



List of New Course(s) Introduced

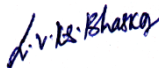
Department : Zoology

Programme Name : B.Sc.

Academic Year : 2020-21

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
01.	LS/ZOO/CC/-501 L	Molecular Biology
02.	LS/ZOO/CC/-502 L	Principle of Genetics
03.	LS/ZOO/DSE-501 (A) L	A. Basics of Neuroscience
04.	LS/ZOO/DSE-501 (B) L	B. Endocrinology
05.	LS/ZOO/DSE-501 (C) L	C. Immunology
06.	LS/ZOO/DSE-502 (A) L	A. Animal Behaviour and Chronobiology
07.	LS/ZOO/DSE-502 (B) L	B. Parasitology
08.	LS/ZOO/DSE-502 (C) L	C. Reproductive Biology
09.	LS/ZOO/CC-601 L	Developmental Biology
10.	LS/ZOO/CC-602 L	Evolutionary Biology
11.	LS/ZOO/DSE-601 (A) L	A. Biology of Insecta
12.	LS/ZOO/DSE-601 (B)L	B. Fish and Fisheries
13.	LS/ZOO/DSE-601 (C) L	C. Wild Life Conservation and Management


विभागाध्यक्ष
HEAD
कस्तुर विज्ञान विभाग
Department of Zoology
गुरु घासीदास वि.वि., बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur



Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2020-21

School : School of Studies of Life Sciences

Department : Zoology

Date and Time : 18 Aug, 2020 - 11:30 AM

Venue : Department of Zoology

The scheduled meeting of member of Board of Studies (BoS) of Department of Zoology, School of Studies of Life Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur was held to design and discuss the B. Sc. scheme and syllabi.

The following members were present in the meeting:

1. Prof. Shivkant Kumar Prasad (External Expert Member BoS, Dept. of Biosciences., Pandit Ravishankar Shukla University).
3. Prof. LVKS Bhaskar (HOD, Dept. of Zoology.-cum Chairman, BOS)
4. Dr. Rohit Seth (Member BoS, Associate Professor, Dept. of Zoology)
5. Dr. Sushant Kumar Verma (Member, Assistant Professor, Dept. of Zoology)

The committee discussed and approved the scheme and syllabi. The following new courses were introduced in B. Sc. Zoology (V to VI semester):

Sr. No.	Course Code	Name of the Course
01.	LS/ZOO/CC/-501 L	Molecular Biology
02.	LS/ZOO/CC/-502 L	Principle of Genetics
03.	LS/ZOO/DSE-501 (A) L	A. Basics of Neuroscience
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LVKS Bhaskar

निष्ठागमन्यक
HEAD
अनु विज्ञान विभाग
Department of Zoology
गुरु घासीदास वि.वि., बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur

Signature & Seal of HoD

गुरु घासीदास विश्वविद्यालय
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
कोनी, बिलासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)
Koni, Bilaspur - 495009 (C.G.)

Scheme and Syllabus

SCHEME AND SYLLABUS

2018-19

FOR

CHOICE BASED CREDIT SYSTEM (CBCS)

FOR B.Sc. HONOURS ZOOLOGY

DEPARTMENT OF ZOOLOGY

SCHOOL OF LIFE SCIENCES

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (CG)

Neeraj
Santosh Singh

Changal

Manish
6/7/18

विभागाध्यक्ष
HEAD
जन्तु विज्ञान विभाग
Department of Zoology
गुरु घासीदास विश्वविद्यालय, बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur



Core Course-10 Practical	LS/ZOO/CC-403 P	Lab Course	2	
Generic Elective-4 Theory	LS/ZOO/GE-401 L	Insect Vectors and Diseases	4	
Generic Elective-4 Practical	LS/ZOO/GE-401 P	Lab Course	4	
Skill Enhancement Course-2	LS/ZOO/SE-401	Medical Diagnostics	2	
Skill Enhancement Course-2	LS/ZOO/SE-401	Lab Course	2	
TOTAL			28	34
Summer internship: 15 days			2	100
Semester V				
Core Course-11 Theory	LS/ZOO/CC-501 L	Molecular Biology	4	4
Core Course-11 Practical	LS/ZOO/CC-501 P	Lab Course	2	4
Core Course-12 Theory	LS/ZOO/CC-502 L	Principles of Genetics	4	4
Core Course-12 Practical	LS/ZOO/CC-502 P	Lab Course	2	4
Discipline Specific Elective-1 Theory	LS/ZOO/DSE-501(A) L	A. Basics of Neuroscience	4	4
	LS/ZOO/DSE-501(B) L	B. Endocrinology		
	LS/ZOO/DSE-501(C) L	C. Immunology		
Discipline Specific Elective-1 Practical	LS/ZOO/DSE-501(A) P	Lab Course A	2	4
	LS/ZOO/DSE-501(B) P	Lab Course B		
	LS/ZOO/DSE-501(C) P	Lab Course C		
Discipline Specific Elective-2 Theory	LS/ZOO/DSE-502(A) L	A. Animal Behavior and Chronobiology	4	4
	LS/ZOO/DSE-502(B) L	B. Parasitology		
	LS/ZOO/DSE-502(C) L	C. Reproductive Biology		
Discipline Specific Elective-2 Practical	LS/ZOO/DSE-502(A) P	Lab Course A	2	4
	LS/ZOO/DSE-502(B) P	Lab Course B		
	LS/ZOO/DSE-502(C) P	Lab Course C		
TOTAL			24	32
Semester VI				
Core Course-13 Theory	LS/ZOO/CC-601 L	Developmental Biology	4	4
Core Course-13 Practical	LS/ZOO/CC-601 P	Lab Course	2	4
Core Course-14 Theory	LS/ZOO/CC-602 L	Evolutionary Biology	4	4
Core Course-14 Practical	LS/ZOO/CC-602 P	Lab Course	2	4
Discipline Specific Elective-3 Theory	LS/ZOO/DSE-601(A) L	A. Biology of Insects	4	4
	LS/ZOO/DSE-601(B) L	B. Fish and Fisheries		
	LS/ZOO/DSE-601(C) L	C. Wild Life Conservation and Management		
Discipline Specific Elective-3 Practical	LS/ZOO/DSE-601(A) P	Lab Course A	2	4
	LS/ZOO/DSE-601(B) P	Lab Course B		
	LS/ZOO/DSE-601(C) P	Lab Course C		
Dissertation/ Project work / Academic Visit followed by report submission and seminar	LS/ZOO/DW/PW/AV		5+1=6	8
TOTAL			24	32
TOTAL CREDITS			152 + 4 (SI)	

As per UGC CBCS guidelines, University / departments have liberty to offer GE and SEC courses offered by any department to students of other departments. The No. of GE course is four. One GE course is compulsory in first 4 semesters each. In present scheme it is proposed to have minimum two GE courses (from one subject) in first two semester after which student shall change two GE for another subject in IIIrd and IVth semester, so that all the student can have exposure of one additional subject.
(Subject to approval by the competent authority)

Changela
External Expert

Dr. Rohit Seth
Dr. Rohit Seth

Santosh Singh
Dr. Santosh Singh

Mouli
Head of the Department

विभागाध्यक्ष
HEAD
जन्तु विज्ञान विभाग
Department of Zoology
गुरु घासीदास वि.वि., बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur



Department of Zoology, School of Life Sciences, GGV, Bilaspur (CG)

CORE COURSE XI

LS/ZOO/CC-501 L

MOLECULAR BIOLOGY

THEORY

(Credits 4)

Unit 1: Nucleic Acids	8
Salient features of DNA and RNA Watson and Crick model of DNA; Ribo-switches, Different types of RNAs	
Unit 2: DNA Replication	12
DNA Replication in prokaryotes and eukaryotes, mechanism of DNA replication, Semi-conservative, bidirectional and semi-discontinuous replication, RNA priming, Replication of circular and linear ds-DNA, replication of telomeres, Concept of DNA repairing	
Unit 3: Transcription	10
RNA polymerase and transcription Unit, mechanism of transcription in prokaryotes and eukaryotes, synthesis of rRNA and mRNA, transcription factors	
Unit 4: Translation	12
Genetic code, Degeneracy of the genetic code and Wobble Hypothesis; Process of protein synthesis in prokaryotes: Ribosome structure and assembly in prokaryotes, fidelity of protein synthesis, aminoacyl tRNA synthetases and charging of tRNA; Proteins involved in initiation, elongation and termination of polypeptide chain; Inhibitors of protein synthesis; Difference in prokaryotic and eukaryotic translation	
Unit 5: Post Transcriptional Modifications and Processing of RNA	8
Structure of globin mRNA; Split genes: concept of introns and exons, splicing mechanism, alternative splicing, exon shuffling, and RNA editing, Processing of tRNA	
Unit 6: Gene Regulation	10
Transcription regulation in prokaryotes: Principles of transcriptional regulation with examples from <i>lac</i> operon and <i>trp</i> operon; Transcription regulation in eukaryotes: Activators, repressors, enhancers, silencer elements; Gene silencing, Genetic imprinting; RNA interference,	

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विभागाध्यक्ष
HEAD
जन्तु विज्ञान विभाग
Department of Zoology
गुरु घासीदास वि.वि., बिलासपुर
Ghasidas Vishwavidyalaya, Bilaspur

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Suresh Singh

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CORE COURSE XII

LS/ZOO/CC-502 L

PRINCIPLES OF GENETICS

THEORY

(Credits 4)

Unit 1: Mendelian Genetics and its Extension	8
Principles of inheritance (Mendel's Laws), Incomplete dominance and co-dominance, Multiple alleles, lethal alleles, Epistasis, Pleiotropy, Sex-linked, sex influenced and sex-limited characters inheritance.	
Unit 2: Linkage, Crossing Over and Chromosomal Mapping	16
Linkage and crossing over, Molecular mechanisms of crossing over including models of recombination, Recombination frequency as a measure of linkage intensity, Two factor and three factor crosses, Interference and coincidence; Introduction to conjugation, transformation and transduction	
Unit 3: Mutations	12
Types of gene mutations (Classification) and causes, Types of chromosomal aberrations (Classification, figures and with one suitable example of each), Molecular basis of mutations in relation to UV light and chemical mutagens;	
Unit 4: Sex Determination and Extra-chromosomal Inheritance	12
Chromosomal mechanisms of sex determination in <i>Drosophila</i> and Man, Extra-chromosomal inheritance with suitable example, Mitochondrial DNA	
Unit 5: Polygenic Inheritance	4
Polygenic inheritance with suitable examples; simple numericals based on it.	
Unit 6: Transposable Genetic Elements	8
Transposition; Transposons in bacteria, P elements in <i>Drosophila</i> , Transposons in humans	

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HEAD

जन्तु विज्ञान विभाग

Department of Zoology

गुरु घासीदास विश्वविद्यालय, बिलासपुर

Guru Ghasidas Vishwavidyalaya, Bilaspur

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CORE COURSE XIII

LS/ZOO/CC-601 L

DEVELOPMENTAL BIOLOGY

THEORY

(Credits 4)

Unit 1: Introduction	12
Historical perspective and basic concepts: Phases of development, Cell-Cell interaction, Pattern formation (Axis formation in <i>Drosophila</i>), Differential gene expression, Cytoplasmic determinants and asymmetric cell division; Basic concept of induction, competence, specification and differentiation.	
Unit 2: Gamete Biology and Fertilization	10
Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Sperm egg interaction; Changes in gametes, Blocks to polyspermy	
Unit 3: Early Embryonic Development	10
Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers	
Unit 4: Late Embryonic Development	8
Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta)	
Unit 5: Post Embryonic Development	12
Metamorphosis: Changes, hormonal regulations in amphibians and insects; Regeneration: Modes of regeneration, epimorphic regeneration of Salamander limbs, morphallactic regeneration in <i>Hydra</i> and compensatory regeneration in mammalian liver; Genes and Ageing, Environmental and Epigenetic causes of ageing	
Unit 6: Implications of Developmental Biology	8
Teratogenesis: Teratogenic agents and their effects on embryonic development; <i>In vitro</i> fertilization, Stem cell (ESC), Amniocentesis	

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HEAD

अनु विज्ञान विभाग

Department of Zoology

गुरु घासीदास वि.वि., बिलासपुर

Guru Ghasidas Vishwavidyalaya, Bilaspur

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CORE COURSE XIV

LS/ZOO/CC-602 L

EVOLUTIONARY BIOLOGY

THEORY

(Credits 4)

Unit 1: Origin of Life Chemogeny and Biogeny, RNA world.	4
Unit 2: Historical Review of Evolutionary Concept Lamarckism, Darwinism, Neo-Darwinism	10
Unit 3: Evidences of Evolution: Fossil record (types of fossils, transitional forms, geological time scale, evolution of horse, Molecular (universality of genetic code and protein synthesizing machinery, neutral theory of molecular evolution, molecular clock, example of globin gene family, rRNA/cyt c, & role of heritable variations in evolution.	16
Unit 4: Population Genetics: Hardy-Weinberg Law; Natural selection (concept of fitness, selection coefficient, types of selection, genetic drift (mechanism, founder's effect, bottleneck phenomenon; Role of Migration and Mutation in changing allele frequencies	12
Unit 5: Product of Evolution Micro evolutionary changes (inter-population variations, clines, races, species concept, Isolating mechanisms, modes of speciation—allopatric, sympatric, Adaptive radiation / macroevolution (exemplified by Galapagos finches Phylogenetic trees, Multiple sequence alignment, construction of phylogenetic trees, interpretation of trees	8
Unit 6: Species Concepts and Species Attribute The "Modern Synthesis". The nature of evolutionary units; Species concepts, The Biological Species concept.	10

Mouib
विभागाध्यक्ष
HEAD
जन्तु विभाग विभाग
Department of Zoology
गुरु घासीदास विश्वविद्यालय, बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur
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Department of Zoology, School of Life Sciences, GGV, Bilaspur (CG)

DISCIPLINE SPECIFIC ELECTIVE COURSE

L.S/ZOO/DSE-501(A) L

BASICS OF NEUROSCIENCE

THEORY

(Credits 4)

Unit 1: Introduction	8
An introduction to neuroscience: Parts of the brain and systemic regulation.	
Unit 2: The Nervous system	10
Introduction to the structure and function of the nervous system: Cellular components: Neurons; Neuroglia; axons and dendrites as unique structural components of neurons. Action potential: Generation, conduction and properties of the action potential.	
Unit 3: Cellular and Molecular Neurobiology	12
Synapse: Synaptic transmission, Types of synapses; synaptic function; Principles of chemical synaptic transmission; Principles of synaptic integration; EPSPs and IPSPs. Ion channels, Neural transmission.	
Unit 4: Neurotransmitters	10
Different types of neurotransmitters; Transmitter gated channels; G-protein coupled receptors and effectors, neurotransmitter receptors; Ionotropic and metabotropic receptors.	
Unit 5: Biological Imperatives	10
The hypothalamic regulation of biological rhythm, stress, sleep, temperature, thirst and drinking, hunger and feeding.	
Unit 6: Diseases of the Nervous system:	10
Addiction, Depression, Schizophrenia, Alzheimer's disease, Parkinson disease, Huntington's disease.	

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विभागाध्यक्ष
HEAT'S
अनु. विज्ञान विभाग
Department of Zoology
गुरु घासीदास विश्वविद्यालय, बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur

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DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-501(B) I.

ENDOCRINOLOGY

THEORY

(Credits 4)

Unit 1: Introduction to Endocrinology

History of endocrinology, Classification, Characteristic and Transport of Hormones, Neurosecretions and Neurohormone

Unit 2: Epiphysis Hypothalamus

Structure of pineal gland, Secretions and their functions in biological rhythms and reproduction.

Structure of hypothalamus, Hypothalamic nuclei and their functions, Regulation of neuroendocrine glands

Unit 3: Hypophysis

Structure of pituitary gland, Hormones and their functions, Hypothalamohypophysial portal system, Feedback mechanisms, Disorders of pituitary gland.

Unit 4: Peripheral Endocrine Glands

Structure, Hormones, Functions and Regulation of Thyroid gland, Parathyroid, Adrenal, Pancreas, Ovary and Testis, Hormones in homeostasis, Disorders of endocrine glands

Unit 5: Control of Hormone Secretion

Synthesis, Processing and sorting of prohormone precursor, sequential stages of the regulated secretory pathway; Dense-core granule: Exocytosis, Regulation of exocytosis by calcium and protein kinase C

Unit 6: Regulation of Hormone Action

Hormone action at Cellular level: Hormone receptors, transduction and regulation, Hormone action at Molecular level: Molecular mediators, Genetic control of hormone action

Dargal

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Santosh Singh

Mouli

HEAD

Department of Zoology
Guru Ghasidas Vishwavidyalaya
Koni, Bilaspur

Mouli



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DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-501(C) L

IMMUNOLOGY

THEORY

(Credits 4)

Unit 1: Overview of Immune System	10
Historical perspective of Immunology, Early theories of Immunology, Cells and organs of the Immune system, Haematopoiesis	
Unit 2: Innate and Adaptive Immunity	10
Anatomical barriers, Inflammation, Cell and molecules involved in innate immunity, primary and secondary lymphoid organs; Adaptive immunity, Passive: Artificial and natural Immunity, Active: Artificial and natural Immunity, Immune tolerance	
Unit 3: Antigens and Antibody	14
Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, Structure and functions of different classes of immunoglobulins, Antigen antibody interactions, Immunoassays (ELISA and RIA), Hybridoma technology: Monoclonal antibodies in therapeutics and diagnosis	
Unit 4: Major Histocompatibility complex	8
Structure and functions of MHC molecules, Endogenous and exogenous pathways of antigen processing and presentation; Immune dysfunctions (brief account of autoimmunity with reference to Rheumatoid Arthritis and tolerance, AIDS).	
Unit 5: Cytokines and complement system	8
Properties and functions of cytokines, Therapeutics Cytokines; Components and pathways of complement activation.	
Unit 6: Hypersensitivity and vaccines	8
Gell and Coombs' classification and brief description of various types of Hypersensitivities; Various types of vaccines.	

Moulio
विभागाध्यक्ष
HEAD
जन्य विज्ञान विभाग
Department of Zoology
गुरु घासीदास विश्वविद्यालय, बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur

Dangal *Sankar Singh*

Neeraj



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DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-502(A) L

ANIMAL BEHAVIOUR AND CHRONOBIOLOGY

THEORY

(Credits 4)

Unit 1: Introduction to Animal Behaviour	8
Origin and history of Ethology; Brief profiles of Karl Von Frisch, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen, Proximate and ultimate causes of behaviour, Methods and recording of a behaviour	
Unit 2: Patterns of Behaviour	10
Stereotyped Behaviours (Orientation, Reflexes); Individual Behavioural patterns; Instinct vs. Learnt Behaviour; Associative learning, classical and operant conditioning, Habituation, Imprinting.	
Unit 3: Social and Sexual Behaviour	12
Social Behaviour: Concept of Society; Communication and the senses; Altruism; Insects' society with Honey bee as example; Foraging in honey bee and advantages of the waggle dance. Sexual Behaviour: Asymmetry of sex, Sexual dimorphism, Mate choice, Intra-sexual selection (male rivalry), Inter-sexual selection (female choice), Sexual conflict in parental care.	
Unit 4: Introduction to Chronobiology	10
Historical developments in chronobiology, Biological oscillation: the concept of Average, amplitude, phase and period. Adaptive significance of biological clocks	
Unit 5: Biological Rhythm	10
Types and characteristics of biological rhythms: Short- and Long- term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photoc zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin.	
Unit 6: Biological Clocks	10
Relevance of biological clocks; Chronopharmacology, Chronomedicine, Chronotherapy.	

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विभागाध्यक्ष
HEAD

35

जंग विज्ञान विभाग
Department of Zoology
गुरु घासीदास विश्वविद्यालय, बिलासपुर

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Department of Zoology, School of Life Sciences, GGV, Bilaspur (CG)

DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-502(B) L

REPRODUCTIVE BIOLOGY

THEORY

(Credits 4)

Unit 1: Functional anatomy of male reproduction	12
Outline and histology of male reproductive system in human; Testis: Cellular functions, germ cell., Epididymal function and sperm maturation; Accessory glands functions; Sperm transportation in male tract	
Unit 2: Functional anatomy of female reproduction	12
Reproductive cycles (rat and human) and their regulation, changes in the female tract; Outline and histological of female reproductive system in human; Ovary: folliculogenesis ovulation, corpus luteum formation and regression; secretion of ovarian hormones	
Unit 3: Gametogenesis	12
Spermatogenesis: kinetics and hormonal regulation; Androgen synthesis and metabolism, Oogenesis, Hormonal regulation of Oogenesis, Steroidogenesis Pathway and regulation, StAR, SRBPE	
Unit 4:	12
Hormonal regulation of gestation, pregnancy diagnosis, foeto- maternal relationship; Mechanism of parturition and its hormonal regulation; Lactation and its regulation	
Unit 5: Reproductive Health	12
Infertility in male and female: causes, diagnosis and management; Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST; Modern contraceptive technologies; Demographic terminology used in family planning	
Unit 6: Reproductive Endocrinology	12
Mechanism of action of Gonadal hormone, steroids, glycoprotein hormones, prostaglandins, hypothalamo - hypophyseal - gonadal axis, regulation of gonadotrophin secretion in male and female; Reproductive System: Development and differentiation of gonade, genital ducts, external genitalia, mechanism of sex differentiation.	

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Dangal

Santosh Singh
HEAD

Department of Zoology
University of Bilaspur, Bilaspur
Jharkhand, India

Neeraj



Department of Zoology, School of Life Sciences, GGV, Bilaspur (CG)

DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-502(C) L

PARASITOLOGY

THEORY

(Credits 4)

Unit 1: Introduction to Parasitology	3
Brief introduction of Parasitism, Parasite, Parasitoid and Vectors (mechanical and biological vector) Host parasite relationship	
Unit 2: Parasitic Protists	15
Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of <i>Entamoeba histolytica</i> , <i>Giardia intestinalis</i> , <i>Trypanosoma gambiense</i> , <i>Leishmania donovani</i> , <i>Plasmodium vivax</i>	
Unit 3: Parasitic Platyhelminthes	15
Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of <i>Fasciolopsis buski</i> , <i>Schistosoma haematobium</i> , <i>Taenia solium</i> and <i>Hymenolepis nana</i>	
Unit 4: Parasitic Nematodes	15
Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of <i>Ascaris lumbricoides</i> , <i>Ancylostoma duodenale</i> , <i>Wuchereria bancrofti</i> and <i>Trichinella spiralis</i> . Study of structure, life cycle and importance of <i>Meloidogyne</i> (root knot nematode), <i>Pratylenus</i> (lesion nematode)	
Unit 5: Parasitic Arthropoda	10
Biology, importance and control of ticks, mites, <i>Pediculus humanus</i> (head and body louse), <i>Xenopsylla cheopis</i> and <i>Cimex lectularius</i>	
Unit 6: Parasitic Vertebrates	2
A brief account of parasitic vertebrates; Cookicutter Shark, Candiru, Hood Mockingbird and Vampire bat	

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HEAD
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Guru Ghasidas Vishwavidyalaya, Bilaspur

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DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-601(A) L

BIOLOGY OF INSECTA

THEORY

(Credits 4)

Unit I: Introduction and Insect Taxonomy	8
General Features of Insects, Distribution and Success of Insects on the Earth; Basis of insect classification, Classification of insects up to orders.	
Unit II: General Morphology of Insects	8
External Features; Head – Eyes, Types of antennae, Mouth parts w.r.t. feeding habits, Thorax- Wings and wing articulation, Types of Legs adapted to diverse habitat, Abdomen- Abdominal appendages and genitalia.	
Unit III: Physiology of Insects	28
Structure and physiology of Insect body systems - Integumentary, digestive, circulatory, respiratory, excretory, endocrine, nervous and reproductive system; Sensory receptors, Growth and metamorphosis	
Unit IV: Insect Society	6
Group of social insects and their social life, Social organization and social behaviour of honey bee/ant/termite.	
Unit V: Insect Plant Interaction	4
Theory of co-evolution, role of allelochemicals in host plant mediation, Host-plant selection by phytophagous insects, Insects as plant pests.	
Unit VI: Insects as Vectors	6
Insects as mechanical and Biological vectors, Brief discussion on houseflies and mosquitoes as important insect vectors.	

Mouib
HEAD
Department of Zoology
गुरु घासीदास वि.वि., बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur

Changela

Sankar Singh

Ravi



Department of Zoology, School of Life Sciences, GGV, Bilaspur (CG)

DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-601(B) L

FISH AND FISHERIES

THEORY

(Credits 4)

Unit 1: Introduction and Classification

6

General description of fish; Account of systematic classification of fishes (upto classes); Classification based on feeding habit, habitat and manner of reproduction.

Unit 2: Morphology and Physiology

16

Different types of fins and scales; Use of scales in classification and determination of age of fish; Gills and gas exchange; Swim Bladder: types and role in respiration, buoyancy; Osmoregulation and ionic balance in fishes; Reproductive strategies (special reference to Indian fishes); Electric organs; Bioluminescence; Schooling; Parental care; Migration

Unit 3: Fisheries

10

Inland Fisheries; Marine Fisheries; Environmental factors influencing the seasonal variations in fish catches in the Arabian Sea and the Bay of Bengal; Fishing crafts and Gears; Depletion of fisheries resources; Application of remote sensing and GIS in fisheries; Fisheries law and regulations

Unit 4: Aquaculture

16

Sustainable Aquaculture; Extensive, semi-intensive and intensive culture of fish; Qualities of culturable species of fishes; Types of pond in a fish farm; Pen and cage culture; Integrated fish farming; Composite fish culture; Brood stock management; Induced breeding of fish; Hatchery, Preparation of compound diets for fish; Role of water quality in aquaculture; Fishery by-products

Unit 5: Fish Pathology and Cure

8

Sign of sickness in fishes, defensive devices in fishes against diseases, diseases of fishes: Nutritional diseases, bacterial disease (Infectious dropsy, Tail rot or fin rot), Fungal diseases (Dermatomycoses, Branchiomycosis) and protozoan diseases (Ichthyophthiriusiasis, Costiasis).

Unit 6: Fish in research

4

Transgenic fish, Zebrafish as a model organism in research

Mouli

विभागाध्यक्ष
HEAD
अनुसंधान विभाग
Department of Zoology
गुरु घासीदास विश्वविद्यालय, कोनी
Guru Ghasidas Vishwavidyalaya

Dangal

Sankar Singh

Ravi



Department of Zoology, School of Life Sciences, GGV, Bilaspur (CG)

DISCIPLINE SPECIFIC ELECTIVE COURSE

LS/ZOO/DSE-601(C) L

WILD LIFE CONSERVATION AND MANAGEMENT

THEORY

(Credits 4)

Unit 1: Introduction to Wild Life	12
Wildlife: Current status in India, Zones of Faunal-distribution in-India and their characteristics; Values of wild life - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies	
Unit 2: Evaluation and management of wild life	12
Habitat analysis, Physical parameters: Topography, Geology, Soil and water; Biological Parameters: food, cover, forage, browse and cover estimation; Standard evaluation procedures: remote sensing and GIS.	
Unit 3: Management of habitats	8
Setting back succession; Grazing logging; Mechanical treatment; Advancing the successional process; Cover construction; Preservation of general genetic diversity; Restoration of degraded habitats;	
Unit 4: Population estimation	14
Population density, Natalty, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation, Hair identification, Pug marks and census method.	
Unit 5: Management planning of wild life in protected areas	8
National parks & sanctuaries, Community reserve; Estimation of carrying capacity; Eco tourism / wild life tourism in forests; Concept of climax persistence; Ecology of perturbation; Tiger conservation in India	
Unit 6: Management of excess population	6
Bio- telemetry; Care of injured and diseased animal; Quarantine; Common diseases of wild animal	

Mouib
अध्यक्ष
H.E. 643
जन्म विज्ञान विभाग
Department of Zoology
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya

Dangal

45

Singh

Rever