

[2023-24]

LESSON PLAN BSc (Medical) EVEN SEMESTER
ZOOLOGY SUBJECT

| S.No | Class | Teacher |
|------|--|-----------------------------|
| | 2nd Sem | |
| | Life and Diversity from Annelids to Hemichordata (2.1) | Aparajita, Sushila, Shalini |
| | Life and Diversity from Annelids to Hemichordata (2.2) <i>Genetics</i> | Aparajita, Sushila, Shalini |
| | 4th Sem | |
| | Life and Diversity of Chordates - II (4.1) | Rakhee, Anjali, Sanju |
| | Mammalian Physiology - II (4.2) | Rakhee, Anjali, Sanju |
| | 6th Sem | |
| | Mammalian Physiology - II (6.1) | Chaiti, Surman, Shweta |
| | Developmental Biology (6.2) | Chaiti, Surman, Shweta |

Lesson Plan of Zoology Department (2023-2024)

Subject- ~~Genetics-II~~ *Life & Diversity of Annelida to Hemichordata*

Class- B.Sc (Med), Sem-2

Faculty Name- Shalini Yadav, Aakanksha Yadav, Sushila

| Time period | Topics covered |
|---------------|--|
| Jan, week 2 | General characters and classification up to order level ii) Biodiversity and economic importance of Annelida |
| Jan, week 3 | Type study - Pheretima |
| Jan, week 4 | Type study - Pheretima , <i>Test</i> |
| Feb, week 1 | Metamerism in Annelida, Trochophore larva: Affinities, evolutionary significance |
| Feb, week 2 | General characters and classification up to order level, Biodiversity and economic importance of insects , <i>Assignment</i> |
| Feb, week 3 | Type study – Periplaneta |
| Feb, week 4 | Type study – Periplaneta |
| March, week 1 | General characters and classification up to order level, Biodiversity and economic importance |
| March, week 2 | Type study - Pila, |
| March, week 3 | General characters and classification up to order level, Biodiversity and economic importance |
| April, week 1 | Type Study -Asteries (Sea Star) , <i>Test & Assignment</i> |
| April, week 2 | Type study: Balanoglossus , Torsion and detorsion in gastropoda |
| April, week 3 | Echinoderm larvae, Aristotle's Lantern |
| April, week 4 | Revision |

Lesson Plan of Zoology Department (2023-2024)

Subject- Genetics II

Class- B.Sc (Med), Sem-2

Faculty Name- Shalini Yadav, Aakanksha Yadav, Sushila

| Time period | Topics covered |
|---------------|--|
| Jan, week 2 | Elements of Heredity and variations. |
| Jan, week 3 | The varieties of gene interaction |
| Jan, week 4 | Linkage and recombination: Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping |
| Feb, week 1 | 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. |
| Feb, week 2 | 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. |
| Feb, week 3 | Extra chromosomal and cytoplasmic inheritance, Kappa particles in Paramecium. ii) Shell coiling in snails. iii) Milk factor in mice. |
| Feb, week 4 | Multiple allelism: Eye colour in Drosophila; A, B, O blood group in man, Test , <i>Assignment</i> |
| March, week 1 | Human genetics: Human karyotype, Chromosomal abnormalities involving autosomes |
| March, week 2 | sex chromosomes, monozygotic and dizygotic twins, Inborn errors of metabolism (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia). |
| March, week 3 | Nature and function of genetic material; Structure and type of nucleic acids; Protein synthesis, structural chromosomal aberrations (deletion, duplication, inversion and translocation) |
| April, week 1 | spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, Test , <i>Assignment</i> |
| April, week 2 | Numerical aberrations (autopolyploidy, euploidy and polyploidy in animals) |
| April, week 3 | Applied genetics: Eugenics, eugenics and eugenics; genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals |
| April, week 4 | Revision |

LESSON PLAN ZOOLOGY

B.Sc Medical 4th Sem ,2023-24

Subject: LIFE AND DIVERSITY OF CHORDATES – II

Paper 4.1

Teacher Name: Sanju Mohan and Anjali , Rakhee Chauhan .

WEEK 2 (Jan)

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

WEEK 3 (Jan)

Reptilia: Type study of Lizard (*Hemidactylus*), Origin, Evolutionary tree. Extinct reptiles; Poisonous and non-poisonous snakes; Poison apparatus in snakes. , Test & Assignment.

WEEK 4 (Jan)

Aves: Type study of Pigeon (*Columba livia*); Flight adaptation, Principles of aerodynamics in Bird flight, migration in birds.

WEEK 1 (Feb)

Mammals: Classification, Adaptive radiations of mammals and dentition. , Test & Assignment

WEEK 2 (Feb)

Type study of Rat

PAPER 4.2

MAMMALIAN PHYSIOLOGY – II

WEEK 3 (Feb)

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, haemopoiesis

WEEK 4 (Feb)

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

Excretion: Patterns of excretory products viz. Ammonotelic, ureotelic, uricotelic, ornithine cycle (Krebs-Henseleit cycle) for urea formation in liver.

WEEK 1 (March)

Excretion: Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition. *Test & Assignment*

WEEK 2 (March)

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

WEEK 3 (March)

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

WEEK 1 (April)

Capacitation of spermatozoa, ovulation, formation of corpus luteum,

WEEK 2 (April)

Menstrual cycle in human; fertilization, implantation and gestation.

Test & Assignment

WEEK 3 (April)

Reproduction: Spermatogenesis, oestrous-anoestrous cycle

WEEK 4 (April)

Revision

LESSON PLAN ZOOLOGY

B.Sc. Medical 6th Sem, 2023-24

Subject : ENTOMOLOGY, PAPER 6.1

Faculty name: Shweta Yadav, Suman, Bharti Khurana

| Time Period | Topics covered |
|-------------|--|
| Jan | <p>Study of important insect pests of crops and vegetables:</p> <p>1 Sugarcane:</p> <ul style="list-style-type: none">(a) Sugarcane leaf-hopper (<i>Pyrilla perpusilla</i>)(b) Sugarcane Whitefly (<i>Aleurolobus barodensis</i>)(c) Sugarcane top borer (<i>Sciropophaga nivella</i>)(d) Sugarcane root borer (<i>Emmalocera depresella</i>)(e) Gurdaspur borer (<i>Bissetia steniellus</i>) <p>With their systematic position, habits and nature of damage caused. Life cycle and control of <i>Pyrilla perpusilla</i> only.</p> <p>2 Cotton:</p> <ul style="list-style-type: none">(a) Pink bollworm (<i>Pectinophora gossypiolla</i>)(b) Red cotton bug (<i>Dysdercus Cingulatus</i>)(c) Cotton grey weevil (<i>Myllocerus undecimpustulatus</i>)(d) Cotton Jassid (<i>Amrasca devastans</i>) <p>With their systematic position, habits and nature of damage caused. Life cycle and control of <i>Pectinophore gossypiella</i>.</p> |
| Feb | <p>3 Wheat:</p> <p>Wheat stem borer (<i>Sesamia inferens</i>) with its systematics position, habits, nature of damage caused. Life cycle and control.</p> <p>4 Paddy:</p> <ul style="list-style-type: none">(a) Gundhi bug (<i>Leptocorisa acuta</i>)(b) Rice grasshopper (<i>Hieroglyphus banian</i>)(c) Rice stem borer (<i>Scirpophaga incertullus</i>)(d) Rice Hispa (<i>Diceladispera armigera</i>) <p>With their systematic position, habits and nature of damage caused. Life cycle and control of <i>Loptocorisa acuta</i>.</p> <p><i>Test & Assignment</i></p> |
| March | <p>5 Vegetables</p> <ul style="list-style-type: none">(a) <i>Raphidopalpa faveicollis</i> – The Red pumpkin beetle.(b) <i>Dacus cucurbitas</i> – The pumpkin fruit fly.(c) <i>Tetranychus tecarius</i> – The vegetable mite.(d) <i>Epilachna</i> – The Hadda beetle. <p>Their systematics position, habits and nature of damage caused. Life cycle and control of <i>Aulacophora faveicollis</i>.</p> |

6 Stored grains:

- (a) Pulse beetle (*Callosobruchus maculatus*)
- (b) Rice weevil (*Sitophilus oryzae*)
- (c) Wheat weevil (*Trogoderma granarium*)
- (d) Rust Red Flour beetles (*Tribolium castaneum*)
- (e) Lesser grain borer (*Rhizopertha dominica*)
- (f) Grain & Flour moth (*Sitotroga cerealella*)

Their systematic position, habits and nature of damage caused. Life cycle and control of *Trogoderma granarium*. , Test & Assignment

April

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

Test and Revision

LESSION-PLAN (Jan 2024 –April 2024)
B.Sc. Med Sem-6, ZOOLOGY
Session 2023-24
Teachers: Dr Suman, Ms. Shweta, Ms. Bharti

Developmental Biology (6.2).

January 2024

Unit-I

- Historical perspectives,
- Aims and scope of developmental biology
- Generalized structure of mammalian ovum & sperm.
- Spermatogenesis and Oogenesis.
- Assignment/test/discussion

February 2024

Session 2023-24

- Fertilization, parthenogenesis,
- different types of eggs and patterns of cleavage in
- Invertebrates and vertebrates.
- Process of blastulation in invertebrates and vertebrates
- Fate-map construction in frog and chick.
- Assignment/test/discussion

March 2024

- Gastrulation in invertebrates and vertebrates
- Gastrulation & formation of three germinal layers in frog and chick.
- Elementary knowledge of primary organizers.
- Assignment/test/discussion

April 2024

- Extra embryonic membranes: structure & significance in birds and mammals.
- Concepts of competence, determination and differentiation.
- Concept of regeneration.
- Assignment/test/discussion

| No | Class | Teacher |
|----|---------------------------------------|--------------|
| | B.Sc. ZOOLOGY (HONS.) 2nd sem | |
| | Biodiversity-III Chordata (201) | Ambika |
| | Biodiversity-IV Chordata (202) | Ambika |
| | Animal Physiology & Histology I (203) | Anjali |
| | B.Sc. BOTANY (HONS.) 2nd sem | |
| | Zoology-II (205) | Naveeta |
| | B.Sc. ZOOLOGY (HONS.) 4th sem | |
| | Cell Biology II (401) | Shalini |
| | Molecular Biology II (402) | Naveeta |
| | Animal Ecology (403) | Sangeeta |
| | EVM (405) | Sushila |
| | B.Sc. ZOOLOGY (HONS.) 6th sem | |
| | Genetics & Genomics II (601) | Aakanksha |
| | Applied Zoology (602) | Sapna Yadav |
| | Immunology II (603) | Sapna Yadav |
| | Animal Biotechnology (604) | Sapna Tanwar |
| | Developmental Biology (605) | Sapna Tanwar |

B.Sc. Zoo(H) 2nd Sem

BOTANY II
(Plant Physiology & metabolism) Manisha

B.Sc. Botany (Hons) 4th Sem Manisha

Molecular Biology-II (402)

MA Geography 2nd sem
(Environmental Issues) Sanju Mohan

B.Sc. Home Science
(Applied Botany) Sangeeta

Lesson Plan (EVEN SEM, 2023-24)

Subject- BIODIVERSITY III CHORDATA

Class- BSc Zoology Honors SEMESTER - II PAPER-201

Teacher name- AMBIKA JINDAL

| Time Period | Topics covered |
|---------------|---|
| Jan, week 2 | Chordates Introduction, affinities and origin |
| Jan, week 3 | General features, Phylogeny & classification of Hemichordates, Retrogressive Metamorphosis |
| Jan, week 4 | General features, Phylogeny & classification of Urochordates |
| Feb, week 1 | General features, Phylogeny & classification of Cephalochordata |
| Feb, week 2 | General features of living Agnatha and classification upto classes. Type study of Petromyzon: Structure and life history |
| Feb, week 3 | Type study of Petromyzon: Structure and life history |
| Feb, week 4 | General features & Classification of Placodermi upto subclasses, Chondrichthyes up to suborders and Osteichthyes upto orders. Osmoregulation, migration and Parental care in Fish. <i>Test & Assignment</i> |
| March, week 1 | Type study of Scoliodon |
| March, week 2 | General features & Classification upto orders, Origin and evolution of terrestrial ectotherms/tetrapods, Parental care & paedomorphosis |
| March, week 3 | Type study of Rana |
| April, week 1 | 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. |
| April, week 2 | General features & Classification upto orders. Origin of birds, Flight adaptations, Mechanism of flight and Migration. <i>Test & Assignment.</i> |
| April, week 3 | Type study of Rat General features & Classification upto orders. Origin of mammals, dentition. |
| April, week 4 | Revision. |

Lesson Plan (EVEN SEM, 2023-24)

Subject- BIODIVERSITY IV CHORDATA

Class- BSc Zoology Honors SEMESTER - II PAPER-202

Teacher name- AMBIKA JINDAL

| Time Period | Topics covered |
|----------------|--|
| Jan, week 2 | Comparative Anatomy of Chordates: Integument Structure and derivatives of integument |
| Jan, week 3 | Comparative Anatomy of Chordates: Bone Structure and types, Ossification, bone growth. |
| Jan, week 4 | Digestive System Alimentary canal and associated glands |
| Feb, week 1 | Respiratory system Skin, Gills, Lungs, Air sacs and voice apparatus, Air bladder and accessory breathing organs in fishes. |
| Feb, week 2 | Circulatory System Evolution of heart and aortic arches |
| Feb, week 3 | Venous system and lymphatic system , Test & Assignment |
| Feb, week 4 | Skeleton System Axial and appendicular skeleton, Jaw suspensorium and Visceral arches |
| March , week 1 | Nervous System Central & Autonomic Nervous System, Cranial nerves |
| March , week 2 | Sense Organs Classification of receptors |
| March, week 3 | Structure and working of Mammalian eye |
| April, week 1 | Structure and working of Mammalian ear , Test & Assignment |
| April, week 2 | Evolution of Urinogenital ducts |
| April, week 3 | Urinogenital System Succession of kidney |
| April, week 4 | Revision. |

Lesson Plan (EVEN SEM, 2023-24)

Subject- BIODIVERSITY IV CHORDATA

Class- BSc Zoology Honors SEMESTER - II PAPER-202

Teacher name- AMBIKA JINDAL

| Time Period | Topics covered |
|----------------|--|
| Jan. week 2 | Comparative Anatomy of Chordates: Integument Structure and derivatives of integument |
| Jan, week 3 | Comparative Anatomy of Chordates: Bone Structure and types, Ossification, bone growth. |
| Jan, week 4 | Digestive System Alimentary canal and associated glands |
| Feb, week 1 | Respiratory system Skin, Gills, Lungs, Air sacs and voice apparatus, Air bladder and accessory breathing organs in fishes. |
| Feb, week 2 | Circulatory System Evolution of heart and aortic arches |
| Feb, week 3 | Venous system and lymphatic system , Test & Assignment |
| Feb, week 4 | Skeleton System Axial and appendicular skeleton, Jaw suspensorium and Visceral arches |
| March , week 1 | Nervous System Central & Autonomic Nervous System, Cranial nerves |
| March , week 2 | Sense Organs Classification of receptors |
| March, week 3 | Structure and working of Mammalian eye |
| April, week 1 | Structure and working of Mammalian ear , Test & Assignment |
| April, week 2 | Evolution of Urinogenital ducts |
| April, week 3 | Urinogenital System Succession of kidney |
| April, week 4 | Revision. |

Lesson Plan (EVEN SEM, 2023-24)

Subject- BOTANY II (PLANT PHYSIOLOGY AND METABOLISM)

Class- BSc Zoology Honors SEMESTER - II PAPER-205

Teacher name- Dr. Manisha Sharma

| Time Period | Topics covered |
|----------------|---|
| Jan, week 2 | Plant-water relations: Concept of osmosis, diffusion, imbibition and water potential; Soil-plant-atmosphere continuum concept, concepts of symplast and apoplast. |
| Jan, week 3 | Ascent of sap; transpiration and antitranspirants; mechanism of opening and closing of stomata |
| Jan, week 4 | Mechanism of opening and closing of stomata, Mineral nutrition, Translocation of photoassimilates. |
| Feb, week 1 | Photosynthetic pigments; Photosystems; Cyclic and noncyclic electron transport; photophosphorylation. |
| Feb, week 2 | Carbon fixation in C3 and C4 plants. |
| Feb, week 3 | CAM plants, factors affecting photosynthesis Respiration: Glycolysis. |
| Feb, week 4 | TCA cycle and its regulation; electron transport in mitochondria; oxidative phosphorylation. <i>Test & Assignment</i> |
| March , week 1 | Flowering; physiological definition; role of light; photoperiodism, inductive and non-inductive cycles; role of dark period. |
| March , week 2 | Role of quality and intensity of light; nature of the flowering stimulus; florigen concept, vernalization: mechanism. |
| March, week 3 | Structure, biosynthesis, analysis, transport, physiological effects and mechanism of action of growth regulators. |
| April, week 1 | Carbohydrate Metabolism: Structure, properties and importance of mono-, di- and polysaccharides; Synthesis of sucrose, starch and cellulose. |
| April, week 2 | Nitrogen Metabolism : Biological nitrogen fixation and nitrogen cycle <i>Test & Assignment</i> |
| April, week 3 | Lipid Metabolism: Structure, properties, classification and functional significance of fatty acids, triglycerides and steroids; Synthesis and breakdown, formation of glycerides; oxidation of fatty acids, beta oxidation; energy balance. |
| April, week 4 | Revision. |

Lesson plan Zoology (hons.) 2023- 24

Even semester (2nd semester)

Animal Physiology & Histology (P- 203) Teacher's name: Anjali Yadav

| Time period | Topics covered |
|---------------|---|
| Jan., week 3 | Tissues and Glands |
| Jan., week 4 | Blood, Muscles- Histology, |
| Feb., week 1 | Ultrastructure of skeletal muscle, Muscle contraction, Muscle twitch, |
| Feb., week 2 | Motor unit, tetanus, muscle dystrophies |
| Feb., week 3 | Digestive system- Histology and function, digestion and absorption of food |
| Feb., week 4 | Role, Control and action of GIT secretions, Respiratory system- histology, Respiratory volumes and capacities |
| March, week 1 | Transport of gases, regulation of acid-base balance , <i>Test A Assignment</i> |
| March, week 2 | Control of respiration, carbon monoxide poisoning |
| March, week 3 | Circulatory system- Outline of heart, coronary circulation, Haemopoiesis, haemostasis |
| April, week 1 | Origin and conduction of cardiac impulse, cardiac cycle, CO, Control of heart rate |
| April, week 2 | Blood pressure, ECG, Blood coagulation , <i>Test B Assignment</i> |
| April, week 3 | Test and revision |

Lesson plan Botany(hons.) 2023- 24

Even semester (2nd semester)

Biodiversity-II: Chordata (BOT-205)

Teacher's name: Naveeta Yadav

| Time period | Topics covered |
|----------------|--|
| Jan. , week 3 | Chordates Introduction and origin. Protochordates: General features |
| Jan., week 4 | Protochordates: General features and Test |
| Feb. , week 1 | Protochordates: Phylogeny of Hemichordates, Urochordates and Cephalochordates. |
| Feb. , week 2 | Retrogressive metamorphosis. Agnatha General features of living Agnatha |
| Feb. , week 3 | Pisces: Osmoregulation, Migration and Test , <i>Assignment</i> |
| Feb. , week 4 | Parental care in fishes |
| March , week 1 | Amphibia: Origin and evolution of terrestrial ectotherms, |
| March , week 2 | Parental care in Amphibia. Reptiles: Origin |
| March , week 3 | Reptiles: Poisonous and non- poisonous snakes in India and Test |
| April , week 1 | Non- poisonous snakes in India. Biting mechanism in snakes, Affinities of Sphenodon .Aves: Origin, |
| April , week 2 | Flight adaptations, Mechanism of flight and Migration in Aves. Origin of Mammals. |
| April, week 3 | Origin and evolution of human and Revision, Test , <i>Assignment</i> |

Lesson Plan of Zoology Department (2023-2024)

Subject- Cell Biology-II

Class- B.Sc Zoo(Hons), Sem-~~3~~4

Faculty Name- Shalini Yadav

401

| Time period | Topics covered |
|---------------|--|
| Jan, week 1 | Signaling molecules and their receptor; functions of cell surface receptors |
| Jan, week 2 | signaling networks. |
| Jan, week 3 | Intracellular signal transduction pathway, signaling networks |
| Feb, week 1 | Eukaryotic Cell Cycle, Regulation of Cell cycle progression |
| Feb, week 2 | Events of Mitotic Phase |
| Feb, week 3 | Meiosis and Fertilization. |
| Feb, week 4 | Programmed Cell Death, Stem Cells and Maintenance of adult tissues, |
| March, week 1 | Embryonic Stem Cells and Therapeutic cloning, Development and Causes of Cancer <i>Test & Assignment</i> |
| March, week 2 | Tumor Viruses, Oncogenes, |
| March, week 3 | Tumor Suppressor genes, Cancer Treatment- molecular approach. |
| April, week 1 | Structure; Transport of small molecules, Endocytosis, the extracellular matrix |
| April, week 2 | cell matrix interactions; cell-cell interactions. |
| April, week 3 | Endocytosis, Bacterial and Eukaryotic Cell <i>Test & Assignment</i> |
| April, week 4 | Revision |

Lesson plan Zoology (hons.) 2023- 24

Even semester (4th semester)

Molecular Biology- II (P- 402)

Teacher's name: Naveeta Yadav

| Time period | Topics covered |
|----------------|--|
| Jan. , week 3 | RNA polymerase and transcription unit |
| Jan., week 4 | Transcription in prokaryotes. |
| Feb. , week 1 | Transcription in Eukaryotes. |
| Feb. , week 2 | RNA Modification- Split gene, Intron and Exon, Spliceosome machinery, Splicing, exon shuffling, rna editing, mRNA transport <i>Test & Assignment</i> |
| Feb. , week 3 | Transcriptional regulation in prokaryotes - principles of transcriptional regulation, regulation at initiation with examples from lac and trp operon |
| Feb. , week 4 | Transcriptional regulation in Eukaryotes - conserved mechanism of regulation, eukaryotic activators, signal integration, signal transduction, gene silencing |
| March , week 1 | Regulatory RNAs - riboswitches, RNA interference, miRNA, siRNA, X - inactivation |
| March , week 2 | translation - ribosome structure & assembly, various steps in protein synthesis |
| March , week 3 | Charging of tRNA, amino acyl tRNA synthetase |
| April , week 1 | protein involve in initiation elongation and termination, fidelity of translation. |
| April , week 2 | inhibitors of protein synthesis and regulation of translation. , <i>Assignment</i> |
| April, week 3 | Test and revision |

Lesson plan Zoology(Hons.)2023-24Evensemester

Animal Ecology,403

Teacher's name:Sangeeta

- January
- Week3:Introduction to ecology, it's relevance and history, autoecology syn ecology
Species-Allopatric, parapatric and sympatric speciation.
- Week4:Population,community,ecosystem,Biome
- February
- Week1:Biosphere,ecosphere,Abiotic factor law of limiting factor, liebig's law of minimum and shelford's law of tolerance.
- Week2:Light and temperature as limiting factor , type of soil, soil erosion, Unitary and Modular population.
- Week3:Population density, natality, mortality, life table, fecundity
- Week4:Survivorship curve, age ratio, sex ratio ,population dispersion and distribution patterns. *Test & Assignment*
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- March
- Week1:Population growth, growth patterns and equations.
- Week2: r and k strategies, population growth regulations
- Week3:Population interactions, niche concept, Guess principal.
- Week4:Holi Break
- April
- Week1:Different types of Ecosystems, community , types of biodiversity
- Week2:Community stratification, ecotone, edge effect, Succession and it's types
Nutrient cycle, nitrogen cycle *Test & Assignment*
- Week3:preparatory break

Lesson Plan (EVEN SEM, 2023-24)

Paper code - 405

Subject-Environment management

Class- BSc Zoology Honors(4th sem), Teacher name- Sushila

| Time Period | Topics covered |
|---------------|--|
| Jan., week 3 | Unit I Introduction: Human population increase; carrying capacity, |
| Jan., week 4 | Exploitation of resources due to anthropogenic activities like agriculture, horticulture, urbanization and industrialization. |
| Feb., week 1 | 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) |
| Feb., week 2 | Pollution of air, water, soil, noise, and due to radioactive substances; causes and methods of prevention and control, Test, Assignment |
| Feb., week 3 | Eutrophication; bioremediation; Depletion of forests; threats to biodiversity, extinction of species. |
| Feb., week 4 | Unit II Natural resources: Land, Water, Air, Bioresources and biodiversity. |
| March, week 1 | Conservation of resources Soil – Contour farming, afforestation and reforestation; Water – Rainwater harvesting, aquifers, groundwater recharge, watershed management; |
| March, week 2 | 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). Test, Assignment |
| March, week 3 | 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 |
| April, 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 |
| April, 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; |

Lesson Plan (EVEN SEM, 2023-24)

Subject- MOLECULAR BIOLOGY-II

Class- BSc botany Honors SEMESTER – 4 PAPER-402

Teacher name- Dr. Manisha Sharma

| Time Period | Topics covered |
|---------------|---|
| Jan, week 2 | RNA Polymerase and the transcription unit |
| Jan, week 3 | Transcription in prokaryotes |
| Jan, week 4 | Transcription in eukaryotes, RNA modification |
| Feb, week 1 | Polypeptide synthesis. protein synthesis steps |
| Feb, week 2 | Protein synthesis in prokaryotes |
| Feb, week 3 | Protein synthesis in Eukaryotes |
| Feb, week 4 | Regulation and protein inhibitors of translation |
| March, week 1 | Transcriptional regulation in prokaryotes , Test & Assignment |
| March, week 2 | Lac and trp operon |
| March, week 3 | Regulatory RNA: roboswitch, miRNA, siRNA, X-inactivation |
| April, week 1 | Transcriptional regulation in Eukaryotes |
| April, week 2 | Signal transduction, integration, transcriptional regulators |
| April, week 3 | Transcriptional repressor, Gene silencing , Test & Assignment |
| April, week 4 | revision |

LESSON PLAN FOR ZOOLOGY
M.A GEOGRAPHY SEMESTER II (2023-24)
PAPER 16ENVO1
ENVIRONMENTAL ISSUES (OPEN ELECTIVE)

Teacher name: Sanju Mohan

WEEK 2 (Jan)

Air pollution: causes of air pollution, some important air pollutants-their sources and effect on living and non living organisms.

WEEK 3 (Jan)

Water pollution: sources of pollution of surface and groundwater, types of water pollutants.

WEEK 4 (Jan)

Solid waste-sources, characterization, disposal and management.

WEEK 1 (Feb)

Soil pollution, sources of soil pollution, pollution and residual toxicity from application of insecticide , *Test & Assignment*

WEEK 2 (Feb)

Deforestation, population growth forms, urbanization, industrialization and modernization of agriculture.

WEEK 3 (Feb)

Forest and wildlife management, desertification

WEEK 4 (Feb)

Reclamation of degraded land, human intervention on wetland, siltation and eutrophication

WEEK 1 (March)

Green house effect: cause and associated hazards , *Test*

WEEK 2 (March)

Ozone layer depletion-causes and associated hazards , *Assignment*

WEEK 3 (March)

Ozone layer depletion-causes and associated hazards. Pesticides and fertilizers, soil erosion.

WEEK 1 (April)

Reclamation of wetlands, mining and environment, open cast mining

WEEK 2 (April)

Oil exploration and transportation

WEEK 3 (April)

Deforestation and their impact on environment

WEEK 4 (April)

Revision

Lesson plan(2023-24)even

-Department of zoology

Bsc.Homescience 2 sem

Applied Botany

Teacher's name Sangeeta

January

Week3:Introduction to home gardening.

Week4:Soil:structure profile.

February

Week1:Components,type of soil, tillage.

Week2:Principles and layout of kitchen garden,utilization of space intense successive cultivation.

Week3:Utilisation of space by intense successive cultivation.

Week4:Crop rotation,role of microorganisms in soil fertility. *Test & Assignment*

March

Week1:Inter cropping, raising of healthy seedling.

Week2Economic botany: neem, aloevera

Week3Tulsi Ginger,garlic.

Week4Holi break

April

Week1 Test, lawn planning and maintenance terrace gardening it's application , *Assignment*

Week2Vegetative propagation by plant, plant tissue culture it's importance

Week3Preparatory break

Lesson plan zoology (hons.) 2023- 24

Even semester (6th semester)

Genetics and Genomics II (P- 601)

Teacher's name: Aakanksha Yadav

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

Lesson plan zoology (hons.) 2023- 24

Even semester (6th semester)

Applied Zoology (P- 602)

Teacher's name: Bharti Khurana and Sapna Yadav

| Time period | Topics covered |
|---------------|--|
| Jan, week 2 | Human diseases, transmission, prevention and control |
| Jan, week 3 | Implantation, placenta, parturition, lactation |
| Jan, week 4 | Infertility cause, diagnosis, and management |
| Feb, week 1 | Assisted reproductive technology and modern contraceptive technologies |
| Feb, week 2 | Bionomics and control of crop pests , <i>Test & Assignment</i> |
| Feb, week 3 | Bionomics and management and control of stored grain pests |
| Feb, week 4 | Classification of insect control with reference to chlorinated hydrocarbons |
| March, week 1 | Classification of insect control with reference to organophosphates, carbamates |
| March, week 2 | Classification of insect control with reference synthetic pyrethroid |
| March, week 3 | General aspects of integrated pest management and Zebrafish as a model for biotechnology |
| April, week 1 | Genetic improvement in aquaculture industry , <i>Test & Assignment</i> |
| April, week 2 | Induced breeding and transportation of fish seed |
| April, week 3 | Outlines of apiculture, sericulture and lac culture |
| April, week 4 | Revision |

Lesson Plan (EVEN SEM, 2023-24)

Subject-Immunology-II

Class- BSc Zoology Honors (6thsem),

Paper-603

Teacher name- Sapna Yadav

| Time Period | Topics covered |
|----------------|---|
| Jan, week 2 | Unit I Major Histocompatibility Complex Structure |
| Jan, week 3 | Major Histocompatibility Complex polymorphism and functions |
| Jan, week 4 | MHC and immune responsiveness |
| Feb, week 1 | The cytosolic pathway: endogenous pathway |
| Feb, week 2 | The endocytic pathway and exogenous pathway. , Test |
| Feb, week 3 | Cytokines: properties and functions, the general structure of cytokine receptors , Assignment |
| Feb, week 4 | Complement system: components, activation and functions. |
| March , week 1 | Hypersensitivity Gell and Coombs classification, IgE mediated (type I) |
| March , week 2 | Hypersensitivity Antibody-mediated (type II) |
| March, week 3 | Immune complex mediated (type III) and T- DTH mediated hypersensitivity (type IV). |
| April, week 1 | Vaccines: bacterial, viral, toxoid and III generation vaccines. |
| April, week 2 | Immunodeficiency-SCID, AIDS etc, Test & Assignment |
| April, week 3 | Autoimmunity |
| April, week 4 | Revision. |

Lesson plan Zoology (Hons.) 2023- 24

Even semester (6th semester)

Animal Biotechnology (P- 604)

Teacher's name: Sapna Tanwar

| Time period | Topics covered |
|---------------|---|
| Jan, week 2 | Introduction to Biotechnology: concept and scopes, Tools and techniques in Biotechnology |
| Jan, week 3 | Cell culture media (natural and defined), Preparation of media, Sterilization of media |
| Jan, week 4 | Primary cell culture, cell lines, Pleuripotent stem cells, Test |
| Feb, week 1 | Cryopreservation of cultures, Introduction to rDNA technology |
| Feb, week 2 | Cloning vectors, Test1 , <i>Assignment</i> |
| Feb, week 3 | Restriction and modification enzymes, Transformation techniques (microbes and plants) |
| Feb, week 4 | Transformation techniques (animals), construction and screening of DNA libraries |
| March, week 1 | Electrophoresis, Molecular analysis of DNA, RNA and Proteins |
| March, week 2 | DNA sequencing, PCR, Test , <i>Assignment</i> |
| March, week 3 | DNA microarray, Production of transgenic animals, Test2 |
| April, week 1 | Intellectual Property Rights, Biosafety levels and guidelines |
| April, week 2 | Molecular diagnosis of genetic diseases, RFLP, RAPD , DNA Fingerprinting, rDNA in medicines |
| April, week 3 | Gene therapy, Enzymes in detergent and leather industry, heterologous protein production |
| April, week 4 | Bioremediation, Revision |

Lesson plan Zoology (Hons.) 2023- 24

Even semester (6th Semester)

Developmental biology (605)

Teacher's name: Sapna Tanwar

| Time period | Topics covered |
|---------------|---|
| Jan, week 2 | Unit I Introduction History, Anatomical tradition, Principles of development-life cycles, Developmental patterns and evolution of differentiation |
| Jan, week 3 | Early Embryonic Development Gametogenesis- Spermatogenesis and oogenesis, Types of eggs, Fertilization- changes in gametes, mono- and polyspermy |
| Jan, week 4 | The early development of <i>C. elegans</i> ; The early development of <i>Xenopus</i> -cleavage, Gastrulation, Embryonic induction and organizers |
| Feb, week 1 | The early development of chick-cleavage, Gastrulation |
| Feb, week 2 | Unit II Later Embryonic Development Differentiation of germ layers- Formation of neural tube (development of CNS) |
| Feb, week 3 | skin, notochord, somites, coelom and digestive tube (upto rudiments) |
| Feb, week 4 | Eye Development Test1 , Assignment |
| March, week 1 | Extra-embryonic membranes in birds and human |
| March, week 2 | Implantation of embryo, placentation – structure, types and physiology of placenta |
| March, week 3 | Unit III Post-Embryonic Development Metamorphosis- changes and hormonal regulation of metamorphosis in insects and amphibians, |
| April, week 1 | Regeneration- modes of regeneration-epimorphosis, Morphallaxis and compensatory regeneration (with one example), |
| April, week 2 | Ageing- concepts and model (<i>C. elegans</i>) , Test 2, Assignment |
| April, week 3 | Unit IV Implications of Developmental Biology Medical implications: Infertility – Diagnosing Infertility, IVF., |
| April, week 4 | Teratogenesis – teratogenic agents and effect of teratogens on embryonic development Experimental embryology, Role of genes in development, Amniocentesis |