ACADEMIC QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 19, TO SEPTEMBER 19	1 ST SEMESTER HONS	Dr Soumik Agarwal HONS. (THEORY+ PRACTICAL) GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	 ZOOL DC1:Non-Chordates I (Protists to Pseudo-coelomates) Unit 1: Basics of Animal Classification: Six kingdom concept of classification (Carl Woese) Unit 2: Protista: General characteristics and classification up to phylum; Locomotion in Euglena, Paramoecium and Amoeba; Conjugation in Paramoecium; Life cycle and pathogenicity of Plasmodium vivax and Entamoeba histolytica. Unit 3: Porifera: General characteristics and classification up to classes; Canal system, cell types and spicules in sponges. Unit 7: Nemathelminthes: General characteristics and classification up to classes; Life cycle, pathogenicity, parasitic adaptations and control measures of Ascaris lumbricoides and Wuchereria bancrofti Practical:- Identification; Staining/mounting: Any protozoa/helminth from gut of cockroach. 	18
	1 st SEMESTER GEN		Discipline Core Courses (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 1: Basics of Animal Classification - Six kingdom concept of classification (Carl Woese). Unit 2: Protista and Metazoa - Protozoa-general characteristics and classification up to phylum, locomotion in Euglena, Paramoecium and Amoeba, conjugation in Paramoecium. Unit 3: Porifera - General characteristics and classification up to classes, canal system in sponges. Unit 4: Cnidaria - General characteristics and classification up to classes, metagenesis in Obelia; corals and coral reef diversity, functions & conservation. Unit 5: Ctenophora - General characteristics and classification up to classe. Unit 6: Platyhelminthes - General characteristics and classification up to classes; life cycle and pathogenicity and control measures of Fasciola hepatica, parasitic adaptation of Fasciola sp.	18
	2 ND YEAR HONS		 Paper ZHT-IV Unit 1: Histology and Histochemistry 25 marks 1. Histology (a) Fixatives and fixation: principle, types and procedure (b) Dyes and stains used in histology (classification, composition and properties); principle of staining: double and triple staining methods of histological tissue sections; mordents and metachromatic dyes (c) Histological and functional aspects of lung, liver, Kidney, pituitary, thyroid, adrenal, testis and ovary in mammals Paper ZHP-II: 1. Demonstration for determination of human blood pressure 2. Differential counts of WBC and total counts of WBC and RBC in human blood; estimation of haemoglobin in human blood; ABO blood grouping; CT and BT determination (human subject: demonstration only) 	45

	2 ND YEAR GEN	Paner: ZGT-III	10
		Unit 1: Histology Cell Biology and Genetics 25 marks 1	10
		Basic idea about common fixatives and dves used in	
		routine histological procedure	
		Paper: ZGP II: Laboratory course (Practical)	
		1. Differential count of human WBCs	
		2. Blood pressure measurement in humans	
		Paper: ZHT-VIII	45
	3 rd YEAR	Unit 1: Microbiology and Immunology	45
	HONS	Paner: ZHT-XII	
		Unit 1: Molecular Biology	
		1. Molecular structure of DNA and RNA (3)	
		2. DNA replication: basic rules and requirements:	
		semiconservative mode of replication (Meselson's	
		and Stahl's	
		and Stand S	
	20.4	replication and linear eukaryotic replication.	
	10000	3. DNA damage and repair: formation of thymine	
	LTL TABLE	dimer: nucleotide excision repair and base excision	
	0.70854	repair	
		Danay ZCT V Unit 2. Microhiology	0
	3 RD YEAR	Paper: 201-V, Unit 2: Which oblood by,	9
	GEN	Parasitology and Immunology 25 marks	
	A DECK OF A DECK OF A DECK	1. Outline classification of bacteria and virus.(3g)	
	1 Sec. 20	2. Food and water borne infections-cholera and	
	0.04	typhoid.	
		Paper: ZGP III: Laboratory course (Practical)	
		1. Study of human blood film: identification of	
		leucocytes	
		2. Study of fecal smear/gut content smear of	
		cockroach for parasites	
		3 Collection and identification of animals:	
		preservation of any five parasites and five pests	
	1.00	(major/minor)	
2			
2	1 ST VEAR	7001 DC2: Non Chardetee II (Coolemates) Unit 4:	10
00019-	HONS	Onychophora: General characteristics and evolutionary	18
Dec19	101.0	significance	
		Unit 5: Mollusca: General characteristics and	
	(1) 71 10 10 10 10	classification up to classes: Nervous system and torsion in	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Gastronoda: Feeding and respiration in Pila sp	
	1 ST YEAR	Discipline Core (DC): Zoology for General Studies	10
	GEN	(A1)DC 1: Animal Diversity and Ecology	18
		Theory[(A1)-ZOOL-G-DC 1-T]	
		Unit 7: Aschelminthes - General characteristics and	
	and the second se	classification up to classes life cycle and pathogenicity	
	The second se	and control measures of Ascaris lumbricoides. Parasitic	
1000		adaptation of Ascaris sp.	
		Unit 8: Annelida - General characteristics and	
		classification up to classes. Excretion in Annelida.	
		Unit 9: Arthropoda - General characteristics and	
		classification up to classes, Respiration in arthropoda	
		(gills in prawn and trachea in cockroach).	
		Unit 10: Onychophora- General characteristics, body	
		structure and evolutionary significance.	
		Unit 11: Mollusca: General characteristics and	
		classification up to classes, Nervous system and torsion in	
		gastropod; feeding and respiration in Pila sp. Page 5 of 23	

		Unit 12: Echinodermata: General characteristics and	
		classification up to classes: water-vascular system in	
		Asteroidan	
		Asterorida. Unit 12. Homishandata, Cananal abanatanistias of nhylum	
		Unit 15: Hemichordata: General characteristics of phytum	
		Hemichordata; relationship with non-chordates and	
	OND XIE AD	chordates.	
	2 ND YEAR	Paper ZHT-IV	45
	HONS	Unit 1: Histology and Histochemistry	
		(c) Histological and functional aspects of lung, liver,	
		Kidney, pituitary, thyroid, adrenal, testis and ovary in	
		mammals	
		(d) Histological organization of different parts of	
		mammalian alimentary canal	
		Paper ZHP-II: Laboratory course (Practical)	
		3. Human pedigree chart analysis	
		4. Squash preparation and study of cell division stages:	
		onion root tip (mitotic) and grasshopper (meiotic)	
	2 ND YEAR	Panar: 7CT-III	10
	GEN	2 Ultrastructure and function of plasma membrane	10
	GER	5. On astructure and function of plasma memorane,	
	171.7 Million	GERL system, ribosome and mitochondria.	
	(4) 100 million	4. Chromosome structure and nucleosome concept	
		Paper: ZGP II: Laboratory course (Practical)	
		3. Determination of haemoglobin in human blood	
		4. Determination of human blood group: ABO system	
		including Rh factor	
	3 RD YEAR	Paper: ZHT-X11	45
	HONS	Unit 1: Molecular Biology	-
		1 Mutation and mutagency malagular hasis	
		4. Mutation and mutagens: molecular basis—	
		frame shift mutation, tautomeric shifts (ability to	
		cause mutations);	
		chemical and physical mutagenic agents.	
		5 Protein synthesis: stages, components and their	
		5. Frotein synthesis: stages, components and then	
		functions.	
	1.001	6. Molecular biology of cancer: proto oncogenes	
		and their activation: tumor suppressor genes:	
		anontosis	
	and the second se	maahamiama	
	2RD V		-
	3 th Year (Gen)	ZGT-V	9
	the second s	Unit-1	
	CD, 71, 329, 519	2. Chemical, biological, hormonal and pheromonal	
	1 Mar 1 1 Mar 1 M	control mechanisms of pests. General idea about	
	the second se	IPM	
2			
5			
Jan20-		DC3	18
March20	SEMESTER	Unit 7: Reptilia: (i) General characteristics and	
Widi Chizo	HONS	classification up to living Orders. (Young 1981),(ii)	
1.000		Poison apparatus and biting mechanism in snake, snake	
		venom and method of treatment of snake biting,(ii)	
		Sphenodon- present status	
		Unit 8: Aves: (i) General characteristics and	
		classification up to Sub-Classes. (Young, 1981). (ii)	
		Exoskeleton and migration in birds. (ii) Principles and	
		aerodynamics of flight. (iv) Archaeontervy-a connecting	
		link.	
	2 ND SEMESTER	DC4	10
	GEN	Unit 1. Circulatory System Consul plan of simulation	10
		comparative account of heart and cortia arches	
		Unit 5. Uning againstal Systems Succession of 1.1	
		Unit 5: Urinogenital System-Succession of kidney,	
		Evolution of urinogenital ducts.	

		DC4P	
		i. Study of placoid, cycloid and ctenoid scales through	
		permanent slides/photographs.	
		ii. Study of disarticulated skeleton of toad, pigeon, fowl.	
		guineapig and rabbit.	
		iii. Demonstration of carapace and plastron of turtle.	
	2 ND YEAR	Paper ZHT-IV	45
	HONS	(e) Tissue structure and function: brain, skin, blood.	75
		lymph node, bone and muscles 2. Histochemistry (a)	
		Histochemistry as a tool in morphological analysis: tissue	
		sampling, fixation, staining and assessment	
		Paper ZHP-II: Laboratory course (Practical)	
		5. Qualitative tests for proteins/carbohydrates/lipids;	
		quantitative estimation of protein 6. pH measurement of	
		various samples (soil and water) using pH meter	
	2 ND YEAR	Paper: ZGT-III	18
	GEN	Unit 1: Histology, Cell Biology and Genetics	10
		5. Cell cycle: phases and regulation	
		6. Elements of heredity: Mandel's monohybrid and	
	1806.005	dihybrid crosses	
		Paper: ZGP II: Laboratory course (Practical)	
		5. Identification with reasons: histological slides of	
		mammalian stomach, ilieum, thyroid, liver, pancreas,	
		kidney, testis, ovary, spleen, lung; chick embryo slides:	
		24, 48, 72 and 96 hours	
	3 RD YEAR	Unit 2: Biotechnology	45
	HONS	1. Recombinant DNA technology: role of restriction	-
		endonucleases in recombinant DNA formation and	
		gene	
		aloning malagular vostors used in the rDNA	
		cioning, molecular vectors used in the rDNA	
		technology and their importance (plasmid, cosmid,	
		phagemid, yeast	
		artificial chromosomes)	
		2. Biotechnological tools for protein and DNA	
		analysis: Western and Southern blot analysis;	
		PCR— requirements,	
		types and application: DNA finger printing and	
	and the second se	cDNA library construction	
		2 Medical biotechnology: hybridoma technology	
	(1) (1) (1) (1) (1) (1)	and some thereasy having compared and applications	
	A CONTRACTOR OF	and gene therapy— basic concept and application;	
		vaccines and	
	and the second s	vaccination— concept and applications of	10 million 100 mil
	and the second sec	attenuated (live) and inactivated (killed) vaccines,	
		toxoid and DNA	
	the second se	vaccines	
	3 RD Year (Gen)	ZGT-V	9
		Unit-1	
		7 Dairy: Common Indian and foreign dairy breeds	
		of mulching cows Milk processing (Pasteurization)	
		5 Deregitic adoptations of Eggsisla and Taggin	
		C. D. L. C.M	
		o. Kole of Mosquito, Sand fly, house fly, cyclops,	
		cockroach, flea, ticks, mites and rats in transmission	
		of diseases.	
4			
April20-	2 ND SEMESTER	DC3:	18
lune20	HONS	Unit 9: Mammals: (i) General characters and	-
Junezo		classification up to living Infra class (Young 1981).	
	· · · · · · · · · · · · · · · · · · ·		

		(11) Affinities of Prototheria, (111) Adaptive radiation	
		in mammals with reference to locomotory	
		appendages, (iv) Echolocation in Chiropterans and	
		Cetaceans.	
		DC3P	
		$\begin{array}{c} DCJI \\ \vdots & A & 1 \\ \end{array}$	
		iv. Ampnibia: Necturus, Buro, Rana, Hyla, Alytes,	
		Axoltl, Tylototriton, Ambystoma.	
		v. Reptilia: Chelone, Trionyx, Hemidactylus,	
		Varanus, Uromastix, Chamaeleon, Ophiosaurus,	
		Draco Bungarus Vipera Naja Hydrophis	
		Crossedulus: Kay for identification of noisenous and	
		Crocodylus, Key for identification of poisonous and	
		non-poisonous snakes.	
		vi. Mammalia: Bat (insectivorous and frugivorous),	
		Funambulus.	
2 ND SEN	MESTER	DC4	10
GEN		Unit 6: Nervous System - Comparative account of brain	10
	1.000	cranial nerves in mammals	
	1.1.1.1.1.1.1	Unit 7: Skoletal System Evolution of visceral arches	
		DC/D Gro A	
		iv Identification of mammalian shulls. Dute Dawa	
		iv. Identification of manimalian skulls: Bujo, Rana,	
and and	ZAD	Columba, Cavia and Dog.	
2 YE	ZAK	raper ZH1-IV	45
HONS	and the second sec	(b) Histochemical staining for carbohydrates (PAS),	
	A DEPOSIT OF A	protein (Millon's staining method), lipids (Sudan black-B	
		method); histochemical study of mucosubstances.	
		(c) Fuelgen nuclear staining technique for DNA.	
		(d) Immunohistochemistry: techniques of	
		immunohistochemical staining and applications.	
		Paper ZHP-II: Laboratory course (Practical)	
		7. Microtomy; tissue fixation, cutting, stretching,	
		affixation, staining, microscopic observation and	
		identification (laboratory bred animal)	
2 ND YE	EAR	Paper: ZGT-III	18
GEN		Unit 1: Histology, Cell Biology and Genetics	
	and the second se	7. Linkage: definition, Complete and Incomplete linkage	
	and the second se	with examples	
	and the second s	8. Crossing over and recombination (genetic and	
	2010/01/02	cytological proof)	
		9. Mutation: Chromosomal changes (structuraland	
		numerical), point mutation, Down's syndrome,	
	Contract of the local division of the local	Klinefelter syndrome	
		Paper: ZGP II: Laboratory course (Practical)	
1.		6. Biostatics: problems to be set based on the theoretical	
		syllabus	
3 RD Yea	ar (Hons)	Paper-X	45
and the second second		Parasitology and Medical Zoology	75
		1. Parasites, parasitism and hyperparasitism; importance	
		of hosts in parasitic development: parasitic adaptations	
		2. Mode of transmission diagnosis and control measures	
		of human malaria and taeniasis	
		3 Life-cycle nathogenicity and treatment of parasitic	
		infection to	
		humans: Schistosomahaematohium Entamochabustobutica	
		and Trypanosomahrucei Gambiense	
		A General aspects of host-parasite interaction	
		Denor 7UT VII	
		Unit 2: Biotechnology	
		4. DNA sequencing and DNA microarray:	

		 techniques and applications 5. Cell culture techniques: primary and secondary cell cultures; cell lines: definition, development and maintenance; cryopreservation of cells and tissues 6. Environmental and food biotechnology: 	
		application of tools and techniques in bioremediation (pesticide only), water purification (drinking water) and food preparation (curd and	
		cheese)	
3 RD Year (Gen)		ZGT-V Unit-1:	9
		8. Biostatistics: Sample, frequency distribution,	
		histogram; definition and calculation of mean,	
		median, mode, standard deviation and standard	
		error (problems to be solved).	
	100 C	Unit-2	
	100 C	9. Structure and mechanism of transmission of HIV	
		10. Principles of Vaccination and types of vaccines	



ACADEMIC OUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 19, TO SEPTEMBER 19	1 ST SEMESTER HONS	Sanchita Chakraborty HONS. (THEORY+ PRACTICAL)	ZOOL DC1:Non-Chordates I (Protists to Pseudo-coelomates) Unit 3: Porifera: General characteristics and classification up to classes; Canal system, cell types and spicules in sponges.	9
		GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	a 121	
Ŕ	1 ST SEMESTER GEN		Discipline Core Courses (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 1: Basics of Animal Classification - Six kingdom concept of classification (Carl Woese). Unit 2: Protista and Metazoa - Protozoa- general characteristics and classification up to phylum, locomotion in <i>Euglena,</i> <i>Paramoecium</i> and <i>Amoeba</i> , conjugation in <i>Paramoecium</i> . Unit 3: Porifera - General characteristics and classification up to classes, canal system in sponges. Unit 6: Platyhelminthes - General characteristics and classification up to classes; life cycle and pathogenicity and control measures of <i>Fasciola hepatica</i> , parasitic adaptation of <i>Easciola hepatica</i> , parasitic	18
1.100	2 ND YEAR HONS		Paper ZHT-IV Unit 1: Histology and Histochemistry 25 marks 1. Histology (a) Fixatives and fixation: principle, types and procedure Paper ZHP-II: 1. Demonstration for determination of human blood pressure	10
	2 ND YEAR GEN		Paper: ZGT-III Unit 1: Histology Paper: ZGP II: Laboratory course (Practical) 1. Differential count of human WBCs	10
	3 rd YEAR HONS		Paper: ZHT-VIII Unit 1: Microbiology and Immunology Paper: ZHT-XII Unit 1: Molecular Biology	10

		 Molecular structure of DNA and RNA (3) DNA replication: basic rules and requirements; semiconservative mode of replication 	
	3 RD YEAR GEN	Paper: ZGT-V, Unit 2: Microbiology, Parasitology and Immunology 25 marks1. Outline classification of bacteria and virus.(3g)2. Food and water borne infections- cholera and typhoid.Paper: ZGP III: Laboratory course (Practical)	10
2			
Oct19- Dec19	1 ST YEAR HONS	ZOOL DC2: Non-Chordates II (Coelomates) Unit 4: Onychophora: General characteristics and evolutionary significance.	4
	1 ST YEAR GEN	Discipline Core (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Unit 7: Aschelminthes - General characteristics and classification up to classes, life cycle, and pathogenicity and control measures of Ascaris lumbricoides; Parasitic adaptation of Ascaris sp. Unit 8: Annelida - General characteristics and classification up to classes, Excretion in Annelida. Unit 9: Arthropoda - General characteristics and classification up to classes, Respiration in arthropoda (gills in prawn and trachea in cockroach).	10
k	2 ND YEAR HONS	Paper ZHT-IV Unit 1: Histology and Histochemistry (c) Histological and functional aspects of lung, liver, Kidney, pituitary, thyroid, adrenal, testis and ovary in mammals (d) Histological organization of different parts of mammalian alimentary canal Paper ZHP-II: Laboratory course (Practical) 3. Human pedigree chart analysis	10
1.100	2 ND YEAR GEN	Paper: ZGT-III3. Ultrastructure and function of plasma membrane, GERL system, ribosome and mitochondria.Paper: ZGP II: Laboratory course (Practical)3. Determination of haemoglobin in human blood	10
	3 RD YEAR HONS	Paper: ZHT-X11Unit 1: Molecular Biology4. Mutation and mutagens: molecularbasis— frame shift mutation, tautomericshifts (ability to cause mutations);chemical and physical mutagenic agents.	18

	3 RD Year (Gen)	ZGT-V Unit-1 2. Chemical, biological, hormonal and pheromonal control mechanisms of pests. General idea about IPM	10
3			
Jan20- March20	2 ND SEMESTER HONS	DC3 Unit 7: Reptilia: (i) General characteristics and classification up to living Orders. (Young 1981),	10
	2 ND SEMESTER GEN	 DC4 Unit 4: Circulatory System- General plan of circulation, comparative account of heart and aortic arches. Unit 5: Urinogenital System- Succession of kidney, Evolution of urinogenital ducts. DC4P i. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs. ii. Study of disarticulated skeleton of toad, pigeon, fowl, guineapig and rabbit. 	10
	2 ND YEAR HONS	Paper ZHT-IV(e) Tissue structure and function: brain, skin, blood, lymph node, bone and muscles 2.Histochemistry (a) Histochemistry as a tool in morphological analysis: tissue sampling, fixation, staining and assessmentPaper ZHP-II: Laboratory course (Practical)5. Qualitative tests for proteins/carbohydrates/lipids; quantitative estimation of protein	10
	2 ND YEAR GEN	 Paper: ZGT-III Unit 1: Histology, Cell Biology and Genetics 5. Cell cycle: phases and regulation 6. Elements of heredity: Mandel's monohybrid and dihybrid crosses 	10
Į	3 RD YEAR HONS 3 RD Year (Gen)	 Unit 2: Biotechnology 1. Recombinant DNA technology: role of restriction endonucleases in recombinant DNA formation and gene cloning; molecular vectors used in the rDNA technology and their importance ZGT-V Unit-1 7. Dairy: Common Indian and foreign dairy breeds of mulching cows, Milk processing(Pasteurization) 5. Parasitic adaptations of <i>Fasciola</i> and <i>Taenia</i> 6. Role of Mosquito, Sand fly, house fly, cyclops, cockroach, i. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs. 	10
4	and are the		
April20- June20	2 ND SEMESTER HONS	DC3: Unit 9: Mammals: (i) General characters and classification up to living Infra class (Young,1981), DC3P	10

	iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes, Axoltl, Tylototriton, Ambystoma.	
2 ND SEMESTER GEN	DC4 Unit 6: Nervous System- Comparative account of brain, cranial nerves in mammals. Unit 7: Skeletal System- Evolution of visceral arches. DC4P Grp-A iv. Identification of mammalian skulls: <i>Bufo,</i> <i>Rana, Columba, Cavia</i> and Dog.	10
2 ND YEAR HONS	Paper ZHT-IV(b) Histochemical staining for carbohydrates(PAS), protein (Millon's staining method),lipids (Sudan black-B method); histochemicalstudy of mucosubstances.Paper ZHP-II: Laboratory course(Practical)7. Microtomy; tissue fixation, cutting,stretching, affixation, staining, microscopicobservation and identification (laboratorybred animal)	10
2 ND YEAR GEN	Paper: ZGT-IIIUnit 1: Histology, Cell Biology and Genetics7. Linkage: definition, Complete andIncomplete linkage with examples8. Crossing over and recombination (geneticand cytological proof)9. Mutation: Chromosomal changes(structuraland numerical), point mutation,Down's syndrome, Klinefelter syndromePaper: ZGP II: Laboratory course(Practical)6. Biostatics: problems to be set based on thetheoretical syllabus	18
3 RD Year (Hons)	Paper-X Parasitology and Medical Zoology 1. Parasites, parasitism and hyperparasitism: importance of hosts in parasitic development; parasitic adaptations 2. Mode of transmission, diagnosis and control measures of human malaria and taeniasis Paper: ZHT-XII Unit 2: Biotechnology 4. DNA sequencing and DNA microarray: techniques and applications 5. Cell culture techniques: primary and secondary cell cultures; cell lines: definition	18
3 RD Year (Gen)	ZGT-V Unit-1: 8. Biostatistics: Sample, frequency distribution, histogram; definition and calculation of mean, median, mode, standard deviation and standard error (problems to be solved). 8. Crossing over and recombination (genetic and cytological proof)	9



ACADEMIC QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 19, TO SEPTEMBER 19	1 st SEMESTER HONS	Md Nazir Hossain Hons. (THEORY+ PRACTICAL) GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	ZOOL DC1:Non-Chordates I (Protists to Pseudo- coelomates) Unit 1: Basics of Animal Classification: Six kingdom concept of classification (Carl Woese) Unit 2: Protista: General characteristics and classification up to phylum; Locomotion in Euglena, Paramoecium and Amoeba; Conjugation in Paramoecium; Life cycle and pathogenicity of Plasmodium vivax and Entamoeba histolytica. Unit 3: Porifera: General characteristics and classification up to classes; Canal system, cell types and spicules in sponges.	18
	1 ST SEMESTER GEN 2 ND YEAR HONS	ALLOTED	Discipline Core Courses (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 1: Basics of Animal Classification - Six kingdom concept of classification (Carl Woese). Unit 2: Protista and Metazoa - Protozoa-general characteristics and classification up to phylum, locomotion in Euglena, Paramoecium and Amoeba, conjugation in Paramoecium. Unit 3: Porifera - General characteristics and classification up to classes, canal system in sponges. Unit 4: Cnidaria - General characteristics and classification up to classes, metagenesis in Obelia; corals and coral reef diversity, functions & conservation. Unit 6: Platyhelminthes - General characteristics and classification up to classes; life cycle and pathogenicity and control measures of Fasciola hepatica, parasitic adaptation of Fasciola sp. Paper ZHT-IV Unit 1: Histology and Histochemistry 25 marks 1. Histology (a) Fixatives and fixation: principle, types and procedure (b) Dyes and stains used in histology (classification, composition and properties); principle of staining: double and triple staining methods of histological tissue sections; mordents and metachromatic dyes Paper ZHP-II: 1. Demonstration for determination of human blood pressure	18
	2 ND YEAR GEN		 2. Differential counts of WBC and total counts of WBC and RBC in human blood; estimation of haemoglobin in human blood; ABO blood grouping; Paper: ZGT-III Unit 1: Histology, Cell Biology and Genetics 25 marks 1. Basic idea about common fixatives and dyes used in routine histological procedure Paper: ZGP II: Laboratory course (Practical) 1. Differential count of human WBCs 	18

	3 RD YEAR HONS	 Paper: ZHT-VIII Unit 1: Microbiology and Immunology Paper: ZHT-XII Unit 1: Molecular Biology 1. Molecular structure of DNA and RNA (3) 2. DNA replication: basic rules and requirements; semiconservative mode of replication (Meselson's and Stahl's experiment); types— theta replication, rolling circle replication and linear eukaryotic replication. 	18
	3 RD YEAR GEN	 Paper: ZGT-V, Unit 2: Microbiology, Parasitology and Immunology 25 marks 1. Outline classification of bacteria and virus.(3g) 2. Food and water borne infections-cholera and typhoid. Paper: ZGP III: Laboratory course (Practical) 1. Study of human blood film: identification of leucocytes 2. Study of fecal smear/gut content smear of cockroach for parasites 	18
2		and the second s	
Oct19- Dec19	1 ST YEAR HONS	ZOOL DC2: Non-Chordates II (Coelomates) Unit 4: Onychophora: General characteristics and evolutionary significance. Unit 5: Mollusca: General characteristics and classification up to classes;	18
	I ST YEAR GEN	 Discipline Core (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Unit 7: Aschelminthes - General characteristics and classification up to classes, life cycle, and pathogenicity and control measures of Ascaris lumbricoides; Parasitic adaptation of Ascaris sp. Unit 8: Annelida - General characteristics and classification up to classes, Excretion in Annelida. Unit 9: Arthropoda - General characteristics and classification up to classes, Respiration in arthropoda (gills in prawn and trachea in cockroach). Unit 10: Onychophora- General characteristics, body structure and evolutionary significance. Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila sp. Page 5 of 23 	18
	2 ND YEAR HONS	 Paper ZHT-IV Unit 1: Histology and Histochemistry (c) Histological and functional aspects of lung, liver, Kidney, pituitary, thyroid, adrenal, testis and ovary in mammals (d) Histological organization of different parts of mammalian alimentary canal Paper ZHP-II: Laboratory course (Practical) 3. Human pedigree chart analysis 	18
	2 ND YEAR GEN	Paper: ZGT-III 3. Ultrastructure and function of plasma membrane,	18

		GERL system, ribosome and mitochondria.	
		4. Chromosome structure and nucleosome concept	
		2 Determination of haemoglobin in human blood	
		5. Determination of nachogroom in numan blood	
	3 RD YEAR	Paper: ZHT-X11	18
	HONS	Unit 1: Molecular Biology	
		4. Mutation and mutagens: molecular basis—	
		frame shift mutation, tautomeric shifts (ability to	
		cause mutations);	
		chemical and physical mutagenic agents.	
		5. Protein synthesis: stages, components and their	
		functions.	
	3 RD Year (Gen)	ZGT-V	9
	1 March 2007	Unit-1	5
	10000	2. Chemical, biological, hormonal and pheromonal	
	11 P. M. M.	control mechanisms of pests. General idea about	
		IPM	
3	- 25		
Jan20-	2 ND	DC3	18
March20	SEMESTER	Unit 7: Reptilia: (i) General characteristics and	
inter chizo	HONS	classification up to living Orders. (Young 1981),(ii)	
	1.	Poison apparatus and biting mechanism in snake, snake	
		Sphenodon- present status	
		Unit 8: Aves: (i) General characteristics and	
		classification up to Sub-Classes. (Young, 1981), (ii)	
		Exoskeleton and migration in birds, (ii) Principles and	
		aerodynamics of flight, (iv) Archaeopteryx-a connecting	
	2ND SEMESTED	link.	10
	GEN	DC4 Unit 4: Circulatory System- General plan of circulation	18
	1. THE B.	comparative account of heart and aortic arches.	
		Unit 5: Urinogenital System- Succession of kidney,	
	and the second se	Evolution of urinogenital ducts.	
	and the second s	DC4P	
	- desire the second	1. Study of placoid, cycloid and ctenoid scales through	
		ii Study of disarticulated skeleton of toad nigeon fow	
		guineapig and rabbit.	
		iii. Demonstration of carapace and plastron of turtle.	
1.1	2 ND YEAR	Paper ZHT-IV	18
	HUNS	(e) Tissue structure and function: brain, skin, blood,	
	The second se	Histochemistry as a tool in morphological analysis: tissue	
1.14	and the second se	sampling, fixation, staining and assessment	
		Paper ZHP-II: Laboratory course (Practical)	
		5. Qualitative tests for proteins/carbohydrates/lipids;	
	OND XEAD	quantitative estimation of protein	
	GEN YEAK	Paper: ZGT-III Unit 1: Histology Call Biology and Consting	18
		5 Cell cycle: phases and regulation	
		6. Elements of heredity: Mandel's monohybrid and	
		dihybrid crosses	
		Paper: ZGP II: Laboratory course (Practical)	
		5. Identification with reasons: histological slides of	
		mammalian stomach, ilieum, thyroid, liver, pancreas,	
		Kinney, wous, ovary, spicen, lung, enter entoryo shues.	

	3 RD YEAR HONS		 Unit 2: Biotechnology 1. Recombinant DNA technology: role of restriction endonucleases in recombinant DNA formation and gene cloning; molecular vectors used in the rDNA technology and their importance (plasmid, cosmid, phagemid, yeast artificial chromosomes) 2. Biotechnological tools for protein and DNA analysis: Western and Southern blot analysis; PCR— requirements, types and application; DNA finger printing and cDNA library construction 3. Medical biotechnology: hybridoma technology and gene therapy— basic concept and application; vaccines and 	18
	3 RD Year (Gen)	1	 ZGT-V Unit-1 7. Dairy: Common Indian and foreign dairy breeds of mulching cows, Milk processing(Pasteurization) 5. Parasitic adaptations of <i>Fasciola</i> and <i>Taenia</i> 6. Role of Mosquito, Sand fly, house fly, cyclops, cockroach, i. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs. ii. Study of disarticulated skeleton of toad, pigeon, fowl, guineapig and rabbit. iii. Demonstration of carapace and plastron of turtle. 	18
4				
April20- June20	2 ND SEMESTER HONS	No. of the local diversity of the local diver	 DC3: Unit 9: Mammals: (i) General characters and classification up to living Infra class (Young,1981), DC3P iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes, Axoltl, Tylototriton, Ambystoma. v. Reptilia: Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Crocodylus; Key for identification of poisonous and non-poisonous snakes. 	18
- 54	2 ND SEMESTER GEN	1	DC4 Unit 6: Nervous System- Comparative account of brain, cranial nerves in mammals. Unit 7: Skeletal System- Evolution of visceral arches. DC4P Grp-A iv. Identification of mammalian skulls: Bufo, Rana, Columba, Cavia and Dog.	18

2 ND YEAR HONS	Paper ZHT-IV (b) Histochemical staining for carbohydrates (PAS), protein (Millon's staining method), lipids (Sudan black-B method); histochemical study of mucosubstances. Paper ZHP-II: Laboratory course (Practical) 7. Microtomy; tissue fixation, cutting, stretching, affixation, staining, microscopic observation and identification (laboratory bred animal)	18
2 ND YEAR GEN	 Paper: ZGT-III Unit 1: Histology, Cell Biology and Genetics 7. Linkage: definition, Complete and Incomplete linkage with examples 8. Crossing over and recombination (genetic and cytological proof) 9. Mutation: Chromosomal changes (structuraland numerical) , point mutation, Down's syndrome, Klinefelter syndrome Paper: ZGP II: Laboratory course (Practical) 6. Biostatics: problems to be set based on the theoretical syllabus 	18
3 RD Year (Hons)	 Paper-X Parasitology and Medical Zoology 1. Parasites, parasitism and hyperparasitism: importance of hosts in parasitic development; parasitic adaptations 2. Mode of transmission, diagnosis and control measures of human malaria and taeniasis 3. Life-cycle, pathogenicity and treatment of parasitic infection to humans: <i>Schistosomahaematobium</i>, <i>Entamoebahystolytica</i> Paper: ZHT-XII Unit 2: Biotechnology 4. DNA sequencing and DNA microarray: techniques and applications 5. Cell culture techniques: primary and secondary cell cultures; cell lines: definition, development and maintenance; cryopreservation of cells and tissues 	18
3 RD Year (Gen)	ZGT-V Unit-1: 8. Biostatistics: Sample, frequency distribution, histogram; definition and calculation of mean, median, mode, standard deviation and standard error (problems to be solved). 8. Crossing over and recombination (genetic and cytological proof) 9. Mutation: Chromosomal changes (structuraland numerical) , point mutation, Down's syndrome, Klinefelter syndrome	18

ACADEMI C QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 19, TO SEPTEMB ER 19	1 ST SEMESTER HONS	TITU KARMAKA R HONS. (THEORY+ PRACTICA L) GENERAL (THEORY+ PRACTICA L) SYLLABUS TOPICS ARE TO BE ALLOTED	 ZOOL DC2: Non-Chordates II (Coelomates) Unit 1: Introduction: Evolution of coelom and metamerism. Unit 2: Annelida: General characteristics and classification up to classes: Type study of Pheretima sp. (morphology, locomotion, circulation and reproduction), Excretion in Annelida. Practical (Full marks = 15) [ZOOL-H-DC2-P] 1. Study of following specimens: a. Annelids - Aphrodite, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria 	18
	1 ST SEMESTE R GEN		Discipline Core Courses (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 1: Basics of Animal Classification - Six kingdom concept of classification (Carl Woese). Unit 2: Protista and Metazoa - Protozoa-general characteristics and classification up to phylum, locomotion in Euglena, Paramoecium and Amoeba, conjugation in Paramoecium. Unit 3: Porifera - General characteristics and classification up to classes, canal system in sponges. Unit 4: Cnidaria - General characteristics and classification up to classes, metagenesis in Obelia; corals and coral reef diversity, functions & conservation. Unit 5: Ctenophora - General characteristics and classification up to class. Unit 6: Platyhelminthes - General characteristics and classification up to classes; life cycle and pathogenicity and control measures of Fasciola hepatica, parasitic adaptation of Fasciola sp.	18
	2 ND YEAR HONS		Paper ZHT-VI Unit 1: Animal Physiology 25 marks 1. Physiology of respiration: mechanism of breathing; transport of O2 and CO2 in mammals, Oxy- haemoglobin dissociation curves; Bohr's effect and Haldane effect, chloride shift 2. Cardiovascular system: erythropoiesis; haemoglobin— structure, function and disorders; electrocardiogram and echocardiography—	45

		concept and application; blood pressure: hypo- and	
		hypertension; body fluid and edema	
	2 ND YEAR	Paper: ZGT-III	18
	GEN	1 Spermatogenesis oogenesis and their hormonal	
	GLIT	regulation	
		2 Fortilization in See yrahin	
		2. Fertilization in Sea-urchin	
		3. Cleavage: types and pattern, process of cleavage in	
		frog and chick	
		Paper: ZGP II: Laboratory course (Practical)	
		1. Differential count of human WBCs	
		2. Blood pressure measurement in humans	
		Paper: ZHT-XI	45
	3 RD YEAR	Unit 1: Developmental Biology and Teratology	
	HONS	1. Gametogenesis: Process of spermatogenesis and	
		oogenesis, structure of male and female gametes 2.	
		Fertilization: External fertilization: physical and	
	and the second sec	abamical events of fartilization in and urahing	
	100 march 100	chemical events of fertilization in sea urchin,	
	107 4 107	capacitation and prevention of polyspermy in	
		mammals; in vitro fertilization	
		Paper ZHP-IV:Laboratory course(Practical)	
		6. Demonstration for preparation and identification of	
		whole mounts of chick embryo 24, 48, 72 and 96 h)	
		Paper: ZGT-V	9
	3 RD YEAR	Unit 2: Microbiology, Parasitology and	
	GEN	Immunology	
	GER	1 Outline classification of bacteria and virus	
		2. East and water home infactions shales and	
		2. Food and water borne infections-cholera and	
		typhoid.	
		3. Interspecific associations-symbiosis, commensalism,	
		mutualism and parasitism.	
	100 million (100 m	Paper: ZGP III: Laboratory course (Practical)	
	323.2	1. Study of human blood film: identification of	
		leucocytes	
2		and the second	
Oct19-	1ST	ZOOL DC2: Non-Chordates II (Coelomates)	18
Dec19	SEMESTED	Unit 4: Onvehendere: Conoral characteristics and	10
Decig	SEMESTER	Unit 4. Onychophora. General characteristics and	
	HONS	evolutionary significance.	
1.11		Unit 5: Mollusca: General characteristics and	10 C
	the second se	classification up to classes; Nervous system and torsion	100 C
	and the second se	in Gastropoda; Feeding and respiration in Pila sp.	
	1 ST	Discipline Core (DC): Zoology for General Studies	18
	SEMESTER	(A1)DC 1: Animal Diversity and Ecology	B. 12
	GEN	Theory[(A1)-ZOOL-G-DC 1-T]:	
		Unit 7: Aschelminthes - General characteristics and	
		classification up to classes, life cycle, and pathogenicity	
		and control measures of Ascaris lumbricoides; Parasitic	
		adaptation of Ascaris sp.	
		Unit 8: Annelida - General characteristics and	
		classification up to classes, Excretion in Annelida.	
		Unit 9: Arthropoda - General characteristics and	
		classification up to classes, Respiration in arthropoda	
		(gills in prawn and trachea in cockroach).	
		Unit 10: Onychophora- General characteristics, body	
		structure and evolutionary significance.	
		Unit 11: Mollusca: General characteristics and	
		classification up to classes, Nervous system and torsion	
		in gastropod; feeding and respiration in Pila sp. Page 5	
		ot 23	

			Unit 12: Echinodermata: General characteristics and	
			classification up to classes; water-vascular system in	
			Asteroidea.	
			Unit 13: Hemichordata: General characteristics of	
			phylum Hemichordata; relationship with non-chordates	
			and chordates.	
	2ND VEAR		Paper 7HT VI Unit 1: Animal Physiology	15
	LONS		3 Renal physiology: physiology of urine formation:	
	HUNS		glomerular filtration tubular secretion plasma	
			clearance and counter current mechanism 4	
			Neurophysiology: propagation of nerve impulse	
			through nerve fibres: orthodromic and antidromic nerve	
			impulse: pathophysiology of Alzheimer's disease and	
			multiple sclerosis; sleep and sleep disorders; yoga and	
			meditationPaper	
			ZHP-II: Laboratory course (Practical)	
			1. Demonstration for determination of human blood	
			pressure	
	2 ND YEAR		Paper: ZGT-IIIUnit 2: Developmental Biology and	18
	GEN	10 m 1 m 10 m	Endocrinology	
		00000	4. Gastrulation in frog and chick 5. Basic idea about the	
		N 6 8 1	role of Organizer and induction mechanism during the	
		10 A 10 A 10	process of embryonic development	
			Paper: ZGP II: Laboratory course (Practical)	
			3. Determination of haemoglobin in human blood	
	3 RD YEAR		Paper: ZHT-XI	45
	HONS		Unit 1: Developmental Biology and Teratology	
			3. Eggs: classification based upon the amount and	
			distribution of yolk and presence and absence of shell;	
			egg membranes	
			4. Cleavage: types with examples based on plane of	
			division and amount of volk: development and	
			arvision and amount of york, development and	
			patterns of cleavage; partnenogenesis: types and	
			significance	
			Paper ZHP-IV:Laboratory course(Practical)	
			7. Identification: prepared slides of embryological	
	(3) T	- C	tissue sections(chick embryo)	
	3 RD Year		Paper: ZGT-V	9
	(Gen)		Unit 2: Microbiology, Parasitology and	
		Concern Concern	Immunology	
			5. Parasitic adaptations of Fasciala and Taenia 6. Role	
	1.11.7		5. I arastite adaptations of I asciola and Tacina 0. Role	
1.13			of Mosquito, Sand Ily, nouse Hy, cyclops, cockroach,	
			flea, ticks, mites and rats in transmission of diseases.	1 m 1
			Paper: ZGP III: Laboratory course (Practical)	10 million (1990)
			2. Study of fecal smear/gut content smear of	
	the second se		cockroach for parasites	
3		100 100	The second se	
Jan20-	2 ND		DC3	18
March20	SEMESTER		Unit 7: Reptilia: (i) General characteristics and	
	HONS		classification up to living Orders (Young 1981) (ii)	
	nono		Poison apparetus and biting machanism in snake, snake	
			roison apparatus and offing incentarisin in shake, shake	
			venom and method of treatment of snake blung,(1)	
			Spnenodon- present status	
			Unit 8: Aves: (i) General characteristics and	
			classification up to Sub-Classes. (Young, 1981), (ii)	
			Exoskeleton and migration in birds, (ii) Principles and	
			aerodynamics of flight, (iv) Archaeoptervx-a	
			connecting link.	
	2 ND		DC4	18
	SEMESTER		Unit 4: Circulatory System- General plan of circulation	
	GEN		comparative account of hasert and cortic arches	
1	GEN	1	comparative account of neart and aortic arcnes.	1

			Unit 5: Urinogenital System- Succession of kidney.	
			Evolution of urinogenital ducts	
			DC/IP	
			1. Study of placoid, cycloid and ctenoid scales through	
			permanent slides/photographs.	
			11. Study of disarticulated skeleton of toad, pigeon,	
			towl, guineapig and rabbit.	
			111. Demonstration of carapace and plastron of turtle.	
	2 ND YEAR		Paper ZHT-VI	45
	HONS		Unit I: Animal Physiology	
			5. Special sense: physiology of vision and hearing in	
			mammals; pain— causes, components and types	
			Paper ZHP-II: Laboratory course (Practical)	
			2. Differential counts of WBC and total counts of	
			WBC and RBC in human blood; estimation of	
			haemoglobin in human blood; ABO blood grouping;	
			CT and BT determination (human subject:	
	aND area i a		demonstration only)	1.0
	2^{ND} YEAR		Paper: ZGT-III	18
	GEN	States and States	Unit 2: Developmental Biology and Endocrinology	
		10000	6. Extra-embryonic membranes in Chick 7. Placenta:	
		10 P. (10)	types and functions 8. Major endocrine glands in	
			mammals and their hormonal functions (pituitary,	
			thyroid, pancreas, adrenal, testis and ovary)	
			Paper: ZGP II: Laboratory course (Practical)	
			4. Determination of human blood group: ABO system	
			including Rh factor	
	3 RD YEAR		Paper: ZGT-V	45
	HONS		Unit 2: Microbiology, Parasitology and	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Immunology	
			5. Parasitic adaptations of Fasciola and Taenia 6. Role	
			of Mosquito Sand fly house fly cyclons cockroach	
			of wosquito, sand fly, house fly, cyclops, cockroach,	
			flea, ticks, mites and rats in transmission of diseases.	
			Paper: ZGP III: Laboratory course (Practical)	
			2. Study of fecal smear/gut content smear of	
			cockroach for parasites	
	3 RD Year		Paper: ZGT-V	9
	(Gen)		Unit 2. Microbiology, Parasitology and	
	(000)		Immunology	
1.1.1	and the second s		7. Concept of Innate and adaptive immunity 8. Basic	
			idea of antigens, types and structure of	
	1. Alt 1.		immunoglobulins, antigen- antibody reactions	
4				
April20-	2 ND		DC3:	18
June20	SEMESTER		Unit 9. Mammals: (i) General characters and	
June20	JONE		$1 = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) \left(\frac{1}{2} + 1$	
	HONS		classification up to fiving infra class (Young, 1981), (f)	
			Affinities of Prototheria, (iii) Adaptive radiation in	
			mammals with reference to locomotory appendages,	
			(iv) Echolocation in Chiropterans and Cetaceans.	
			DC3P	
			iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes,	
			Avoltl Tylototriton Ambystoma	
			y Dantilia Chalana Triany Useri isatulua V	
			v. Repula: Chelone, Thonyx, Hemidactylus, Varanus,	
			Uromastix, Chamaeleon, Ophiosaurus, Draco,	
			Bungarus, Vipera, Naja, Hydrophis, Crocodylus; Key	
			for identification of poisonous and non-poisonous	
			snakes.	
			vi. Mammalia: Bat (insectivorous and frugivorous)	
			Funambulus	
1	1			1

2 ND SEMESTER	DC4 Unit 6: Nervous System- Comparative account of brain annual partice in mammals	18
GEN	Unit 7: Skeletal System- Evolution of visceral arches. DC4P Grp-A iv. Identification of mammalian skulls: <i>Bufo. Rana.</i>	
	Columba, Cavia and Dog.	
2 ND YEAR HONS	Paper ZHT-VI Unit 1: Animal Physiology 5. Special sense: physiology of vision and hearing in mammals; pain— causes, components and types 6. Physiology of muscle contraction Paper ZHP-II: Laboratory course (Practical)	45
2 ND YEAR GEN	Paper: ZGT-III Unit 2: Developmental Biology and Endocrinology 9. Classification of hormones and elementary idea about mechanism of hormone action 10. Insect endocrine gland (in brief)	18
3 RD Year	Paper: ZHT-XI	45
(Hons)	 Unit 1: Developmental Biology and Teratology 8. Major endocrine glands in mammals and their hormonal functions (pituitary, thyroid, pancreas, adrenal, testis and ovary) 9. Classification of hormones and elementary idea about mechanism of hormone action 10. Insect endocrine gland (in brief) 	
3 RD Year (Gen)	Paper: ZGT-V Unit 2: Microbiology, Parasitology and Immunology 9. Structure and mechanism of transmission of HIV 10. Principles of Vaccination and types of vaccines Paper: ZGP III: Laboratory course (Practical) 6. Identification of microfilaria larva; type specimen: Taenia solium, Scirpophaga incertulus, Sitophilus oryzae, Leptocorisa, Epilachna, Coccinella, Lepisma, Termite, Bandicota sp., Labeo rohita, L. bata, Catla catla, Cirrhinus mrigala, Hypophthalmicthyes molitrix, Ciprinus carpio, Ctenopharyngodon idela, Tenualosa (=Hilsa) ilisha, Penaeus, Macrobrachium rosenbrgi	9

ACADEMI C QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 19, TO SEPTEMB ER 19	1 ST SEMESTER HONS	ATINDRIA SEN HONS. (THEORY+ PRACTICA L) GENERAL (THEORY+ PRACTICA L) SYLLABUS TOPICS ARE TO BE ALLOTED	 ZOOL DC2: Non-Chordates II (Coelomates) Unit 1: Unit 3: Arthropoda: General characteristics and classification up to classes; Respiration in Arthropoda (gills in prawn and trachea in cockroach), Metamorphosis in Lepidopteran insects, Vision in insects. Unit 4: Onychophora: General characteristics and evolutionary significance. Unit 5: Mollusca: General characteristics and classification up to classes; Nervous system and torsion in Gastropoda; Feeding and respiration in Pila sp. Unit 6: Echinodermata: General characteristics and classification up to classes; Water- vascular system in Asteroidea; Larval forms in Echinodermata; Affinities with Chordates. Unit 7: Hemichordata: General characteristics of phylum Hemichordata; Relationship with non-chordates and chordates. Practical (Full marks = 15) [ZOOL-H-DC2-P] Study of following specimens: Arthropods - Limulus, Palamnaeus, Palaemon, Daphnia, Balanus, lepas, Sacculina, Carcinus, Eupagurus, Buthus, Scolopendra, Julus, Bombyx, Periplaneta, termites and honey bees,,Peripatus. Onychophora Molluscs - Chiton, Dentalium, Pila, Doris, Helix, Unio, Mytilus, Ostrea, Pinctada, Sepia, Octopus, Nautilus, Loligo. 	18
	1 ⁵¹ SEMESTE R GEN		Discipline Core Courses (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)	18

	Unit 11 : Mollusca: General characteristics and classification up to classes, Nervous	
	system and torsion in gastropod; feeding and respiration in Pila.	
	Unit 12: Echinodermata: General characteristics and classification up to classes;	
	water-vascular system in Asteroidea.	
	Unit 13: Hemichordata: General characteristics of phylum Hemichordata; relationship with non-chordates and chordates.	
	Practical (=15 marks) [(A1)-ZOOL-G-DC 1-P]:	
mil	f. Molluscs : Chiton, Doris, Unio, Sepia, Octopus, Nautilus, Loligo. Mytilus.	
197	g. Echinodermate: Pentaceros/Asterias, Ophiura, Echinus, Cucumaria and Antedon.	
Carl I have	• Ecology:	
32	i. Study of an aquatic ecosystem: determination of pH, and Dissolved Oxygen content (Winkler's method) and CO2 in water.	
	Report on a one-day visit to Sanctuary/Zoo/Sericulture station/Fishery/apiculture station/pond ecosystem/agro-ecosystem.	
2 ND YEAR HONS	Paper ZHT-V Unit 2: Genetics 25 marks	45
TUTTE	1. Basic principles of heredity: Mendel's law segregation and concept of dominance; Mendel's dihybrid crosses and law of independent assortment.	16
6	2. Criteria of genetic materials: DNA as the genetic material (experiments of Griffith; Hershey and Chase experiment, and experimental protocol of Avery, MacLeod and McCarty)	h.
And and a second second	3. Sex determination and dosage compensation in Drosophila and man.	
	4. Linkage and crossing over; sex linked inheritance in man and Drosophilamelanogaster; sex limited characters and cytoplasmic inheritance	
	5. Chromosomal aberrations: structural variations in chromosomes (deletion, duplication, inversion and translocation); variation in chromosome number (aneuploidy, euploidy and polyploidy)	

	6. Chromosomal basis of genetic disorder and	
	diseases: Down, Turner's and Klinefelter syndromes.	
	Paper ZHP-II: Laboratory course (Practical) 50	
	marks	
	1 Human nedigree chart analysis	
2 ND VEAR	Panar: 7CT III	18
CEN	1 aper. 201-111	10
GEN		
	Unit 1: Histology, Cell Biology and Genetics	
	6. Elements of heredity: Mandel's monohybrid and	
	dihybrid crosses	
	7. Linkage: definition, Complete and Incomplete	
	linkage with examples	
	8 Crossing over and recombination (genetic and	
	autological proof	
100-0.01	cytological proof)	
107 4 87		
11.498	9. Mutation: Chromosomal changes (structuraland	
	numerical), point mutation, Down's syndrome,	
	Klinefelter	
	syndrome	
	and the second s	
	10. Sex determination in Drosophila and Man	
1 1000		
	11 Inheritance of sex linked and autosomal genes in	
	man haamanhilia and Thalagaamia	
	man-naemophina and Thalassenna	
	Paper: ZGP II: Laboratory course (Practical)	
	1. Determination of haemoglobin in human blood.	
1000	Paper ZHT-VII	45
3 RD YEAR	Unit 2: Adaptation and Evolution. 25 marks	
HONS	and the second se	
the second se	1. Adaptation	
and the second se	and the second se	
and the second se	(a) Aquatic adaptation	
- 11 T L T L T L T L T L T L T L T L T L	(b) Volant adaptation	
1 - CAMP - 1 - CAMP		
	(a) Economial adaptation	
and the second sec	(c) Possonal adaptation	
and the second s	(d) Scansorial adaptation	
the second se	(e) Cursorial adaptation	
	2. Evolution	
	(a) Concept of evolution: Hardy-Weinberg equilibrium,	
	calculating allele and genotype frequencies; Founder	
	effect and population bottleneck: genetic diversity and	
	nhylogenetic analysis	
	phylogenetic analysis	
	(b) Domions and dimensional strenge and dimension	
	(b) Barriers and dispersais: types and their impact on	
	animai distribution; Zoogeographical realms: names,	
	subdivisions, climatic features and vertebrate fauna	
	(c) Origin of life: DNA world and RNA world; theory	
	of evolution- Lamarckism, Darwinism; modern	

	synthetic theory of evolution	
	 (d) Mimicry and colouration in animals: evolutionary significance; isolation— types and mechanisms; evolution of man; adaptive radiation with special reference to marsupials (e) Fossils and fossilization; importance of fossils and dating of fossils Paper: ZHT-IX 	
	Unit 1: Ecology 25 marks 1. Ecosystem, ecology and energetics: energy flow and energetic of ecosystem; energy transformations and energy transfer; Law of thermodynamics	
19/	 2. Biogeochemical cycles: gaseous cycle- carbon and nitrogen cycles; sedimentary cycle 3. Population ecology: properties of population- density, natality,mortality, age distribution, biotic potential 	
19	environmental resistance and carrying capacity, population growth forms, J and S shaped curves, migration, emigration and immigration 4. Community ecology: Biotic community- definition,	
30	 characteristics and classification, species diversity, fluctuations, stratification, succession, ecotone and edge effect 5. Population interactions: Intraspecific and interactions 	
11112	interspective associations- positive and negative interactions: mutualism, commensalism, parasitism, predation and competition. Paper ZHP-IV:Laboratory course(Practical) 50 marks	ĺ.
	1. Determination of toxicity of permissible agents:(a) LC50 against stored grain pests/mosquito larvae; (b) LD50 against air breathing fishes (demonstration only) (graphical presentation required in both cases).	3
3 RD YEAR	 Determination of dissolved oxygen and carbon dioxide in water. Paper: ZGT-V Unit 2: Microbiology. Parasitology and 	9
GEN	Immunology 1.Outline classification of bacteria and virus. 2. Food and water borne infections-cholera and typhoid.	

			3. Interspecific associations-symbiosis, commensalism.	
			mutualism and parasitism	
			Panar: 7CP III: Laboratory course (Practical)	
			1 State of James 11, 1 flue identification of	
			1. Study of numan blood film: identification of	
-			leucocytes	
2				
Oct19-	1 ST		ZOOL DC2: Non-Chordates II (Coelomates)	18
Dec19	SEMESTER		Unit 4: Onychophora: General characteristics and	
	HONS		evolutionary significance.	
			Unit 5: Mollusca: General characteristics and	
			classification up to classes: Nervous system and torsion	
			in Costronado: Faading and requiration in Bile sn	
	1 ST		In Gastropoda, Feeding and respiration in Fia sp. $\mathbf{D}_{i}^{(i)}$	10
			Discipline Core (DC): Zoology for General Studies	18
	SEMESTER		Theory (A1) ZOOL C DC 1 Th	
	GEN		Unit 7: Asabalminthas General abaractoristics and	
		100 C 100 C	classification up to classes life cycle and pathogenicity	
			and control measures of Ascaris lumbricoides: Parasitic	
		States and States	adaptation of Ascaris sp	
		200 C	Unit 8: Annelida - General characteristics and	
			classification up to classes. Excretion in Annelida.	
			Unit 9: Arthropoda - General characteristics and	
			classification up to classes, Respiration in arthropoda	
		- BC -	(gills in prawn and trachea in cockroach).	
			Unit 10: Onychophora- General characteristics, body	
			structure and evolutionary significance.	
			Unit 11: Mollusca: General characteristics and	
			classification up to classes, Nervous system and torsion	
			in gastropod; feeding and respiration in Pila sp. Page 5	
			of 23	
			Unit 12: Echinodermata: General characteristics and	
			classification up to classes; water-vascular system in	
			Asteroidea.	
			Unit 13: Hemichordata: General characteristics of	
			phylum Hemichordata; relationship with non-chordates	
			and chordates.	
	2 ND YEAR	and the second s	Paper ZHT-VI Unit 1: Animal Physiology	45
	HONS		3. Renal physiology: physiology of urine formation;	
		Contract Contract	glomerular filtration, tubular secretion, plasma	
			clearance, and counter current mechanism 4.	
			Neurophysiology: propagation of nerve impulse	
			through nerve fibres; orthodromic and antidromic nerve	
	and the second se		impulse; pathophysiology of Alzheimer's disease and	and the second se
			multiple scierosis; sleep and sleep disorders; yoga and	100
			TUP II I I I TOTAL	
			1 Demonstration for determination of human blood	
			1. Demonstration for determination of numan blood	
	2ND VEAD		Paper: 7GT-IIIIInit 2: Developmental Biology and	18
	CEN		Endocrinology	10
	GEN		4. Gastrulation in frog and chick 5. Basic idea about the	
			role of Organizer and induction mechanism during the	
			process of embryonic development	
			Paper: ZGP II: Laboratory course (Practical)	
			3. Determination of haemoglobin in human blood	
	3 RD YEAR		Paper: ZHT-XI	45
	HONS		Unit 1: Developmental Biology and Teratology	
			3 Eggs: classification based upon the amount and	
			distribution of volk and presence and absonce of shall.	
			and membrones	
			egg membranes	
			4. Cleavage: types with examples based on plane of	
			division and amount of yolk; development and	

			patterns of cleavage; parthenogenesis: types and	
			significance	
			Paper ZHP-IV:Laboratory course(Practical)	
			7. Identification: prepared slides of embryological	
			tissue sections(chick embryo)	
	3 RD Year		Paper: ZGT-V	9
	(Gen)		Unit 2. Microbiology Parasitology and	,
			Immunology	
			5 Parasitic adaptations of Fasciala and Taenia 6 Role	
			of Mosquite, Sand fly, house fly, evaluate acakroach	
			flee ticks mites and rate in transmission of discasses	
			Denorm ZCD III. Laboratory course (Dreatical)	
			Paper: ZGF III: Laboratory course (Fractical)	
			2. Study of fecal smear/gut content smear of	
2			cockroach for parasnes	
3	- ND			1.0
Jan20-	2 ND	100	DC3	18
March20	SEMESTER		Unit 7: Reptilia: (i) General characteristics and	
	HONS	State of the	classification up to living Orders. (Young 1981),(ii)	
			Poison apparatus and biting mechanism in snake, snake	
			venom and method of treatment of snake biting,(ii)	
		1.10	Sphenodon- present status	
			Unit 8: Aves: (i) General characteristics and	
			classification up to Sub-Classes. (Young, 1981), (ii)	
			Exoskeleton and migration in birds, (ii) Principles and	
			aerodynamics of flight, (iv) Archaeopteryx-a	
	1.2.164		connecting link.	
	2 ND		DC4	18
	SEMESTER		Unit 4: Circulatory System- General plan of circulation	10
	GEN		comparative account of heart and aortic arches	
	GLI		Unit 5: Urinogenital System Succession of kidney	
			Evolution of uning genital dusts	
			Evolution of utmogenital ducts.	
			1. Study of placoid, cycloid and ctenoid scales through	
			ii Study of disarticulated skeleton of toad nigeon	
		and the second second	fowl, guineanig and rabbit.	
	1000		iii. Demonstration of carapace and plastron of turtle.	
	2 ND YEAR		Paper ZHT-V	45
	HONS	1.1.1.2.1	Unit 2: Genetics 25 marks	
1.11			Contraction of the second s	
			1. Basic principles of heredity: Mendel's law	10 million
			segregation and concept of dominance; Mendel's	
			dihybrid crosses	
			and law of independent assortment.	
			2. Criteria of genetic materials: DNA as the genetic	
			material (experiments of Griffith: Hershev and Chase	
			experiment, and experimental protocol of Avery,	
			MacLeod and McCarty)	
			3. Sex determination and dosage compensation in	
			Drosophila and man.	
			4. Linkago and grossing over any linked inhoritance in	
			4. Linkage and clossing over, sex inked inneritance in man and Drosonhilamelanogaster: sex limited	
			characters	
			and cytoplasmic inheritance	
			J 1	
			5. Chromosomal aberrations: structural variations in	
			chromosomes (deletion, duplication, inversion and	
	ļ		translocation); variation in chromosome number	

	(aneuploidy, euploidy and polyploidy)	
	6 Chromosomal basis of genetic disorder and	
	diseases: Down, Turner's and Klinefelter syndromes	
	Paper 7HP II: Laboratory course (Practical) 50	
	marks	
	3. Human pedigree chart analysis	
2 ND YEAR CEN	Paper: ZGT-III Unit 1: Histology Cell Biology and Genetics	18
GEN	6. Elements of heredity: Mandel's monohybrid and	
	dihybrid crosses	
	7. Linkage: definition. Complete and Incomplete	
	linkage with examples	
	8. Crossing over and recombination (genetic and	
	cytological proof)	
	9 Mutation: Chromosomal changes (structuraland	
Sec. 87	numerical), point mutation, Down's syndrome,	
107.82	Klinefelter	
1-28	syndrome	
100	10. Sex determination in Drosophila and Man	
	11. Inheritance of sex linked and autosomal genes in	
	man-haemophilia and Thalassemia Paper: ZGP II: Laboratory course (Practical)	
1.24	4. Determination of human blood group: ABO system	
3 RD VEAR	including Rh factor Paper: Paper ZHT VII	45
HONS	Unit 1: Taxonomy and Animal Behaviour	-15
	2. Animal behavior	
10005	(a) Basic concept of classical ethology(fixed action pattern sign stimulus): (orientation/kinesis) innate	
A 74 B	behavior, simple reflexes, motivation	
	and the second s	
and the second se	(b) Instinctive and learning behavior, fixed action	
	and pheromone, sound/bird's singing)	1 C C C C C C C C C C C C C C C C C C C
[1] S. (11) [12] [2]		
and the second sec	(c) Elements of Sociobiology: selfishness, cooperation,	
1 million 1	altruism and kinship	10 mil
	(d) Social organization in termites: eusociality and	1.1
	castes	6.8 - I
the second se	(e) Parental investment (fishes): role of male and	100
	female in parental investment; effect, cost and benefit	
	of	
	parental investment; parent-offspring conflict; parental	
	(f) Biological clocks/rhythm: photoperiod and	
	circadian rhythm, fish and bird migration	
	Unit 2: Adaptation and Evolution	
	Paper: ZGP III: Laboratory course (Practical)	

		2. Study of fecal smear/gut content smear of	
		cockroach for parasites	
	3 RD Year	Paper: ZGT-V	9
	(Gen)	Unit 2: Microbiology, Parasitology and	
		Immunology	
		7. Concept of Innate and adaptive immunity 8. Basic	
		idea of antigens, types and structure of	
		immunoglobulins, antigen- antibody reactions	
4			
April20-	2 ND	DC3:	18
June20	SEMESTER	Unit 9: Mammals: (i) General characters and	
	HONS	classification up to living Infra class (Young, 1981), (ii)	
		Affinities of Prototheria, (iii) Adaptive radiation in	
		mammals with reference to locomotory appendages,	
		(iv) Echolocation in Chiropterans and Cetaceans.	
	Contraction of	DC3P	
		iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes,	
	100 mar 100	Axoltl, Tylototriton, Ambystoma.	
		v. Reptilia: Chelone, Trionyx, Hemidactylus, Varanus,	
	PE DE -	Uromastix, Chamaeleon, Ophiosaurus, Draco,	
		Bungarus, Vipera, Naja, Hydrophis, Crocodylus; Key	
	- 18 A	for identification of poisonous and non-poisonous	
		snakes.	
		vi. Mammalia: Bat (insectivorous and frugivorous),	
	10 March 10	Funambulus.	
	4 201		
	2 ND	DC4	18
	SEMESTER	Unit 6: Nervous System- Comparative account of	
	GEN	brain, cranial nerves in mammals.	
		DC4D Crrr A	
		DC4P GIP-A	
	1000	IV. Identification of mammalian skulls: Bufo, Rana, Columba Cavia and Dog	
		Columbu, Cuviu and Dog.	



OND VEAD	Denen 711T V	15
HONS	Unit 2: Genetics 25 marks	45
HONS	ond 2. Ochercy 25 marks	
	1. Basic principles of heredity: Mendel's law	
	segregation and concept of dominance; Mendel's	
	dihybrid crosses	
	and law official and and an ender on the	
	and law of independent assortment.	
	2. Criteria of genetic materials: DNA as the genetic	
	material (experiments of Griffith; Hershey and Chase	
1804.0	experiment, and experimental protocol of Avery,	
10.4.0	MacLeod and McCarty)	
1.48	3 Sex determination and dosage compensation in	
	Drosophila and man.	
	4. Linkage and crossing over; sex linked inheritance in	
	man and Drosophilamelanogaster; sex limited	
- Trank 81	characters	
1.	and cytoplasmic inheritance	
	5. Chromosomal aberrations: structural variations in	
	chromosomes (deletion, duplication, inversion and	
	translocation); variation in chromosome number	
1.00	(ancupiolity, cupiolity and polypiolity)	
1. The second	6. Chromosomal basis of genetic disorder and diseases:	
	Down, Turner's and Klinefelter syndromes	
and the second second	Paper ZHP-II: Laboratory course (Practical)	
2ND YEAR	Paper: ZCT-IV	18
GEN	Unit 1: Molecular Biology and Biotechnology	10
OLI (7. Enzymes used in genetic engineering; concepts of	
17 Aug 19 - 1	plasmids and cosmids	100 C
	8. Basic idea about Cell and embryo cloning and their	
	applications	
1.000	9. Principles of DNA fingerprinting and its use	
	10. Scope of Genetic engineering for human welfare	
	Paper: ZGP II: Laboratory course (Practical)	
	including Rh factor	
3 RD Year	Paper: Paper ZHT-VII	45
(Hons)	Unit 1: Taxonomy and Animal Behaviour	
	2. Animal behavior	
	(a) Basic concept of classical ethology(fixed action	
	pattern, sign stimulus); (orientation/kinesis), innate	
	behavior, simple reflexes, motivation	

	(b) Instinctive and learning behavior; fixed action	
	pattern: communication in honeybees (dance	
	Language and pheromone, sound/bird's singing)	
	(a) Elements of Socializitory colfishings	
	(c) Elements of Sociobiology: settismess,	
	(d) Social organization in termites: eusociality and	
	castes	
	(e) Parental investment (fishes): role of male and	
	female in parental investment; effect, cost and	
	Paper: Paper ZHT-VII	
	Unit 1: Taxonomy and Animal Behaviour	
	2. Animal behavior	
Contraction of the second s		
	(a) Basic concept of classical ethology(fixed action	
18 p 10	pattern, sign stimulus); (orientation/kinesis), innate	
107 4 107	behavior, simple reflexes, motivation	
10.00	(b) Instinctive and learning behavior: fixed action	
	attern: communication in honeybees (dance	
	Language and pheromone sound/bird's singing)	
	Language and photomone, sound ond s singing)	
	(c) Elements of Sociobiology: selfishness,	
1.000	cooperation, altruism and kinship	
	(d) Social organization in termites: eusociality and	
	castes	
	(e) Parental investment (fishes): role of male and	
1000	female in parental investment; effect, cost and benefit	
1.754-5	OI	
	care in amphibians	
and the second se		
and the second s	(f) Biological clocks/rhythm: photoperiod and	
1	circadian rhythm, fish and bird migration	
1.1.1 (1.1)	Unit 2: Adaptation and Evolution	
		1.0
A CONTRACTOR OF A CONTRACTOR OFTA CONTRACTOR O	and the second se	100 C
	Paper: ZGP III: Laboratory course (Practical)	
	2. Study of fecal smear/gut content smear of	
- 1. C	cockroach for parasites	
	Dener ZCT V	0
5 Year (Gen)	Paper: 201-V Unit 2: Microbiology Parasitology and Immunology	9
	7 Concept of Innate and adaptive immunity & Basic	
	idea of antigens, types and structure of	
	immunoglobulins, antigen- antibody reactions	