

On 28/3/16 in the 1st meeting of the 2nd B.F.S.

CHOICE BASED CREDIT SYSTEM (CBCS) IN ZOOLOGY

Total credit = 72

Credit (Core 48 + Elective 20 + 4 Compulsory)

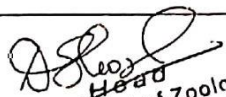
Compulsory Elective (2 + 2 Credits)

Core Courses

Semester - I		
Course Code	Course Name	Credit
ZOOL701C	Animal Diversity (Non Chordates and Chordates)	4
ZOOL702C	Developmental Biology & Endocrinology	4
ZOOL703C	Biochemistry and Animal Physiology	4
ZOOL704C	Laboratory Exercise	4
Semester - II		
ZOOL801C	Histology	2
ZOOL802C	Cell Biology and Genetics	4
ZOOL803C	Ecology & Environmental Zoology	4
ZOOL-804C	Laboratory Exercise	4
Semester - III		
ZOOL901C	Ethology	2
ZOOL902C	Parasitology and Immunology	4
ZOOL-903C	Project	4
Semester - IV		
ZOOL1001C	Biosystematics & Evolution	2
ZOOL1002C	Molecular Biology	2
ZOOL1003C	Project	4
Total Credit		48

Elective Courses offered by the Department

Semester II		
Course Code	Course Name	Credit
ZOOL805E	Tools and Methods in Biology	2
Semester III		
ZOOL904E	Aquatic Environmental Science	2
ZOOL905E1/ ZOOL905E2/ ZOOL905E3	Advanced Animal Ecology Fisheries Comparative Endocrinology	4
Semester IV		
ZOOL1004E	Aquaculture	2
ZOOL1005E	Insect Taxonomy	2
ZOOL1006E	Soil Zoology	2
ZOOL1007E1/ ZOOL1007E2/ ZOOL1007E3	Biodiversity Fish Technology Mammalian Endocrinology	4
Total Credit		18
Compulsory Foundation (Computer Application and Soft Skill)		(2+2) 4
Elective Foundation (Statistics)		2
Total Course Credit		72


 Head
 Department of Zoology
 Tripura University
 Suryamaninagar






 19/3/15

Paper No. ZL 801C

Histology

Credit: 2

Marks 50

Topic No.	Topics	No. of Classes
HISTOLOGY		
01	Preparation of tissues for study: Fixation, Embedding & sectioning, Staining; Acid stains & Basic stains; Auxochrome & Chromophore groups in stain	02
02	Classification of tissues, their origin, structure and function.	06
03	Histology of Lymphoid organ (Spleen & its function)	02
04	Origin, gross anatomy, blood supply, histology & functions of exocrine glands viz. Liver and Pancreas	04
05	Origin, histology and functions of skin – the largest organ in the body	02
06	Origin, gross anatomy, blood supply, histology and functions of endocrine glands viz. Pituitary, Thyroid, Adrenal, islets of Langerhans, Testis & Ovary	12
	Class Tests	02
	Class discussion	02
	Total	32

Paper No. ZL 802C

Cell Biology & Genetics

Credit: 4

Marks 100

Topic No.	Topics	No. of Classes
Cell Biology Credit: 2		
01	Membrane structure and function, membrane proteins and channels, electrical properties of membranes	05
02	Cell and cycle and its regulation	05
03	Hormones and their receptors, cell surface receptor, signalling through G-protein coupled receptors, signal transduction pathways, regulation of signalling pathways	06
04	Cytoskeleton, components structure, dynamics and function	02
05	General principles of cell communication, cell adhesion and roles of different adhesion molecules, gap junctions, extracellular matrix, integrins, neurotransmission and its regulation	06
06	Cellular oncogenes, tumor suppressor genes, virus-induced cancer, metastasis, interaction of cancer cells with normal cells, apoptosis	06
	Class Tests	02
	Total	32
Genetics Credit: 2		
01	Mendel's law and their chromosomal basis: Concept of gene: allele, multiple alleles, pseudo-allele, iso-allele; Extensions of Mendelism: dominance relationship, epistasis, pleiotropy, expressivity, penetrance	03
02	Organization of genes and chromosomes Organization of chromatin: Nucleosome, molecular anatomy of eukaryotic chromosomes, structure and organization of telomere, centromere and kinetochore, polytene chromosome; Unique and repetitive DNA, euchromatin and heterochromatin, constitutive and facultative heterochromatin, chromatin domains and boundary function	03

03	Somatic cell genetics Cell fusion and technology; Heterokaryon selecting hybrids and chromosome mapping, hybridoma	02
04	Microbial genetics Methods of genetic transfer: Transormaiton, conjugation, Transduction and Sex-duction\; Genetics of Bacteriophage: Lytic and Lysogenic cycle and regulatory mechanisms	03
05	Human genetics Karyotype and nomenclature of metaphase chromosome bands: Concept of G Banding, R banding, Q banding; Chromosome anomalies and disease: Common syndromes caused by aneuploidy, mosaicism, deletion and duplication, chromosomal anomalies in malignancy (chronic myeloid leukemia, Burkitt's lymphoma, retionoblastoma and Wilm's tumor), Fragile site and X – linked mental retardation; Pedigree analysis and concept of LOD score	04
06	Gene mapping techniques Three point test cross in Drosophila; Gene mapping in human by linkage analysis in pedigrees; Tetrad analysis in Neurospora	07
07	Sex determination and Dosage compensation in c. Elegance, Drosophila and human	02
08	Transposable elements in prokaryotes and eukaryotes	01
09	Quantitative genetics Polygenic inheritance; Heritability and its measurements	02
10	Mutation Types, causes and detection: autosomal and sex-linked, loss of function, gain of function Molecular basis of mutation, germinal versus somatic mutants Insertional mutagenesis	03
11	Regulation of gene expression Lac operon; Trap operon	03
	Class Tests	02
	Total	33

Paper No. ZL 803C

Ecology & Environmental Zoology

Credit: 4

Marks: 100

Topic No.	Topics	No. of Classes
ECOLOGY Credit: 2		
01	Life and Physical Environment: Interdependence of biological and physical worlds; Role of organisms in the formation of the Earth's atmosphere; How humans affect the natural world; Body size and environment relationship	05
02	Energy and Heat relationship: Chemical equations of photosynthesis and respiration; Kinds of adaptations required for living at extremely high and extremely low temperatures; Four avenues of heat transfer between organisms and their environment	05
03	Population Structure: Various components of population structure; How do environmental factors affect geographic distribution at different scales; Why are conservation biologists interested in genetic structure of small populations; How are isozyme analysis and DNA fingerprinting used to examine genetic variation; How are life tables used to characterize population structure?	05
04	Regulation of Ecosystem functions: Phosphorus limitations in fresh water; Nitrogen limitations in marine water; Ecosystem regulations by top-down or bottom-up controls (nutrient flux)	04
05	Resources and Consumers: Four general types of species interactions; difference between renewable and non-renewable resources; three types of renewable resources; What is a limiting resource? Five types of consumers	05
06	Applied Ecology: Environmental pollution; global environmental changes; biodiversity management approaches; biodiversity hot spots of world, biodiversity status of northeast India	05
	Class tests	02
	Class discussion	01
	Total	32

Environmental Zoology Credit: 2		
01	Scope, principle and definition- environmental Zoology:	02
02	Factors affecting terrestrial and aquatic environment; definition: Interactions between Physico-chemical and biological parameters in an ecosystem; Stressed and non-stressed freshwater environment	04
03	Aspects in the atmosphere, hydrosphere, lithosphere and biosphere. Mass and Energy transfer across different interfaces. Thermodynamics; Aspects and prospects of meteorology, climate change	04
04	Natural resources, conservation and sustainable development.	03
05	Effects of pollution in freshwater, brackish water and marine water ecosystem; definition of DO, BOD, and COD, sedimentation etc. thermo chemical and photochemical reactions in the atmosphere. Oxygen and ozone,	05
06	Effects of acid industrial pollution on air and biota	03
07	Sugarcane and effects of its waste on the distribution of fauna. Biological and Chemical aspects of sewage, effects on diversity of aquatic fauna Leather waste and its impact on terrestrial and aquatic fauna	04
08	Paper mill waste, chemical character & effects on the distribution of fauna. Inorganic and organic components of soil, Nitrogen pathways, NPK of terrestrial and aquatic soil. Agricultural pesticides in water; Biochemical aspects of arsenic, cadmium, carbon monoxide etc	05
	Class Test	02
	Total	32

Paper No. ZL 804C
Laboratory Exercises
Credit: 4
Marks: 100

Topic No.	Topics	No. of Classes
01	Processing of mammalian glandular tissues and their double staining (Eosin & Hamatoxylin)	02
02	Preparation and staining of skeletal muscles of mammal	02
03	Staining and identification of blood cells	02
04	Identification of histological slides based on syllabus	02
05	Bactrial Culture in LB Broth	03
06	Animal cell culture	03
07	Staining of Mitochondria	02
08	Nucleocytoplasmic index	02
09	Fluorescence staining	02
10	Study of meiosis from grasshopper testis	04
11	Immunoflouroscent Staining of actin fibre	02
12	Determination of dissolved Oxygen in water	02
13	Determination of free Carbon dioxide in water	02
14	Determination of species diversity of a community by Shannon-Weiner Index	02
15	Chromatographic Separation of Amino acids	02
16	Tissue preparation for analysis of Proteins, Enzymes, Nucleic acids using tools like Centrifuge, Spectrophotometer	06
17	Demonstration of Auto radiographic slide	02
18	Analysis of Turbidity and Transparency of supplied sample	03
19	Analysis of Carbonates and Bicarbonates of supplied sample	03
20	Haematology of some fauna from Pesticide contaminated Environment	02
21	Analysis of Human Pedigree and Construction of Pedigree Chart	01
22	Preparation of Polytene Chromosomes of Drosophila Larvae	01
	Total (Each class of 3 hours)	55 x 3 hrs = 165 hrs

Paper No. ZL 805C

Tools and Methods in Biological Sciences

Credit: 2

Marks: 50

Topic No.	Topics	No. of Classes
01	Principles and uses of different kinds of Microscopes	04
02	Basic principles and uses of different staining techniques used of late.	04
03	Methods of separation and purification of macromolecules including chromatographic and electrophoretic methods	05
04	Different spectrophotometric methods and their uses	04
05	Radio isotopic methods and their utilities in different kinds of studies related to metabolic studies	04
06	Ideas of PCR, X Ray crystallography, NMR, Patch Clamp, FACS and optogenetic methods	05
07	Centrifugation, and its different uses including determination of 'S' value	04
	Class Test	02
	Total	32

CHOICE BASED CREDIT SYSTEM (CBCS) IN ZOOLOGY

Total credit = 64

Credit (Core 48 + Elective 16)

Compulsory Credit 4 = Foundation Course (Computer Application)

Semester I

Core Course		Credit	Elective Course		Credit	Total Credit
ZOOL701C	Animal Diversity (Non Chordates and Chordates)	4				4
ZOOL702C	Developmental Biology & Endocrinology	4				4
ZOOL703C	Biochemistry and Animal Physiology	4				4
ZOOL704C	Laboratory Exercise	4				4

Semester II

Core Course		Credit	Elective Course		Credit	Total Credit
ZOOL801C	Tools and Techniques and Histology	2	ZOOL801E/	Quantitative Zoology/ Aquatic Environmental Science	2	4
ZOOL802C	Cell Biology and Genetics	4				4
ZOOL803C	Ecology & Environmental Zoology	4				4
ZOOL-804C	Laboratory Exercise	4				4

Semester III

Core Course		Credit	Elective Course		Credit	Total Credit
ZOOL901C	Applied limnology & Ethology	4				4
ZOOL902C	Parasitology and Immunology	4				4
			ZOOL903E1/ ZOOL903E2/ ZOOL903E3/		4	4
ZOOL-904C	Laboratory Exercise	2	ZOOL904E	Laboratory Exercise	2	4

Semester IV

Core Course		Credit	Elective Course		Credit	Total Credit
ZOOL1001C	Biosystematics and Evolution	4				4
ZOOL1002C	Molecular Biology	2	ZOOL1002E	Insect Taxonomy/ Soil Zoology	2	4
			ZOOL1003E1/ ZOOL1003E2/ ZOOL1003E3/		4	4
ZOOL1004C	Laboratory Exercise	2	ZOOL1004E	Laboratory Exercise	2	4
Total Core Credit		48	Total Elective Credit		16	64

Basu
20/2/15

Pritya-kanchandran
20/2/15

Sharma
20/2/15

Head
64
20.2.15
Department of Zool.
Tripura University
Suryamaninagar

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Paper No.

ZOOL903E1 – Ecology & Biodiversity

ZOOL903E2 – Fisheries and Fish Technology

ZOOL903E3 – Reproductive Biology and Mol. Endocrinology

ZOOL1003E1 = Ecology & Biodiversity

ZOOL1003E2 – Fisheries and Fish Technology

ZOOL1003E3 – Reproductive Biology and Mol. Endocrinology

Prof. Anwar
20/2/15

Prayanku Chaitan
20/2/15

S. Ghosh
20/2/15

ASR
20.2.15
Head
Department of Zoology
Tripura University
Suryamaninagar

ASR
20/2/15



CHOICE BASED CREDIT SYSTEM (CBCS) IN ZOOLOGY**Total credit = 74****Credit (Core 48 + Elective 18 (Department) + Foundation 4+ Elective 4 (Other Departments)**

Foundation Credit 4 = 4 Compulsory (Computer Application)

Core Courses

<i>Semester - I</i>		
Course Code	Course Name	Credit
ZL701C	Animal Diversity (Non Chordates and Chordates)	4
ZL702C	Developmental Biology and Endocrinology	4
ZL704C	Laboratory Exercise	4
ZL705C	Biochemistry and Molecular Biology	4
<i>Semester - II</i>		
ZL802C	Cell Biology and Genetics	4
ZL804C	Laboratory Exercise	4
ZL806C	Histology & Histochemistry	2
ZL807C	Environmental Biology and Animal Behaviour	4
<i>Semester - III</i>		
ZL902C	Parasitology and Immunology	2
ZL903C	Project	4
ZL906C	Animal Physiology	4
<i>Semester - IV</i>		
ZL1001C	Biosystematics & Evolution	2
ZL1003C	Project	4
ZL1008C	Economic Zoology	2
Total Credit		48

Elective Courses

<i>Semester II</i>		
ZL805E	Tools and Techniques in Biology	2
<i>Semester III</i>		
ZL904E	Aquatic Environmental Science	2
ZL905E1/ ZL905E2/ ZL905E3/ ZL905E5	Advanced Animal Ecology Fisheries Comparative Endocrinology Advanced Biochemistry	4
<i>Semester IV</i>		
ZL1004E	Aquaculture	2
ZL1005E	Insect Taxonomy	2
ZL1006E	Soil Zoology	2
ZL1007E1/ ZL1007E2/ ZL1007E4/ ZL1007E5	Biodiversity Fish Technology Mammalian Reproductive Physiology Advanced Cell Biology	4
Total Credit		18
Compulsory Foundation (Computer Application)		4
ST704E	Elective Other Department (Statistics)	4
Total Course Credit		74

Proceeding of the First Meeting of the Board of Post Graduate Studies in Zoology

Date: 2nd & 3rd August 2016

Time: 12.30 PM – 4.30 PM

Venue: Seminar Hall, Zoology Department

Sl. No.	Name and Address of Members Present	Signature
1.	Prof. B.B. Jana, University of Kalyani, West Bengal	<i>B. Jana</i>
2.	Prof. Jagat K. Roy, Banaras Hindu University, Varanasi	<i>J. K. Roy</i>
3.	Prof. N. Saha, North – Eastern Hill University, Shillong	<i>N. Saha</i>
4.	Prof. M.K. Singh, Dean, Faculty of Science, Tripura University	
5.	Prof. D. Ghosh, Department of Zoology, Tripura University	<i>D. Ghosh</i> 3.8.16
6.	Prof. S. Banik, Department of Zoology, Tripura University	<i>S. Banik</i> 3/8/16
7.	Prof. P.S. Chaudhuri, Department of Zoology, Tripura University	<i>P. S. Chaudhuri</i> 3/8/16
8.	Dr. S. S. Singh, Department of Zoology, Tripura University	<i>S. S. Singh</i> 3/8/16
9.	Prof. A.K. Saha, Department of Botany, Tripura University	
10.	Dr. Dipayan Chaudhuri, Department of Human Physiology, Tripura University	<i>D. Chaudhuri</i> 3.8.16
11.	Prof. B. K. Agarwala, Head & ex-officio Chairperson	<i>B. K. Agarwala</i>

1. To welcome new members of the Board

The Chairperson welcomed all the members to the first meeting of the BPGS. He expressed his gratitude to the external members, in particular, who took the trouble to travel to Agartala and for sparing their valuable time with us.

2. To discuss and approve the revised syllabus of second, third and fourth semesters in zoology under the CBC System

Soft copies of the draft of syllabi were sent to all the members in advance and hard copies of the same were distributed in the meeting. All the members actively took part in finalizing the draft of the first, second, third and fourth semester syllabi and, after necessary improvements, approved the modified CBCS course lay out and syllabi of all four semesters in Zoology for implementation beginning from the first semester 2016 as per the rules of Tripura University. It was also resolved that the unmodified CBCS plan of course lay out in Zoology as approved by BOF (Science) will remain unchanged for the students of the 3rd semester 2016 and their further progress in to 4th semester 2017.

3. To approve the Research Advisory Committees (RAC) of the following candidates enrolled for Ph.D.

- (I) Smt. Shilpa Dhar
 (II) Smt. Sushmita Debnath
 (III) Smt. Ruma Datta
 (IV) Smt. Anandita Deb
 (V) Smt. Sangita Sutradhar

As per the Ph.D. Regulation no. 5. 01. and 05. 02 of Tripura University, RACs of the following candidates are approved:

Sl. No.	Name of Student	RESEARCH ADVISORY COMMITTEE		
		External Member	Supervisor	Internal Member
1.	Smt. Shilpa Dhar	Prof. G. S. Solanki Department of Zoology, Mizoram University, Aizwal- 796004	Prof.P.S. Chaudhuri	1. Prof. B. K. Agarwala 2. Prof. D. Ghosh 3. Prof. S. Banik
2.	Smt. Sushmita Debnath	Prof. G. S. Solanki Department of Zoology, Mizoram University, Aizwal- 796004	Prof.P.S. Chaudhuri	1.Prof. B. K. Agarwala 2. Prof. D. Ghosh 3. Prof. S. Banik
3.	Smt. Ruma Datta	Prof. Sumit Home Chaudhuri Deptt. of Zoology, University of Calcutta	Prof. P. S. Chaudhuri	1. Prof. B.K. Agarwala 2. Prof. D. Ghosh 3. Prof. S. Banik
4.	Smt. Anandita Deb	Prof. S. K. Maitra Deptt. of Zoology Viswa Bharati Santineketan – 731235, W.B	Prof. S.S. Singh (Supervisor) Prof. D. Ghosh (Co- Supervisor)	1.Prof. B. K. Agarwala 2. Prof. S. Banik 3. Prof. P.S. Chaudhuri
5.	Smt. Sangita Sutradhar	Prof. S. K. Maitra Deptt. of Zoology Viswa Bharati Santineketan – 731235, W.B	Prof. S.S. Singh (Supervisor) Prof. D. Ghosh (Co- Supervisor)	1.Prof. B. K. Agarwala 2. Prof. D. Ghosh 3. Prof. S. Banik
6.	Sri Partha Sarathi Nath	Proposal withdrawn by the Supervisor.		

4. To approve the changes in Ph. D. Thesis titles of the following candidates based on the recommendations of the RACs as under:

- (i) Smt. Santa Ghosh
 (ii) Smt. Aprajita Singh

As per the Ph.D. regulation no. 6.07, changes in the Ph. D. Thesis titles as proposed by the respective RACs of the candidates are approved:

S.L. No.	Name of student	Existing thesis title	Proposed change in thesis title
1.	Smt. Santa Ghosh	" Genital Morphology, Karyotyping and DNA Barcoding of some species of Coceinellini (Coleoptera: Coccinellidae) of Tripura, India"	" Genital Morphology, Biometry and DNA Barcoding of some species of Coceinellini (Coleoptera: Coccinellidae) of Tripura, India"
2.	Smt. Aprajita Singh	"Biology and Aquaculture of Aar, <i>Aorichthys aor</i> (Hamilton, 1822) with reference to its conservation"	" Biology and Aquaculture of Aar, <i>Sperata aor</i> (Hamilton, 1822) with reference to its conservation"

5. To approve the panel of Examiners and moderators for needful use in different examinations to be held during the Academic year:

The list containing 35 names of proposed examiners and moderators from different University/ Institutes in India is approved for needful use by the Controller of Examinations for the M. Sc. end - Semester examinations in Zoology to be held during the year 2016 and 2017.

6. To approve the Ph. D. Work plans of the following Candidates:

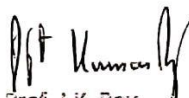
- (i) Smt. Shilpa Dhar
- (ii) Smt. Sushmita Debnath


Ph.D. work plans of Smt. Shilpa Dhar and Smt. Sushmita Debnath, as recommended by the RACs, under the supervision of Prof. P.S. Chaudhuri are approved with necessary modifications.


7. Any other items with the permission of the Chair

(a) It was decided that the meeting of the full Board should be held at least once in an academic year to review and discuss the academic and research performances of the Department. However, infrequent meetings of the Board with quorum may be held as per the need.

The meeting ended with a vote of thanks to the Chair.

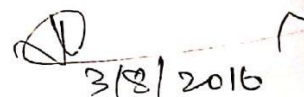

Prof. J.K. Roy
Banaras Hindu University


Prof. B.B. Jana
University of Kalyani


Prof. B.K. Agarwala
Head of the Department



Prof. S. Banik
Tripura University

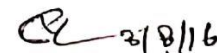

Prof. D. Ghosh
Tripura University


Prof. N. Saha
North Eastern Hill University


Dr. Dipayan Choudhuri
Tripura University


Prof. A.K. Saha
Tripura University


Prof. P.S. Choudhuri
Tripura University


Dr. S.S. Singh
TU