nervous System: Central and Autonomic Nervous System

Cranial nerves

Classification of Receptors

Week 9 (30May-4 June)

Structure and Working of Mammalian Eye and Ear

Week 10 (6 June-11 June)

Succession of Kidney

Evolution Of Urinogenital Duct

Week 11(13 June- 18 June)

Revision

LESSON PLAN FOR EVEN SESSION, 2022

Faculty name: Bharti Khurana

ENTOMOLOGY PAPER 6.1

WEEK 1

Introduction to pests (4April- 9 April)

Pests of Sugarcane: Systematic Position, Habits, Nature of Damage caused and Life Cycle of Pyrilla perpusilla.

WEEK 2 (April)

Pests of Cotton: Systematic Position, Habits, Nature of Damage caused and Life Cycle of Pectinophora gossypiella.

WEEK 3 (April)

Pests of Wheat: Systematic Position, Habits, Nature of Damage caused and Life Cycle of Sesamia inferens.

WEEK 4 (April)

Pests of Paddy : Systematic Position, Habits, Nature of Damage caused and Life Cycle of Leptocorisa acuta.

WEEK 5 (May)

Pests of Vegetables : Systematic Position, Habits, Nature of Damage caused and Life Cycle of Aulacophora faveicollis.

WEEK 6 (May)

Pests of Stored Grains : Systematic Position, Habits, Nature of Damage caused and Life Cycle of Trogoderma granarium.

WEEK 7 (May)

INSECT CONTROL: Biological control, its history, requirement and Precaution and Feasibility of biological agents for control.

WEEK 8 (May)

Chemical Control: History, Categories of Pesticides, Important Pesticides, Insect repellants and attractants

WEEK 9 (June)

Integrated pest management.

WEEK 10 (June)

Important bird and rodent pests of agriculture and their management.

WEEK 11 (June)

Revision

LESSON PLAN FOR EVEN SESSION, 2022

DEVELOPMENTAL BIOLOGY PAPER 6.2

Faculty name : Bharti Khurana

WEEK 1

Historical perspectives, Aims and scope of Developmental Biology.

WEEK 2 (April)

Generalized structure of mammalian ovum and sperm.

Gametogenesis.

WEEK 3 (April)

Oogenesis

Fertilization

Parthenogenesis, Different types of eggs

WEEK 4 (April)

Patterns of cleavage in Vertebrates and invertebrates.

Process of Blastulation

WEEK 5 (May)

Fate-map construction in Frog and chick.

Introduction to Gastrulation in invertebrates and vertebrates.

Gastrulation in Frog and Formation of three germ layers.

WEEK 6 (May)

. Gastrulation in Chick and Formation of three germ layers.

Elementary Knowledge of primary organizers.

WEEK 7 (May)

Extra Embryonic membranes structure and significance in Birds and mammals.

WEEK 8 (May)

Concepts of competence, determination and differentiation

WEEK 9 (June)

Concept of Regeneration.

WEEK 10 (June)

Revision.

WEEK 11 (June)

Revision.

LESSON PLAN ZOOLOGY

B.Sc. Medical 6th Sem, 2021-22

Subject : ENTOMOLOGY, PAPER 6.1

Faculty name: Shweta Yadav

Week 1 (April)

Study of important insect pests of crops and vegetables:

1. Sugarcane:

(a) Sugarcane leaf-hopper (*Pyrilla perpusilla)*

(b) Sugarcane Whitefly (*Aleurolobus barodensis)*

(c) Sugarcane top borer (*Sciropophaga nivella)*

Week 2 (April)

(d) Sugarcane root borer (*Emmalocera depresella)*

(e) Gurdaspur borer *(Bissetia steniellus)*

2. Cotton:

(a) Pink bollworm *(Pestinophora gossypfolla)*

Week 3 (April)

(b) Red cotton bug *(Dysdercus Cingulatus)*

(c) Cotton grey weevil *(Myllocerus undecimpustulatus)*
(d) Cotton Jassid *(Amrasca devastans)*

Week 4 (April)

3. Wheat:
Wheat stem borer (*Sesamia inferens*) with its systematics position, habits, nature of damage caused. Life cycle and control.

Week 5 (May)

4. Paddy:
(a) Gundhi bug *(Leptocorisa acuta)*
(b) Rice grasshopper *(Hieroglyphus banian)*
(c) Rice stem borer *(Scirpophaga incertullus)*
(d) Rice Hispa *(Diceladispa armigera)*
With their systematic position, habits and nature of damage caused. Life cycle and control of *Loptocorisa acuta.*

Week 6 (May)

5. Vegetables
(a) *Raphidopalpa faveicollis* – The Red pumpkin beetle.
(b) *Dacus cucurbitas* – The pumpkin fruit fly.
(c) *Tetranychus tecarius* – The vegetable mite.
(d) *Epilachna* – The Hadda beetle.
Their systematics position, habits and nature of damage caused. Life cycle and control of
Aulacophora faveicollis.

Week 7 (May)

6. Stored grains:
(a) Pulse beetle (*Callosobruchus maculatus)*
(b) Rice weevil (*Sitophilus oryzae)*
(c) Wheat weevil (*Trogoderma granarium)*

Week 8 (May)

(d) Rust Red Flour beetles (*Tribolium castaneum)*
(e) Lesser grain borer *(Rhizopertha dominica)*
(f) Grain & Flour moth *(Sitotroga cerealella)*

Week 9 (June)

6. Insect control: Biological control, its history, requirement and precautions and feasibility of biological agents for control.
7. Chemical control: History, Categories of pesticides. Important pesticides from each category to pests against which they can be used.

Week 10 (June)

Insect repellants and attractants.
8. Integrated pest management.
9. Important bird and rodent pests of agriculture & their management.

Week 11(June)
Revision and test

LESSON PLAN ZOOLOGY

B.Sc. Medical 6th Sem, 2021-22

Subject : DEVELOPMENTAL BIOLOGY, PAPER 6.2

Faculty name: Shweta Yadav

WEEK 1 (April)

Historical perspectives, Aims and scope of Developmental Biology.

WEEK 2 (April)

Generalized structure of mammalian ovum and sperm.

Gametogenesis.

WEEK 3 (April)

Oogenesis

Fertilization

Parthenogenesis, Different types of eggs

WEEK 4 (April)

Patterns of cleavage in Vertebrates and invertebrates.

Process of Blastulation

WEEK 5 (May)

Fate-map construction in Frog and chick.

Introduction to Gastrulation in invertebrates and vertebrates.

Gastrulation in Frog and Formation of three germ layers.

WEEK 6 (May)

Gastrulation in Chick and Formation of three germ layers.

Elementary Knowledge of primary organizers.

WEEK 7 (May)

Extra Embryonic membranes structure and significance in Birds and mammals.

WEEK 8 (May)

Concepts of competence,

WEEK 9 (June)

Concept of determination and differentiation

- **WEEK 10 (June)**

Concept of Regeneration.

WEEK 11 (June)

Revision.

LESSON PLAN FOR EVEN SESSION, 2022

PAPER 4.1

LIFE AND DIVERSITY OF CHORDATES – II

Faculty name: Aakanksha Yadav

WEEK 1

Amphibia: Origin, Evolutionary tree. Type study of frog (Rana tigrina), Parental Care in Amphibia

WEEK 2 (April)

Reptilia: Type study of Lizard (Hemidactylus), Origin, Evolutionary tree. Extinct reptiles;

Poisonous and non-poisonous snakes; Poison apparatus in snakes.

WEEK 3 (April)

Aves: Type study of Pigeon (Columba livia); Flight adaptation, Principles of aerodynamics in

Bird flight, migration in birds.

WEEK 4 (April)

Mammals: Classification, Adaptive radiations of mammals and dentition.

WEEK 5 (May)

Type study of Rat

PAPER 4.2

MAMMALIAN PHYSIOLOGY – II

WEEK 6 (May)

Circulation: Origin, conduction and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system; Composition and functions of blood & lymph; Mechanism of coagulation of blood, coagulation factors; anticoagulants, haempoiesis

WEEK 7 (May)

Respiration: Exchange of respiratory gases, transport of gases, lung air volumes, oxygen dissociation curve of hemoglobin, Bohr's effect, Haburger's phenomenon (Chloride shift), control / regulation of respiration.

Excretion: Patterns of excretory products viz. Amonotelic, ureotlic uricotelic, ornithine cycle (Kreb's– Henseleit cycle) for urea formation in liver.

WEEK 8 (May)

Excretion: Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.

Neural Integration: Nature, origin and propagation of nerve impulse along with medullated & non-medullated nerve fibre, conduction of nerve impulse across synapse.

WEEK 9 (June)

Chemical integration of Endocrinology: Structure and mechanism of hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads.

WEEK 10 (June)

Reproduction: Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human; fertilization, implantation and gestation.

WEEK 11 (June)

Revision[1]

LESSION PLAN(2021-2022) by Shalini Yadav- Department of Zoology

BSc Zoology(Hons) 2nd Semester

Biodiversity III: Chordates

April

Week 1(4-6 April) Introduction, affinities and origin.

Week 2(11-13 April) General features, Phylogeny & classification of Hemichordates, Urochordates & Cephalochordates.

Week 3(18-20 April) Retrogressive metamorphosis, General features of living Agnatha and classification upto classes.

Week 4(25-27 April) Type study of Pteromyzon: Structure and life history

May

Week 1(2-4 May) Type study of Pteromyzon: Structure and life historyGeneral features & Classification of Placodermi upto

subclasses.

Week 2(9-10 May) Chondricthyes up to suborders and Osteichthyes upto orders. Osmoregulation, migration and Parental

care.

Week 3(16-18 May) Type study of Scoliodon

Week 4(23-25 May) General features & Classification upto orders,Origin and evolution of terrestrial ectotherms/tetrapods,

Parental care & paedomorphosis.

Week 5(30-31 May and 1st June) Type sudy of Rana.

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June

Week 1(6-8 June) General features & Classification upto orders. Origin of reptiles skull types, Poisonous and non poisonous snakes in India, Biting mechanism in snakes, Status of Sphenodon and Crocodiles.

Week 2(13-15 June) General features & Classification upto orders. Origin of birds, Flight adaptations, Mechanism of flight,and Migration. General features & Classification upto orders. Origin of mammals, dentition.

Week 3(20-21 June) Type study of Rat

LESSON PLAN(2021-2022) by Shalini Yadav - Department of Zoology

BSc(Hons) Zoology 4th Semester

Animal Ecology

April

Week1(1-2 April) Relevance of studying ecology, its history

Week 2(7-9 April) autecology, synecology. Species- Sympatric, parapatric and Allopatric, Population, Community.

Week 3(14-16 April) Abiotic Factors: Laws of limiting factors- Liebig's law of minimum and Shelford's law of

tolerance. A brief account of light and temperature as limiting factors.

Week 4(21-23 April) soil types and soil erosion, Unitary and modular populations. Ecosystems- terrestrial

(grassland), marine, and aquatic (pond).

Week 5(28-30 April) unique and group attributes- population density, natality, mortality, life tables, fecundity tables,

survivorship curves, age ratio, sex ratio.

May

Week 1(5-7 May) Population dispersion and distribution pattern, Exponential/Malthusian and Sigmoid growth

patterns

Week 2(12-14 May) Verhulst-Pearl growth equation, 'r' and 'k' strategies. Lotka Volterra Equation for prey predator

interaction, functional and numerical responses of prey and predator

Week 3(19-21 May) Intrinsic mechanism- Density dependant fluctuations and oscillations, Extrinsic mechanism Density independent, environmental and climatic factors.

Week 4(26-28 May) population interactions- types in a tabular form with examples. Niche concept, Gause's principle

of competitive exclusion with laboratory and field examples.

June

Week 1(2-4 June) Characteristics of community diversity, diversity index, types of biodiversity species richness,

abundance, species area relationship.

Week 2(9-11 June) community stratification, ecotone/edge effect, succession, stages of primary succession, climax

community. Energy flow through an ecosystem- food chains, food web, trophic levels

Week 3(16-18 June) grazing and detritus type of food chain, Y- shaped food chain in forest, one example of food web, terrestrial and aquatic, nutrient cycle and nitrogen cycle.

Lesson Plan (2021-22)
Subject- Animal Biotechnology (604)
Class- Bsc Zoology (Hons) (6th Sem)
Faculty Name- Naveeta Yadav

Time Period	Topics covered
April, week 1	Concept and scope of biotechnology, Tools and techniques in biotechnology.

April, week 2	**Cell culture media (natural and defined), Preparation and sterilization.**
April, week 3	**Primary cell culture, Cell lines, Pluripotent stem cells, Cryopreservation of cultures.**
April, week 4	**Introduction to the concept of Recombinant DNA Technology , Cloning vectors, Restriction and modifying enzymes, Transformation techniques (microbial, plants and animals), Construction and screening of DNA libraries.**
April, week 5	**Agarose and Polyacrylamide Gel Electrophoresis, Molecular analysis of DNA, RNA and Proteins (i.e. Southern, Northern and Western blotting).**
May, week 1	**DNA sequencing (Maxam-Gilbert and Sanger methods), Polymerase chain reaction and DNA microarrays.**
May, week 2	**Production of transgenic animals-nuclear transplantation, Retroviral method, DNA microinjection method.**
May, week 3	**Applications of transgenic mice, fish, & Dolly, Scientific significance, Therapeutic applications, Human cloning, Ethical issues of transgenic animals.**
May, week 4	**Intellectual property rights, Biosafety levels and guidelines.**
June, week 1	**Molecular diagnosis of genetic diseases (Cystic fibrosis, Huntington's disease, Sickle cell anemia), RFLP, RAPD and DNA fingerprinting, Vaccines and therapeutic agents.**
June, week 2	**Recombinant DNA in medicines (recombinant insulin and human growth hormone), Gene therapy, Enzymes in detergents and leather industries, Heterologous protein production.**
June, week 3	**Bioremediation, Revision**

Lesson Plan (2021-22)
Subject- Animal Physiology and Histology 1 (203)
Class- Bsc Zoology (Hons) (2nd Sem)
Faculty Name- Naveeta Yadav

Time Period	**Topics covered**
April, week 1	**Concepts and classification- Epithelial tissue, Connective tissue.**

April, week 2	**Structure & composition of Blood, Histology of different types of muscle; Ultrastructure of skeletal muscle.**
April, week 3	**Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation, tetanus and muscle dystrophies.**
April, week 4	**Histology and functions of gastrointestinal tract and its associated glands.**
April, week 5	**Mechanical and chemical digestion of food; Role of gastrointestinal hormones; Control and action of GI Tract secretions.**
May, week 1	**Absorptions of carbohydrates, lipids, proteins, water, minerals and vitamins.**
May, week 2	**Histology of trachea and lung; Pulmonary ventilation; Respiratory volumes and capacities.**
May, week 3	**Transport of oxygen in the blood (oxygen-hemoglobin and myoglobin dissociation curve and its influencing factors).**
May, week 4	**Carbon monoxide poisoning; Carbon dioxide transport in the blood; Regulation of acid-base balance; Control of respiration.**
June, week 1	**An outline structure of heart; Coronary circulation; Origin and conduction of cardiac impulse; Cardiac cycle; Cardiac output and its regulation-Frank-Starling Law of the heart.**
June, week 2	**Autonomic control and chemical regulation of heart rate. Blood pressure and its regulation;Electrocardiogram. Structure and functions of hemoglobin; Haemopoiesis; Haemostasis.**
June, week 3	**Coagulation of blood, Revision**

LESSON PLAN (EVEN SEM. 2021-22)
CLASS- B.Sc. ZOOLOGY HONS. 6TH SEMESTER
SUBJECT- DEVELOPMENTAL BIOLOGY (605)
TEACHER'S NAME- ANJALI YADAV

APRIL

WEEK 1- History, anatomical tradition, principles of development, developmental patterns
WEEK 2- evolution of differentiation, gametogenesis, types of eggs
WEEK 3- fertilization, early development of *C. elegans*
WEEK 4- early development of *Xenopus* and chick

MAY

WEEK 1- differentiation of germ layers, formation of neural tube, skin, notochord, somite's, coelom
WEEK 2- formation of digestive system, EEM's in birds and human, implantation of embryo
WEEK 3- placentation, metamorphosis
WEEK 4- regeneration-epimorphosis, morphallaxis
WEEK 5- compensatory regeneration, ageing, class test

JUNE

WEEK 1- medical implications, teratogenesis
WEEK 2- experimental embryology, role of genes in development, amniocentesis
WEEK 3- revision, class test

LESSON PLAN (EVEN SEM. 2021-22)
CLASS- B.Sc. MEDICAL 6TH SEMESTER
SUBJECT- DEVELOPMENTAL BIOLOGY (6.2)
TEACHER'S NAME- ANJALI YADAV

APRIL

WEEK 1- Historical perspectives, aims and scope of developmental biology
WEEK 2- structure of mammalian sperm and ovum, spermatogenesis
WEEK 3- oogenesis, fertilization, types of eggs
WEEK 4- parthenogenesis, patterns of cleavage in vertebrates and invertebrates

MAY

WEEK 1- blastulation, fate map construction in frog and chick,
WEEK 2- introduction to gastrulation in invertebrates & vertebrates gastrulation in frog, class test
WEEK 3- gastrulation in chick, elementary knowledge of primary organizers
WEEK 4- EEM's structure and significance in birds and mammals
WEEK 5- concepts of competence, determination and differentiation

JUNE

WEEK 1- concept of regeneration
WEEK 2- revision and class test
WEEK 3- revision and class test

LESSON PLAN (EVEN SEM 2021-22)
CLASS- B.Sc. MEDICAL 6TH SEMESTER
SUBJECT- ENTOMOLOGY (6.1)
TEACHER'S NAME- ANJALI YADAV

APRIL

WEEK 1- Introduction to pests, Pests of Sugarcane: systematic position, habits, nature of damage caused. Life cycle and control of *Pyrilla perpusilla*.
WEEK 2- Pests of Cotton: systematic position, habits, nature of damage caused. Life cycle and control of *Pectinophora gossypiella*
WEEK 3- Pests of Wheat: systematic position, habits, nature of damage caused. Life cycle and control of *Sesamia inferens.*
WEEK 4- Pests of Paddy: systematic position, habits, nature of damage caused and Life cycle and control of *Leptocorisa acuta*

MAY
WEEK 1- Pests of Vegetables: systematic position, habits, nature of damage caused and Life cycle and control of *Aulacophora faveicollis*.
WEEK 2- Pests of Stored Grains: systematic position, habits, nature of damage caused and Life cycle and control of *Trogoderma granarium,* Class test
WEEK 3- Insect Control: biological control, its history, requirement and precautions and feasibility of biological agents for control.
WEEK 4- Chemical Control: History, categories of pesticides, important pesticides
WEEK 5 - Insect repellants and attractants

JUNE
WEEK 1- integrated pest management
WEEK 2- Important bird and rodent pests of agriculture and their management
WEEK 3- revision

Lesson Plan (EVEN SEM, 2021-22)

Subject-Life and Diversity from Annelida to Hemichordata (2.1)

Class- BSc Medical pass course (2nd Sem)

Teacher name- Ambika Jindal

Time Period	Topics covered
April, week 1	Phylum - Annelida: i) General characters and classification up to order level
April , week 2	ii) Biodiversity and economic importance of Annelida iii) Type study - Pheretima (Earthworm)
April , week 3	iv) Metamerism in Annelida v) Trochophore larva:. Affinities, evolutionary significance
April , week 4	Phylum - Arthropoda: i) General characters and classification up to order level
April , week 5	ii) Biodiversity and economic importance of insects iii) Type study – Periplaneta
May , week 1	iii) Type study – Periplaneta, Phylum - Mollusca: i) General characters and classification up to order level
May , week 2	ii) Biodiversity and economic importance iii) Type study - Pila
May , week 3	iv) Torsion and detorsion in gastropoda v) Respiration and foot
May , week 4	Phylum - Echinodermata: i) General characters and classification up to order level
June, week 1	ii) Biodiversity and economic importance iii) Type Study -Asteries (Sea Star)
June , week 2	iv) Echinoderm larvae v) Aristotle's Lantern
June , week 3	Phylum – Hemichordata: Type study: Balanoglossus

Lesson Plan (EVEN SEM, 2021-22)

Subject-Genetics (2.2)

Class- BSc Medical pass course (2nd Sem)

Teacher name- Ambika Jindal

Time Period	Topics covered
April, week 1	Elements of Heredity and variations.
April , week 2	The varieties of gene interactions
April , week 3	Linkage and recombination: Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.
April , week 4	Sex determination and its mechanism: male and female heterozygous systems, genetic balance system; role of Y -chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination.
April , week 5	Sex linked inheritance: Haemophilia and colour blindness in man, eye colour in Drosophila, Nondisjunction of sex-chromosome in Drosophila; Sex-linked and sex influenced inheritance.
May , week 1	Extra chromosomal and cytoplasmic inheritance: i) Kappa particles in Paramecium. ii) Shell coiling in snails. iii) Milk factor in mice.
May , week 2	Multiple allelism: Eye colour in Drosophila; A, B, 0 blood group in man.
May , week 3	Human genetics: Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.

May , week 4	**Inborn errors of metabolism (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia).**
June , week 1	**Nature and function of genetic material; Structure and type of nucleic acids; Protein synthesis**
June , week 2	**spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation); Numerical aberrations (autoploidy, euploidy and polyploidy in animals)**
June , week 3	**Applied genetics: Eugenics, euthenics and euphenics; genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals** **Revision**

Lesson Plan (EVEN SEM, 2021-22)

Subject-Environment management

Class- BSc Zoology Honors(4th sem),

Teacher name- Ambika Jindal

Time Period	Topics covered
April, week 1	**Unit I Introduction: Human population increase; carrying capacity,**
April , week 2	**Exploitation of resources due to anthropogenic activities like agriculture, horticulture, urbanization and industrialization.**

April , week 3	**Effect of human activities: Depletion of resources; Generation of waste; types (agricultural, municipal, industrial); management of wastes and disposal (emphasis on concepts of reduce, reuse and recycle)**
April , week 4	**Pollution of air, water, soil, noise, and due to radioactive substances; causes and methods of prevention and control**
April , week 5	**Eutrophication; bioremediation; Depletion of forests; threats to biodiversity, extinction of species.**
May , week 1	**Unit II Natural resources: Land, Water, Air, Bioresources and biodiversity.**
May , week 2	**Conservation of resources Soil – Contour farming, afforestation and reforestation; Water – Rainwater harvesting, aquifers, groundwater recharge, watershed management;**
May , week 3	**Biodiversity – In-situ conservation (Sanctuaries, National Parks, Biosphere Reserves, World Heritage Sites), Project Tiger and other conservation efforts. social forestry and Joint forestry Management; ex-situ conservation (botanical gardens, gene banks, cryopreservation).**
May , week 4	**Role of organizations like NBPGR, BSI, ZSI, WWF, IUCN and conventions like Convention on Biological diversity; Ramsar Convention, National Action Plan on Conservation of Biodiversity; Environmental laws and acts. Unit III Global environment change Greenhouse effect**

June , week 1	**Global warming; climate change; shrinking of glaciers and polar ice caps and consequent effects on river and sea levels; ozone layer depletion; vegetation and biota**
June , week 2	**International efforts to control these effects (Vienna Convention, Montreal Protocol, UNFCCC, Kyoto Protocol, Copenhagen Summit, etc.); IPCC; Biosafety of GMOs and LMOs.** **Unit IV Sustainable Development: Definition; Brundlandt Report;**
June , week 3	**Threats to sustainable development, green technologies, eco-cities, Ecological footprint, National Environmental Policy. Energy: Conventional & non-conventional fuel resources** **Revision**

LESSON PLAN(2021-2022) by Sangeeta- Department of Zoology

BSc Zoology(Hons) 4th Semester

Molecular biology - ll

April

Week 1(4-6 April) RNA polymerase and transcription unit

Week 2(11-13 April) Transcription in prokaryotes.

Week 3(18-20 April) Transcription in Eukaryotes.

Week 4(25-27 April) RNA Modification

May

Week 1(2-4 May) Transcriptional regulation in prokaryotes.

Week 2(9-10 May) Transcriptional regulation in Eukaryotes

Week 3(16-18 May) Regulatory RNAs.

Week 4(23-25 May) Assembly line in polypeptide synthesis

Week 5(30-31 May and 1st June) Charging of tRNA, amino acyl tRNA synthetase,

June

Week 1(protein involve in initiation elongation and termination, fidelity of translation.

Week 2(13-15 June) inhibitors of protein synthesis and regulation of translation.

Week 3(20-21 June) Test and revision

Lesson plan (2021-22) by Sangeeta-Department of zoology

Bsc Home science 2 sem

Applied Botany

April

Week 1 introduction to home gardening.

Week 2 soil : structure profile.

Week 3 components , type of soil , tillage.

Week 4 principles and layout of kitchen garden, utilisation of space by intense successive cultivation,

May

Week 1 crop rotation, role of microorganisms in soil fertility, intercropping , raising f healthy seedling.

Week 2 economic botany: neem , aloevera

Week 3Tulsi Ginger, garlic.

Week 4 lawn planning and maintenance

Week 5 terrace gardening it's application

June

Week 1 vegetative propagation by plant

Week 2 plant tissue culture it's importance

Week 3 test and revision.

LESSON PLAN(2021-2022) by Sushila- Department of Zoology

BSc Zoology(Hons) 4th Semester

Cell Biology-ll

April

Week 1(4-6 April) The plasma membrane: Structure and transport is small molecules

Week 2(11-13 April) Endocytosis, Bacterial cell wall and eukaryotic Cell wall

Week 3(18-20 April) THe extracellular matrix and matrix interaction, cell- cell interaction.

Week 4(25-27 April) Signalling molecules and their receptor

May

Week 1(2-4 May) Function of cell surface receptor, intracellular signal transduction pathway

Week 2(9-10 May) Signalling network, eukaryotic cell cycle

Week 3(16-18 May) Regulation of cell cycle progression

Week 4(23-25 May) Events of mitosis phase, meiosis and fertilisation

Week 5(30-31 May and 1st June) Programmed cell death, Stem cell and maintenance of adult tissues

June

Week 1(6-8 June) Embryonic stem cell and therapeutic cloning, development and causes of cancer

Week 2(13-15 June) Tumour viruses, oncogenes, tumour suppressor genes, cancer treatment-molecular approachWeek 3(20-21 June) Test and revision

LESSON PLAN(2021-2022) by Sushila -Department of Zoology

BSc medical 2ndSemester

Life and diversity from protozoa to Helminths

April

Week1(1-2 April) Phylum Annelida General characters and classification upto order level, biodiversity and economic importance

Week 2(7-9 April) type study of pheretima

Week 3(14-16 April) Metemerism in Annelida, Trochophore larva: affinities and evolutionary significance

Week 4(21-23 April) Phylum -Arthropoda : General characters and classification upto order level

Week 5(28-30 April) Biodiversity and economic importance, Type study of Periplaneta

May

Week 1(5-7 May) Type Study of Periplaneta

Week 2(12-14 May) Phylum -Mollusca

General characters and classification upto order level , biodiversity and economic importance

Week 3(19-21 May) Type study of pila globosa

Week 4(26-28 May) Torsion detorsion in gastropods, respiration and foot

June

Week 1(2-4 June) Phylum -Echinodermata

General characters and classification upto order level, biodiversity and economic importance

Week 2(9-11 June) Type study of Asterias, echinoderm larvae, Aristotle lantern

Week 3(16-18 June) Type study of Hemichordata: Balanoglossus, Revision and test

LESSON PLAN(2021-2022)

Teacher Name -Sushila

Department of Zoology

BSc medical 2ndSemester

Subject -Genetics (2.2)

April

Week1(1-2 April) Elements of heredity and variations,The varities of gene interactions

Week 2(7-9 April) Linkage and recombination: Coupling and repulsion hypothesis, crossing- over and chiasma formation, gene mapping

Week 3(14-16 April) Sex determination and it's mechanism: male and female heterozygous systems, genetic balance system, role of y- chromosome, male haploidy, cytoplasmic and environmental factors, role of hormone in sex determination

Week 4(21-23 April)Sex linked inheritance: Haemophilia and colour blindness in man, eye colour in drosophila,Nondisjunction of sex-chromosome in drosophila, Sex linked and sex- influenced inheritance

Week 5(28-30 April) Extrachromosomal and cytoplasmic inheritance:

1) **Kappa particles in paramecium**
2) **Shell coiling in snails**
3) **Milk factor in mice**

May

Week 1(5-7 May) Multiple allelism: Eye colour in drosophila, A,B,O blood group in man

Week 2(12-14 May) Human genetics : Human karyotype , chromosomal abnormalities involvingautosomes and sex- chromosomes, monozygotic and dizygotic twins

Week 3(19-21 May) Inborn errors of metabolism (Alcaptonuria, phenylketonuria, Albinism,Sickle- cell anaemia)

Week 4(26-28 May) Nature and function of genetic material, structure and types of nucleic acids, protein synthesis

June

Week 1(2-4 June) Spontaneous and induced (chemical and radiations) mutations, gene mutations, chemical basis of mutations, transition, transversion, structural chromosomal aberrations (deletions, duplication, inversion and translocation), numerical aberrations (aneuploidy, euploidy and polyploidy in animals)

Week 2(9-11 June) Applied Genetics: Eugenics. Euthenics and euphenics, genetic counseling, pre- natal diagnostics

Week 3(16-18 June) DNA-finger printing, Transgenic animals, Revision and test

Lesson Plan (EVEN SEM, 2021-22)

Subject-205- BOTANY II (PLANT PHYSIOLOGY AND METABOLISM)

Class- BSc ZOOLOGY HONS. (2nd Sem)

Teacher name-MANISHA SHARMA

Time Period	Topics covered

April, week 1	**Plant-water relations: Concept of osmosis, diffusion, imbibition and water potential; Soil-plant-atmosphere continuum concept, concepts of symplast and apoplast; ascent of sap; transpiration and antitranspirants.**
April , week 2	**Mechanism of opening and closing of stomata, Mineral nutrition, Translocation of photoassimilates.**
April , week 3	**Photosynthesis: Photosynthetic pigments; Photosystems; Cyclic and noncyclic electron transport; photophosphorylation.Carbon fixation in C3 plants.**
April , week 4	**Carbon fixation in C4 Plants, CAM plants, factors affecting photosynthesis**
April , week 5	**Respiration: Glycolysis; the TCA cycle and its regulation**
May , week 1	**Electron transport in mitochondria; oxidative phosphorylation**
May , week 2	**Carbohydrate Metabolism: Structure, properties and importance of mono-, di- and polysaccharides; Synthesis of sucrose, starch and cellulose**
May , week 3	**Nitrogen Metabolism: Biological nitrogen fixation and nitrogen cycle. Lipid Metabolism: Structure, properties, classification.**
May , week 4	**Lipid Metabolism: functional significance of fatty acids, triglycerides and steroids; Synthesis and breakdown, formation of glycerides; oxidation of fatty acids, beta oxidation; energy balance.**
June, week 1	**Flowering; physiological definition; role of light; photoperiodism, inductive and non- inductive cycles; role of dark period; role of quality and intensity of light; nature of the flowering stimulus; florigen concept**

June , week 2	**Vernalization: mechanism. Structure, biosynthesis, analysis, transport, physiological effects and mechanism of action of growth regulators.**
June , week 3	**Test and revision**

Subject : BOT 205
Zoology 11
BIODIVERSITY-II: CHORDATA

Class- BSc Botany HONS. (2nd Sem)

Teacher name-MANISHA SHARMA

Time Period	Topics covered
April, week 1	**Chordates Introduction and origin. Protochordates: General features**
April , week 2	**Protochordates: Phylogeny of Hemichordates, Urochordates and Cephalochordates.**
April , week 3	**Retrogressive metamorphosis. AgnathaGeneral features of living Agnatha**
April , week 4	**Pisces:Osmoregulation, Migration and Parental care.**

April , week 5	**Amphibia:Origin and evolution of terrestrial ectotherms,**
May , week 1	**Parental care in Amphibia.Reptiles: Origin, Poisonous and non-poisonous snakes in India**
May , week 2	**Non- poisonous snakes in India.Biting mechanism in snakes**
May , week 3	**Affinities of *Sphenodon* .Aves: Origin,**
May , week 4	**Flight adaptations, Mechanism of flight and**
June , week 1	**Migration in Aves.Origin of Mammals.**
June , week 2	**Origin and evolution of human**
June , week 3	**Test and revision**