

TEACHING PLAN, (2016-2017)

Name: Rupamoni Das Hazarika

Course: 102

Semester: I

Department: Zoology

Programme: Core

Class Allotted: 2/ Week

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
II(Th) / 2	Population	Unitary & Modular Populations. Unique & group attributes of population: Density, natality, mortality, life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal & dispersion. Exponential & logistic growth, equation & patterns, r- & k-strategies. Population regulation: density dependent & density independent factors. Population interactions, Gause's principle with laboratory and field examples, Lotka – Volterra equation for competition & predation, functional & numerical responses.	White board, Discussion, Test	24
II (P) / 1		Study of Life Tables and plotting of survivorship curves of different types of population from the hypothetical / real data provided.		8

Name: Rupamoni Das Hazarika**Course:** 201(Th & P)**Semester:** II**Department:** Zoology**Programme:** Core**Class Allotted:** 2/ Week

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
III (Th) / 4	Non-Chordates- II	Onychophora : General characteristics & Evolutionary significance	White board, Discussion, Test	4
III (Pr)	Non-Chordates- II	Identification		2
IV (Th) /6	Cell Biology	Nucleus : Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus. Chromatin: Euchromatin and Heterochromatin and packaging (Nucleosome)	White board, Discussion, Test White board, Discussion, Test	8
IV (Th) /7	Cell Biology	Cell Division : Mitosis , Meiosis, Cell cycle and its regulation		6
IV (Pr) /2		Study of various stages of Mitosis & Meiosis		2

Name: Rupamoni Das Hazarika**Course:** ZooMT-301**Semester:** III**Department:** Zoology**Programme:** Major**Class Allotted:** 2/ Week

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT-301/ 3	Chordate Diversity & Comparative anatomy	Distinctive characters and Classification of Reptilia upto orders with examples ; Anatomical peculiarities & affinities of Sphenodon ; Poisonous snakes of India; Biting mechanism of poisonous snakes.	White board, Discussion, Test	12
ZooMP-302/1	do	9 th & 10 th cranial nerves os Scoliodon.		2
ZooMP-302/2		Identification: Reptilia		4
ZooMP-304/1	Bio-instrumentation	Separation of Chlorophylls by paper chromatography		4

Name: Rupamoni Das Hazarika

Course: V & VI

Semester: IV

Department: Zoology

Programme: Major

Class Allotted: 2/ Week

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT-403/ 4		Organogenesis : development of sense organs (eyes & ears)	-do-	8
ZooMP-404/ 3	Based on Course XI	1. Study of permanent slides of different embryonic stages of toad/ frog. 2. Study of permanent slides of developmental stages in Chick embryo. 3. Preparation of slides of Chick embryo.		2 2 8

Name: Rupamoni Das Hazarika**Course:**V & VI**Semester:** V**Department:** Zoology**Programme:** Major**Class Allotted:** 4/ Week

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT-503/ 4	Mammalian Physiology	Drug addiction & its physiological effects; Socio biological aspects of genesis of drug addiction, stimulants and depressants, Physiological and social implications.	White board, Discussion, Test	8
ZooMP-503/ 1		Determination of RQ		2
ZooMT-505/ 1 & 2	Environmental Biology	Concepts pertaining to ecosystem, Species, Community, Biome & ecotone; Biotic & abiotic environmental factors & their effects on animals; Trophic levels & energy flow.	White board, Discussion, Test	10
ZooMT-505/ 2		Shelford's law of tolerance; concept of productivity; Population structure and dynamics; Exponential & logistic growth; r- & k- strategies and multidimensional niche concept; Lotka & Volterra model; natality & mortality; predation & predator-prey relationship.	White board, Discussion, Test	16
ZooMT-505/ 4		Bioindicators of pollution studies; ecological succession; ecological backlash.	White board, Discussion, Test	10
ZooMP-506/ 4		Find out the abundance & densities of terrestrial invertebrate/ macrophyte associated fauna by Quadrant method.		2
ZooMT-507/ 4	Endocrinology	Amniocentesis and IVF	White board, Discussion	5

Name: Rupamoni Das Hazarika

Course: V & VI

Semester: VI

Department: Zoology

Programme: Major

Class Allotted: 4/ Week

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT-601/ 1	Parasitology	Parasitism; types of parasites; hosts & vectors; parasitic adaptations & effects on hosts.	White board, Discussion, Test	6
ZooMT-601/ 2		General organization & pathogenicity of bacteria & virus (Rickettsia, Borrelia, Treponema & Leptospira .).	White board, Discussion, Test	10
ZooMT-601/ 3		Life history & mode of infection & General organization & pathogenicity of Entamoeba, Trypanosoma, Leishmania, Giardia, Trichomonas & Plasmodium sp.	White board, Discussion, Test	14
ZooMP-602/1&2		1. Identification of mosquito sp. Causing malaria, encephalitis, & dangué fever. 2. Study of Protozoan parasites(permanent slides).		
ZooMP-605/ 6		Histological study of Lymphoid organs.		
ZooMP-607/ 6		Demonstration of Induced breeding of Fish		

Teaching Plan

Faculty: Nilave Bhuyan

Department: Zoology

Programme: B.Sc (Major)

Semester: I Classes allotted: Weekly

Theory - 1

Practical - 1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
Course: Core Course II (TH) : Principles of Ecology					
Theory	I	History of Ecology	Ecology in Indian Classics, ancient Greek and Roman literature, during 12 th - 17 th century and again in 18 th - 20 th century	Curriculum centred classroom; Lecture; Reading information; Cooperative learning like Group discussion, Students' Seminar presentation; Technology integration like internet, Video, Power point presentation, Quiz, Class test.	2
		Autecology & Synecology	Comparative study		1
		Levels of Organization	Hierarchy, Deductions of certain basic principles, biological importance of increasing complexity &		2
		Laws of Limiting factors	Liebig's law of limiting factors, Shelford's law of tolerance		4
		Study of Physical factors	Nature of response of organism to light, temperature, pressure.		2
	IV	Nutrient and Biogeochemical cycles with one example of Nitrogen cycle	Organic and abiotic phases of geochemical cycles, types of biogeochemical cycles, N-cycle		2
		Human modified ecosystem	Agriculture		1
	V	Ecology in Wildlife Conservation and Management	Wildlife of India, Reasons for its depletion, Necessity for conservation, Modes of conservation - protection by law, establishment of sanctuaries & national parks etc. Protected species of Indian wildlife.		4
Practical	III	Determination of pH	Introduction, Principle, Materials Required,	Hands-on training	2
		Determination of dissolved oxygen content (Winkler's method)	Procedure/Method, Observation, Calculation, Result and Discussion, Significance of the experiment		3

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
Practical	III	Determination of Chemical oxygen content	Introduction, Principle, Materials Required, Procedure/Method, Observation, Calculation, Result and	Hands-on training	3
		Determination of free CO ₂			3
	IV	Visit to a National park/Biodiversity park/Wildlife sanctuary	Natures trail, interviews with local people about the history of the area, simple mapping exercise, collection of non-living materials, importance of field guides	Field visit	14 days

Semester: II Classes allotted: Weekly

Theory - 2

Practical - 1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT-201: Biochemistry					
Theory	1	Laws of thermodynamics and their application in biochemistry	enthalpy, entropy, 1 st law, 2 nd law with their applications from biological systems	Curriculum centred classroom; Lecture;	2
		Free energy change in biochemical system	Gibb's free energy change, Redox reactions		Reading information;
		ATP and other high energy phosphates as energy carrier	Structure of ATP and phosphate group transfers, ATP hydrolysis	Cooperative learning like Group discussion,	2
	2	Structure and Classification of Proteins, amino acids	Representation of the α -amino acids, polarity of the 'R' group, peptides, polypeptides	Students' Seminar presentation; Problem solving, Technology integration like internet,	2
		Levels of organization of proteins	1 ^o , 2 ^o , 3 ^o & 4 ^o levels of structure with examples, Chemical bonds involved		2
ZooMP-202: Practical based on ZooMT-201					
Practical	3	Assay of enzyme urease/peroxydase by titrimetric method	Introduction, Principle, Materials Required, Preparation of the reagents, Procedure, Observation, Calculation, Result and Discussion, Significance of the experiment	Hands-on training	2

Semester: III Class allotted: Weekly

Theory - 2

Practical - 1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT- 301: Chordate diversity and Comparative anatomy					
Theory	5	Comparative account of selected systems in reptiles, birds and mammal:		Curriculum centred classroom; Lecture; Reading information; Cooperative learning like Group discussion, Students' Seminar presentation; Problem solving, Technology integration like internet, Video, Power point presentation, Quiz, Class test	
		Alimentary	Comparative anatomy of Oesophagus, Stomach, Intestine, Liver, Pancreas, Spleen		2
		Circulatory,	Comparative anatomy of heart and arteries, venous system, lymphatic system		2
		Reproductive systems	Reproductive system, modes of reproduction in vertebrates, Gonads, structure of ovaries; Comparative anatomy of testes and ovaries.		2
ZooMT- 303: Bioinstrumentation and Biostatistics					
Theory	5	Measures of Statistical average, Mean deviation and Standard deviation,	Mathematical average: AM, GM, HM; Average of Position: Median, Mode; Measures of Partition values: Quartiles, Quintiles, Deciles, Percentiles		3
		Probability tests,	Introduction, Definition, Rules of Probability, Applications		3
		Correlation and Regression,	Introduction, types, Karl Pearson's Coefficient of Correlation/ 'r' value, Significance; Variables, Linear Regression analysis, Regression equation		3
		Significance tests (t, F, Chi square test)	Degrees of freedom paired & unpaired 't' test, Determination of 't' value significance		6
ZooMP - 302: Practical based on ZooMT - 301					
Practical	5	Demonstration of digestive,	Animated, e-models of the systems in the selected vertebrates highlighting their structure and function.	Technology integration like internet, Video, Power point presentation	1
		circulatory,			1
		respiratory and			1
		urinogenital system of reptiles, bird and mammals through electronic media.			1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT- 304: Practical based on ZooMT - 303					
Practical	3	Statistical calculation of Central tendency,	Mathematical average: AM, GM, HM; Average of Position: Median, Mode; Measures of Partition values: Quartiles, Quintiles, Deciles, Percentiles	Problem solving	8
		Deviations,	Range, Quartile Deviation, MD, SD, Variance		4
		Correlation,	Introduction, types, Karl Pearson's Coefficient of Correlation/ 'r' value, Significance		2
		Regression & t test	Variables, Linear Regression analysis, Regression equation, Degrees of freedom paired & unpaired 't' test, Determination of 't' value significance		4

Semester: IV Class allotted: Weekly

Theory - 2

Practical - 1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT-401: Cell Biology, Histology and Histo-chemistry					
Theory	3	Cell cycle - molecular events in different phases,	Events in the Cell cycle, DNA replication, Protein synthesis	Curriculum centred classroom; Lecture; Reading information; Cooperative learning like Group discussion, Students' Seminar presentation; Technology integration like internet, Video,	3
		regulation of cell cycle;	regulatory points of cell cycle, cdk proteins etc.		3
		normal and abnormal cell growth;	Differences w.r.to microscopic examination, energy metabolism, genetic make-up, Failure of the Cell cycle check points		1
		concept of apoptosis;	Role of Caspases, neutrophins, mitochondria, Release of Cyt. C		1
		cell division (mitosis and meiosis)	Chromosome structure & movement in different stages of the cycles, Cytokinesis etc.		2

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT-403: Developmental Biology					
Theory	1	Gametogenesis -formation of gametes; structure, maturation and growth of sperm and ovum; vitellogenesis.	Histology of testes, Spermatogenesis, Spermiogenesis, Morphology of mature sperm; Histology of the ovary, Oogenesis, Functions of yolk, morphology of mature	Power point presentation, Quiz, Class test.	2
ZooMP-402: Practical based on ZooMP-401					
Practical	3	Histochemical localization of (b) Metachromatic substances by Toluidine blue method.	Introduction, Principle, Materials Required, Preparation of the reagents, Procedure, Observation, Result, Significance of the experiment	Hands-on training	3
	4	Histological preparation of liver, stomach, intestine, kidney, pancreas, testes and ovary of vertebrates and submission of		Hands-on training	

Semester: V Class allotted: Weekly

Theory - 3

Practical - 1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT-501: Genetics and Evolution					
Theory	4	Evidences and theories of evolution – Paleo-biological and molecular evidence;	Rocks and their nature, Fossilization, Importance of fossil record, Geological record and its incompleteness Blood proteins and comparative serology, Cyt. C.	Curriculum centred classroom; Lecture; Reading information; Cooperative learning like	2
		Lamarckism,	Lamarck's theory & their analysis and criticism		1.5
		Darwinism,	Theory of natural selection, Origin of new species,		1.5
		Neo-Darwinism,	Contributions of Huxley, Haeckel, Weismann, Haldane, Wright, Muller, Dobzhansky, Kettlewell, Spencer and Mendel favouring Darwinism	Group discussion, Students' Seminar presentation; Problem solving,	2
		Mutation theory and	H.D. Vries theory, types & causes of mutation, criticism		1
		Modern synthetic theory.	Genetic variability: its causes & significance in population, Natural selection, Isolation		2

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT-503: Animal Physiology					
Theory	5	Nervous system-neurons,	structure & function, neuroglial cells	Technology integration like internet, Video, Power point presentation, Quiz, Class test.	1
		resting membrane potential and its basis,	electrical properties of neuron, genesis of rmp,		1
		action potential and its propagation in myelinated and non-myelinated nerve fibre,	stimulus, depolarization, explanation of the AP graph generated through a CRO, repolarization, All-or-None hypothesis, Events in impulsr propagation, Velocity of nerve impulse		1
		types of synapses and synaptic	synapse-structure, types, neurotransmitters, transmission		1
		neurotransmitters-their release and action	Communication at synapses, Cycling of neuro-transmitters & of synaptic vesicles in axon terminals		1.5
		neuromuscular junction,	definiton, formation		1
		types of reflexes, reflex activity, reflex arc,	synaptic integration, reflex: arc, general properties, action, characteristics, types and classification		2
		physiology of vision,	Structure of human eye, retina; image formation, colour vision, accomodation		2
addictive drugs-types, drug addiction-causes, physiological effects, social	Drugs-definition, addiction, types, mechanism of action, causes & its effects on the society	2			
ZooMT-507: Endocrinology					
Theory	1	Comparative anatomy of endocrine organs in fish, amphibian, birds and mammals			
		pituitary	Comparative and illustrative account of location, histological structure and physiological functions in the selected vertebrates		1.5
		thyroid,			1.5
		adrenal and			1.5
pancreas	1.5				

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMP-504: Practical based on ZooMT-503					
Practical	4	Demonstration of Knee jerk reflex	Introduction, Principle, Materials Required, Procedure/Method, Observation, Calculation, Result and Discussion, Significance of the experiment	Hands-on training	1
	5	Demonstration of Osmosis using toad/frog urinary bladder/alimentary canal.			1
	6	Recording of muscle twitch			2
ZooMP-506: Practical based on ZooMT-505					
Practical	3	Determination of dissolved O ₂	Introduction, Principle, Materials Required, Preparation of the reagents including Concept of Molarity & Normality, Procedure, Observation, Calculation, Result and Discussion, Significance of the experiment	Hands-on training	2
		CO ₂ and			2
		Alkanity in the water samples			2
	6	To visit a National park/Wildlife sanctuary to study the habitat/forest types and prepare a full note on it.			Natures trail, interviews with local people about the history of the area, simple mapping exercise, collection of non-living materials, importance of field guides

Semester: VI Class allotted: Weekly

Theory - 4

Practical - 1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMT-601: Parasitology and Ethology					
Theory	4	Introduction to animal behaviour: brief history of ethology,	Contributions of Aristotle, Harvey, Gallen, White, Darwin, Heinroth, Lorenz, Tinbergen and Frisch to the study of ethology	Curriculum centred classroom; Lecture; Reading information;	1
		patterns of behaviour,			Aggression, territoriality, courtship, communication, feeding, grooming, parental care, learning and social behaviour.

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
		sense organs and behaviour,		Technology integration like internet, Video, Power point presentation, Quiz, Class test.	2
		genetical and ecological aspects of behaviour.	Hoe genes control an innate behaviour		1
	5	Different types of Orientation and	Kineses, Taxes; Positional, Object, Strato, Zonal, Topographic, Geographic Orientations		2
	Communication in animals,	Introduction, types of communication with examples	2		
	comparative aspects of learning,	Introduction, types of learning with e.g.: Habituation, Classical conditioning; Imprinting, memory	2		
	Offensive and defensive behaviour,		1		
	social behaviour in insects.	Language of honey bees and termites	2		
ZooMT-603: Molecular Biology and Immunology					
Theory	3	Transformation,	Genetic transfer: 4 steps in transformation, general steps of the lytic cycle, generalized and specialized transduction, Bacterial conjugation, Fertility factors		1
		Transduction and			1
		Conjugation and			1
		Concept of transposons and plasmids,			1
Theory	3	Recombination in Prokaryotes,	horizontal gene transfer; general, site specific and replicative recombination	Curriculum centred classroom; Lecture; Reading information; Cooperative learning like Group discussion, Students' Seminar presentation; Problem solving, Technology integration like internet, Video, Power point presentation, Quiz, Class test.	2
		Operon concept (Lac operon).	Jacob and Monod's Lactose operon model		1
		regulation of gene expression in prokaryotes,	Induction, Repression, Substitution of sigma factor and DNA sequences controlling transcription, Leader		2
ZooMT-604: Molecular Biology and Immunology					
Theory	5	Basic concept, steps in evaluation of phylogeny and	Introduction		2
		Constructing phylogenetic trees	Molecular data, distance data, UPGMA, NJ, Character based methods		2
		Phylogenetic analysis,	Genetic markers and phylogenetic analysis: RFLP, SSR, AFLP, CAPS, SNP		2

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
ZooMP-602: Practical based on ZooMT-601					
Practical	3	Study of geotactic,	Introduction, Principle, Materials Required, Procedure, Observation, Result and Discussion, Significance of the experiment	Hands-on training	1
		Chemotactic and			1
		Socio-tactic behaviour of earthworms, cockroach, paramecium, fish			2
ZooMP-605: Practical based on ZooMT -603 & 604					
Practical	1	Determination of blood group and Rh factor	Introduction, Principle, Materials Required, Procedure, Observation, Result and Discussion, Significance of the experiment	Hands-on training	1
	9	Creation of databases			MS Access, Fields and Records, Relationship, Tables, Queries, Forms.

Teaching Plan

Faculty: Nilave Bhuyan

Department: Zoology

Programme: B.Sc (General)

Semester: II Class allotted: Weekly

Theory - 1

Practical - 1

Paper	Unit	Course Content	Key aspects	Teaching method	Classes required
Course: ZooGT - 201: Cell Biology and Biochemistry					
Theory	4	Types of Carbohydrates, Proteins	monosaccharides, oligosaccharides, polysaccharides with examples; Glycosydic bonds; Isomerism; significance.	Curriculum centred classroom; Lecture; Reading information; Power point presentation, Class test.	4
		Nature and function of Enzymes	Enzyes: General properties, Coenzymes, Isozymes; Kinetics, Factors affecting reaction rate, active site, catalytic site, allosteric site; mechanism of action.		2
Course: ZooGP - 202: Practical based on ZooGT-201					
Practical	4	Qualitative test of Carbohydrate, protein and fat	Introduction, Principle, Materials Required, Preparation of the reagents, Procedure, Observation, Result and Discussion, Significance of the experiment	Hands-on training	4

Semester: IV Class allotted: Weekly

Theory - 1

Practical - 1

Course: ZooGT - 401 - Animal Physiology and Endocrinology					
Theory	3	Neurons and Conduction of Nerve impulse	structure & function of neurons, neuroglial cells; electrical properties of neuron, genesis of rmp, polarization; stimulus, depolarization, explanation of the AP graph generated through a CRO, repolarization, All-or-None hypothesis, Events in impulsr propagation, Velocity of	Curriculum centred classroom; Lecture; Reading information; Power point presentation, Class test.	6
		Drug addiction and its impact on society	Drugs-definition, addiction, types, mechanism of action, causes & its effects on the society		2
Course: ZooGP - 402 - Practical based on ZooGT - 401					
Practical	1	Preparation of Haemin crystal		Hands-on training	2

Teaching Plan

(2016-17)

Submitted on: 16/09/2016

Dhiramani Bhuyan

Assistant Professor

Department of Zoology

J.B. College (Autonomous), Jorhat

TEACHING PLAN

(2016- 17)

Name: **DHIRAMANI BHUYAN**

Course: **Core course I & II (Th & Pr)** Semester: **I**

Department: **Zoology**

Programme: **Core (Major)**

Class Allotted: **3/Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
Th I/ 3	Cnideria	General characters and Classification upto Class . Metagenesis in obelia, polymorphism in Cnideria, Coral Coral reefs	White board, Power point presentation, Discussion, Test	12
Th II / 3	Community	Community characteristics: species richness, dominance, diversity, abundance, vertical stratification, Ecotone and edge effect; Ecological succession with one example Theories pertaining to climax community	White board, Power point presentation, Discussion, Test	12
Pr I & II / 8 & 2 (Practical)	Project	To submit a Project Report on any related topic on life cycles/coral/ coral reefs.	White board, Discussion, internet, HW	8
	Calculation	Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community	White board, Discussion, Test, Hands on practice	8

TEACHING PLAN

(2016- 17)

Name: **DHIRAMANI BHUYAN** Course: **Core Course IV (Th & Pr)**

Semester: **II**

Department: **Zoology**

Programme: **Major**

Class Allotted: **4/ Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
Th IV/ 1	Cell biology	Overview of Cells Prokaryotic and Eukaryotic cells, Virus, Viroids, Mycoplasma, Prions	White board, Power point Discussion, Test	3
Th IV/ 2	Cell biology	Plasma Membrane Various models of plasma membrane structure Transport across membranes: Active and Passive transport, Facilitated transport Cell junctions: Tight junctions, Desmosomes, Gap junctions	White board, Discussion	7
Th IV/ 3	Cell biology	Endomembrane System Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosomes	White board, Power point Discussion, Test	10
Pr IV/1		Preparation of temporary stained squash of onion root tip to study various stages of mitosis	Demonstration, Discussion	2

TEACHING PLAN

(2016- 17)

Name: **DHIRAMANI BHUYAN** Course: **ZOOLT-301, 303 & ZOOMP- 302** Semester: **III**

Department: **Zoology**

Programme: **Major**

Class Allotted: **4/ Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZOOLT-301/ 1	Chordates	General characters of Chordata & classification upto class; Classification of protochordata up to orders; general characters of hemichordate, urochordata & cephalochordate; Structure & post embryonic development of larval forms & their significance in chordate phylogeny; affinities of protochordates.	White board, Power point Discussion, Test	12
ZOOLT-301/3	Amphibia	Distinctive characters and classification of Amphibia upto orders with examples, Parental care, metamorphosis and neoteny in Amphibia	White board, Power point Discussion, Test	6
ZOOLT-301/3	Bioinstrumentation	Basic principle and applications of light, phase contrast and electron microscope	White board, Power point Discussion, Test	6
ZOOMP-302/ 1 & 3	Dissection	Weberian ossicles of carp	White board, Hands on practice	6
	Slide prep.	From vertebrate animals	White board, Hands on practice	8

TEACHING PLAN

(2016- 17)

Name: **DHIRAMANI BHUYAN**

Course: **ZOOGT-301**

Semester: **III**

Department: **Zoology**

Programme: **Core**

Class Allotted: **3/ Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooGT 301 / 1	Chordates	General characters of Chordates; protochordata Classification of up to order. structural organisation of hemichordates, urochordates	White board, Power point Discussion, Test	8
ZooGT 301/ 5	Developmental biology	patterns of cleavage; gastrulation, germ layers, fate maps & cell lineage.	White board, Power point Discussion, Test	10

TEACHING PLAN

(2016- 17)

Name: **DHIRAMANI BHUYAN** Course: **ZOoMT-401 & ZOoMP- 402** Semester: **IV**

Department: **Zoology**

Programme: **Major**

Class Allotted: **4/ Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT 401/ 1	Cell Biology	Overview of prokaryotic and Eukaryotic cells; Structure & function of cell organelles : plasma membrane, mitochondria, Golgi bodies; endoplasmic reticulum, lysosome, ribosome, nucleus, Structure & function of plasma membrane (lipid bilayer model), extracellular matrix, receptor mediated endocytosis	White board, Power point Discussion, Test	15
		Structure & function of chromosomes, polytene & lamp brush chromosomes, chromatin-molecular organization, nucleosome.	White board, Power point Discussion, Test	10
ZooMP 402 / 1 Practical	Slide prep.	Mitosis of onion root tip/ tadpole tail.	White board, demonstration Hands on practice	4

TEACHING PLAN

((2016- 17))

Name: **DHIRAMANI BHUYAN** Course: **ZOoMT-401 & ZOoMP- 402** Semester: **IV**

Department: **Zoology**

Programme: **core**

Class Allotted: **3/ Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT 401/4	Endocrinology	A brief outline of the organization of endocrine system in mammals, anatomy of pituitary, thyroid, pancreas, adrenal gland	White board, Power point Discussion, Test	10
ZooMP 402/1 & 2 Practical	Slide prep. Dissection	Preparation of haemin crystals Display pituitary and gonad f fishes	White board, demonstration Hands on practice	8

TEACHING PLAN

(2016- 17)

Name: **DHIRAMANI BHUYAN**

Course: **ZooMT 501,505, 507**

Semester: **V**

ZooMp 502, 504, 506, 508

Department: **Zoology**

Programme: **Major**

Class Allotted: **4/ Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT 501/ 5	Evolution	Concept of population- gene pool and gene frequency (Hardy- Weinberg Law), change in gene frequency (genetic drift, gene flow, genetic load); Continental drift; parallel, divergent and convergent evolution; endemism and adaptive radiation	-do-	10
ZooMT 505/3	Environmental Biology	Biogeochemical cycles(carbon, nitrogen, phosphorous and hydrological cycles); Renewable & non renewable resources of NE India & strategy for their sustainable utilization. Basic concept of remote sensing and EIA	-do-	8
ZooMT 507/4	Endocrinology	Role of hormones in reproductive cycle, pregnancy, parturition and lactation; methods of contraception	-do-	8
ZooMP 502/ 1 Practical	Demonstration	Polytene chromosome of chironomous or Drosophila larvae.	Hands on practice	4
ZooMP504 /3 Practical	Demonstration	Preparation of haemin crystals	Hands on practice	2
ZooMP506 /5 Practical	Demonstration	Study of structural components of an aquatic/ grassland ecosystem	Hands on practice	4
ZooMP506 /5 Practical	Demonstration	Dissect and display the following endocrine gland in fish/ birds: pituitary, thyroid, adrenal	Hands on practice	6

TEACHING PLAN

(2016- 17)

Name: **DHIRAMANI BHUYAN**

Course: **ZooMT- 603**

Semester: **VI**

Department: **Zoology**

Programme: **Major**

Class Allotted: **6/ Week**

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
ZooMT 603/ 1, 2, 3	Molecular biology	Genome organization in prokaryotes & eukaryotes. Nucleic Acids, DNA as genetic material, Structure & function of DNA & RNA. Watson and Crick model of DNA, other forms of DNA (A & Z) Replication & Transcriptions, genetic code; wobble hypothesis, protein biosynthesis in prokaryotes .	White board, Power point Discussion, Test	20
ZooMT 604/ 1	Biotechnolo gy	Introduction, history and scope, basic knowledge of genetic engineering, protoplast fusion and somatic hybridization technique Basic principles of recombinant DNA technology, cutting, joining and visualization of DNA fragments, cloning vectors and gene cloning, application of DNA technology in agriculture and health; industrial biotechnology with special reference to production of alcohol and antibiotics.	White board, Power point Discussion, Test	20
Zoo MP 605 /2,4 Practical	Demonstrati on	Preparation of ball & stick model of nucleotides Immunodiffusion/ blood grouping (Ag- Ab reaction)		4
Zoo MP 606/5 Practical	Demonstrati on	Identification of common aquatic weeds, planktons and insects		6

TEACHING PLAN

2016

Submitted by

Pallwabee Duarah

Department -Zoology

J.B.College

Jorhat

TEACHING PLAN

2016

Name: Pallwabee Duarah

Semester- I

Department: Zoology

Programme: Core(CBCS)

Allotted: 3/Week

Paper / Unit	Key Aspect	Course Content	Teaching Method	Class Required
Core course I /Unit -6(Th)	Nemathelminths	General characters and Classification upto classes. Study the life cycle and pathogenicity of <i>Ascaris lumbricoides</i> and <i>Wuchereria bancrofti</i> . Parasitic adaptations in helminthes	Lecture using White board, Power point presentation, Discussion, Test	10
Core course(pr)		Study of adult <i>Ascaris lumbricoides</i> . Ten Stages of life cycle. Slide Preparation.	Observation under microscope,white board,sPhotograph	10x2=20
Core course I /Unit 4	Ecosystem	Types of Ecosystem with one example in detail, food chain, detritus and grazing food chain, linear and Y shaped food chain, food web, energy flow through ecosystem.	White board, Power point presentation, Discussion, Test	6

TEACHING PLAN (2016)

NAME: PALLWABEE DUARAH

Course: 201

Semester: II

Department: Zoology

Programme: Major

Class Allotted: 4/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
201/3(Th)	Metabolism	Concept of metabolism. Glycolysis Krebs cycle Electron transport system ATP synthesis B-oxidation	Lecture using white board, Demonstration Using chart, ppt.	22
202/1(Pr)		Preparation of molar solution(4 example)	do	4
		Preparation of molar solution(4 example)	do	4
		Preparation of buffer solution	do	4

TEACHING PLAN (2016)

NAME: PALLWABEE DUARAH

Course: 201,202

Semester: II

Department: Zoology

Programme: Core

Class Allotted:3/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
201/4	Biochemistry	Concept of metabolism. Glycolysis Krebs cycle Electron transport system ATP synthesis B-oxidation	Lecture using white board, Demonstration Using chart, ppt.	15
202/2(pr)		Preparation of slide for study of mitosis and meiosis with suitable material	Demonstration by using onion root tip, different stages are studied.	8

TEACHING PLAN

(2016)

NAME: PALLWABEE DUARAH

Course: 301,302,303,304

Semester: III

Department: Zoology

Programme: Major

Class Allotted: 4/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
301/2	Chordate diversity	Distinctive characters of Petromyntia. Chondrichthyes Dipnoi Classification of Osteichthyes upto orders with example.	White board, Lecture Demonstration	14
301/5	do	Comparative anatomy of integument-fish, reptile and mammals, pectoral, pelvic girdles of tetrapoda (fish, reptile, birds, mammals) Brain and cranial nerves in amphibia and mammals.	Do	12
302/4(Pr)		Study of vertebral column of mammals Pectoral and pelvic girdle of reptiles Bird Amphibia	Demonstration	12x2
303/3	Instrumentation	Photometry-principle and uses of colorimeter and spectrophotometer.	White board, Lecture Demonstration	4
304/2		Colorimeter Spectrophotometer.	Demonstration	2

TEACHING PLAN

(2016)

NAME: PALLWABEE DUARAH

Course: 301, 302

Semester: III

Department: Zoology

Programme: Core

Class Allotted: 3/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
301/2	Chordate diversity	Amphibia:Classification up to orders Parental care	White board, Lecture Demonstration	6
301/4	Development biology	Extra embryonic embryonic membranes , its development Types Physiology of placenta	do	8
302/3(Pr)		Preparation ofPermanent slides from suitable material from vertebrate animals.	Hand on practice	6x2
302/4(Pr)		Study of chick embryo development upto 72 hrs by permanent slides	do	4x2

Teaching Plan

NAME: PALLWABEE DUARAH

Course: 401&402

Semester: IV

Department: Zoology

Programme: Major

Class Allotted: 4/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
401/2	Cell Biology	DNA packaging in Prokaryotes DNA packaryotes Heterochromatin Euchromatin Models of chromosomal movements	White board, Lecture Demonstration	8
403/3	Developmental Biology	Cleavage and gastrulation Cleavage pattern Blustulation Gastrulation in chick Fate maps ,fate of germ layers Primary organisers Induction,inductive substance	do	16
403/4	Development Biology	Organogenesis-Development of eye and year	do	5
402/2	Practical	Meiosis in testes of grasshopper Or cockroach	Demonstration& Hands on session	7

Year- 2016

NAME: PALLWABEE DUARAH

Course: 401&402

Semester: IV

Department: Zoology

Programme: Core

Class Allotted: 3/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
401/5	Hormone	Unit – 5 General character of hormones, feedback mechanism , Functions of hormones of pituitary, thyrod, pancreas and adrenal.	White board, Lecture Demonstration	14
402/ 2 prac		Blood group determination		6
402 / 4 prac		Study of histological slide of endocrine glands.		6

Teaching Plan

NAME: PALLWABEE DUARAH

Course: 501,504,505,506,507,508

Semester: V

Department: Zoology

Programme: Major

Class Allotted: 4/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
501/2	Genetics	Linkage Crossing over Gene mapping Sex determination Sex linked inheritance Cytoplasmic inheritance	White board, Lecture Demonstration	16
504/2	Practical	Recording of heart beat of frog by Kymograph	Demonstration Hands on session	3
505/5	EVS	IUCN status of species category, important endangered species of N.E. India Rhinoceros, tiger, golden langur, dancing deer, river dolphin, pigmy hog, white winged wood duck, golden mahseer, threats to biodiversity, manwildlife conflict, ex-situ & insitu conservation strategies, NP, WLPA-1972	Lecture Projector Semmer	15
506/1	Practical	Estimation of size of population by capture-recapture method	Demonstration & Hands on session	3
507/2	Endocrinology	Hormones secreted by endocrine glands.	Lecture, Demonstration	9
508/3	Practical	Study of permanent slides of endocrine gland	Hands on session	4
508/4	Practical	Submission of models of endocrinology	do	3

NAME: PALLWABEE DUARAH

Course: 501&502

Semester: V

Department: Zoology

Programme: Core

Class Allotted:3/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
501/1	Genetics	Linkage Crossing over Non chromosomal inheritance Sex determination	White board, Lecture Demonstration	12
501/2	Genetics	Concept of gene Mutation Chrosomal aberrations Mutagens &application	do	10

Teaching Plan

NAME: PALLWABEE DUARAH

Course: 601,602,,603,604,605,606,607

Semester: VI

Department: Zoology

Programme: Major

Class Allotted: 4/week

Paper/Unit	Key aspect	Course Content	Teaching Method	Class Required
603/1	Molecular Biology & Immunology	Types of immunity;cells and organs involved in immunity;antigen-antibody reaction;lymphoid organs,adjuvant and haptens,antigen-antibody reaction,vaccines and vaccinations.	White board, Lecture Demonstration	10
603/5	do	Immunoglobulin,basic structure,classes and functions,clonal selection theory,polyclonal and monoclonal antibodies, major histocompatibility complex-structure and functions,immune system in health and disease,basic concept of immunodiagnostic techniques(immunodiffusion,RIA and ELISA),AIDS.		13
605/5	Practical	Study of Blood Cell types in blood smear slides -	Demonstration and Hands on session	4
606/5	Economic Zoology	Piggery management and practices of pig rearing,poultry diseases and its prevention /control	Lecture Use of projector White board.	3
607/4	Practical	Identification of economically important fish and prawn available locally	Visit to local market and lake,fisheries	2

TEACHING PLAN

Name : Dr.Rima Sarmah Baruah

Course : I Theory and Practical

Semester: I

Department: Zoology

Program: Major

Class allotted: 1/week

Paper/Unit	Course Content	Key aspects	TeachingMethods	Classes required
1/4	General characteristics and Evolutionary significance	Ctenophora	White board, Power point presentation ,Interaction,tests,seminars	4 Nos
1/5	General characteristics and classification upto classes .Life cycle and pathogenecity of Fasciola nepatica and Taenia solium	Platyhelminthes	White board, Power point presentation ,Interaction,tests,seminars	15 Nos
5/Prac	One specimen/slide of any ctenophore	Ctenophore	Demostration ,projector,microscope,White board	1No
6/prac	Study of adult Fasciola hepatica,Taenia solium and their life cycles	Platyhelminthes	Demostration ,projector,microscope,White board	1 No

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah

Course : 201

Semester: II

Department: Zoology

Program: Major

Class allotted: 1/week

Paper/Unit	Course Content	Key aspects	TeachingMethods	Classes required
201/4	Vitamins (Source and Function)and co-enzymes	Vitamins	White board, Power point presentation ,Interaction,tests,seminars	4Nos

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah

Course: 301&303

Semester: III

Department: Zoology

Program: Major

Class allotted: 2/week

Paper/Unit	Course Content	Key aspects	Teaching Methods	Class required
301/4	General characters and classification of mammals upto orders with examples , affinities of monotremata and marsupialia, dentition in mammals, echo location in bats, adaptation of aquatic mammals	Mammalia	White board, Power point presentation , Interaction, tests, seminars	
303/1	chromatography-details of paper, ion exchange and thin layer chromatography	1)Chromatography	White board, Power point presentation , Interaction, tests, seminars	10Nos
2/Prac	Demonstration of instruments	Chromatography,	Display practically, White board	5Nos

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah

Course: 401&403

Semester: IV

Department: Zoology

Program: Major

Class allotted: 2/week

Paper/Unit	Course Content	Key aspects	Teaching Methods	Classes required
401/5	Histological method-Basic principles of fixation, Dehydration, Embedding, Sectioning and Spreading Types of Staining: Vital Staining, Classification and properties of dyes , Metachromatic dyes and Staining	Histological methods	White board, Power point presentation ,practical demonstration, Interaction, tests, seminars	15 Nos
403/5	Placentation in mammals	Developmental biology	White board, Power point presentation ,practical demonstration, Interaction, tests, seminars	6 Nos

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah **Course:** 502,503,504,506& 507

Semester: V

Department: Zoology

Program: Major

Class allotted: 4/week

Paper/Unit	Course Content	Key aspects	TeachingMethods	Classes required
502/4	Study of materials/organisms of evolutionary significance(rocks, fossil and connecting links)	Materials of evolutionary significance	White board, Power point presentation ,Interaction,tests,seminars	2 Nos
503/2	Digestion: site and sequence of digestion ;digestive secretions andtheir regulation;mechanism of digestion and absorption of carbohydrates,proteins and lipids; role of gastrointestinal hormones;balanced diet	Digestion	White board, Power point presentation ,Interaction,tests,seminars	15Nos
503/3	Excretion:structure and functions of nephron;renal blood supply;mechanism and regulation of urine formation;renal failure and dialysis	Excretion	White board, Power point presentation ,Interaction,tests,seminars	8Nos
504/7prac	Qualitative test of salivary amylase	salivary amylase	Experiments White board,,	2Nos
506/2	Find out the abundance and density of insect pests in some essential food commodities	Insect Pest	Experiments White board,,	2 Nos
507/5	Neuroendocrine system in insects : role of hormones in growth and development of insects	Neuroendocrine system	White board, Power point presentation ,Interaction,tests,seminars	5 Nos

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah **Course:** 606&607

Department: Zoology

Program: Major

Class allotted: 4/week

Paper/Unit	Course Content	Key aspects	TeachingMethods	Classes required
606/1	Major insect pest of paddy,tea and stored grains and their biology: pest management – chemical,cultural and biological: intregrated pest management	Pest	White board, Power point presentation ,Interaction,tests,seminars	20 Nos
606/2	Life history of silkworm (Eri, muga and mulberry):culture techniqueof silkworms, diseases of silkworm and its prevention	silkworm	White board, Power point presentation ,Interaction,tests,seminars	15Nos
606/3	Life history of honey bee Apis indica: rearing technique of honey bee ;Biology and culture of lac insect	Honey bee	White board, Power point presentation ,Interaction,tests,seminars	8Nos
607/1prac	Identification of silkworms (eri,muga and mulberry), immature and adult stage	silkworm	Demonstration,White board,powerpoint	2Nos
607/2prac	Submission of life cycles of eri/muga / mulberry silkworms	silkworm	Demonstration,White board,powerpoint	2 Nos
607/3prac	Study of important pests of paddy,tea and stored grains and their submission	Pest	Demonstration,White board, Power point presentation ,Interaction,	3 Nos
607/7prac	Apiculture –culture of honey bee and extraction of honey	honey bee	Demonstration,practical White board, Power point presentation ,	4 Nos
607/8prac	Analysis of nutrients (Carbohydrate ,Protein and Lipid) of honey	Honey	Demonstration,Experiment White board, Power point presentation ,	

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah

Course: 201,202

Semester: II

Department: Zoology

Program: Core

Class allotted: 1/week

Paper/Unit	Course Content	Key aspects	TeachingMethods	Classes required
201/4	Vitamins their sources and functions	Vitamins	White board, Interaction,tests,seminars	4Nos
202/5Prac	Qualitative tests of Salivary amylase	Salivary amylase	Experiment,White board	3Nos

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah

Course: 301&302

Semester: III

Department: Zoology

Program: Core

Class allotted: 3/week

Paper/Unit	Course Content	Key aspects	TeachingMethods	Classes required
301/3	Mammalia :Classification upto orders, Dentition in mammals	Mammalia	White board, powerpoint presentation Interaction,tests,seminars	5Nos
302/2,4 Prac	Identification of specimens ,Study of chick embryo development up to 72 hrs by permanent slides	Specimen , slide	Demonstration,White board,microscope	4Nos

TEACHING PLAN

Name: Dr.Rima Sarmah Baruah

Course: 401

Semester: IV

Department: Zoology

Program: Core

Class allotted: 1/week

Paper/Unit	Course Content	Key aspects	TeachingMethods	Classes required
401	Balanced diet , Digestion and absorption of carbohydrate , proteins and fats	Digestion	White board, Powerpoint Interaction,tests,seminars	8Nos