



TRIPURA UNIVERSITY

(A Central University)

Suryamaninagar

SYLLABUS

OF

Zoology
(General & Major)

Semester-I



TRIPURA UNIVERSITY

Year 2014

TRIPURA UNIVERSITY

Zoology (General)

Course Structure

Year	Semester	Paper	Content	Marks
1 st Year	Semester I	Paper -1	U-I. Non Chordates I (Without Coelom) U-II. Non Chordates II (With Coelom) U-III. Chordates I (Protochordates to fish) U-IV. Chordates II (Amphibia to mammals)	100
	Semester II	Paper-2A	U-I. Cell Biology, Histology and Developmental Biology U-II. Biochemistry, Animal Physiology and Endocrinology	50
		Paper - 2B	Practical based on theory of Paper II-A	50
2 nd Year	Semester - III	Paper-3A	U-I. Taxonomy & Classification, Evolution & Adaptation U-II. Ecology, Ethology, Zoogeography and Biodiversity	50
		Paper-3B	Practical based on theory of Paper -III-A	50
	Semester-IV	Paper - 4A	U-I. Applied Zoology U-II. Genetics and Molecular Biology	50
		Paper - 4B	Practical Based on Theory of Paper -IV-A	50
3 rd Year	Semester- V	Paper-5A	U-I. Parasitology and Medical Entomology U-II. Microbiology and immunology	50
		Paper-5B	Practical Based on Theory of Paper-V-A	50
	Semester-VI	Paper - 6	Project in Zoology i. Project Preparation (literature review, field work/lab work) - 50 ii. Presentation - 25 iii. Viva - 25	100

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Zoology (General)

Semester I

Paper - I

Unit -I: Non-Chordates -I (without coelom)

- Paramecium sp.: Structure, locomotor organelle and reproduction.
- Sycon: Histology of body wall with special reference to canal system and spicules.
- Obelia: Organisation and Life history with special reference to metagenesis.
- Morphology and functional anatomy of *Planaria* & *Fasciola*

UNIT II : Non-Chordates - II (with coelom)

- Mechanism of feeding and structure of digestive system in Earthworm and Pila.
- Respiration : Structure and function of : Gills (Prawn). Trachea (Cockroach), Ctenidium and Pulmonary sac (Pila).
- Circulation: Open type (Cockroach) and closed type (Earthworm).
- Excretion : Nephridia and its role in Earthworm
- Nervous System: Basic plan of Invertebrates nervous system; Nervous system in Cockroach and Pila.

UNIT III: Chordata - I (Protochordates to Pisces)

- Branchiostomata: General Organisation, structure of Pharynx & Nephridia, mechanism of feeding and excretion.
- Ascidia: Structure of Pharynx and mechanism to feeding; The life history with special reference to retrogressive metamorphosis, Evolutionary significance of Ascidian Tadpole.
- Cyclostomata: Petromyzon: Difference between Petromyzon and Myxine; Respiratory system of Petromyzon; Ammocoetes larva and its significance.
- Lates: Digestive, Respiratory, Circulatory and Urinogenital system.
- Accessory Respiratory organs in fishes.

UNIT IV: Chordata -II (Amphibia to Mammals)

- Digestive system: Functional anatomy of stomach in Collumba and Cow.
- Respiratory System: Lungs and mode of respiration in Amphibia, Birds and Mammals.
- Circulatory system: Comparative anatomy of Heart and aortic arches in Amphibia, Reptiles, Birds and Mammals.
- Nervous system: Structure of Brain in Toad and Guinea pig; Cranial Nerves-Origin, distribution and function; Difference between Sympathetic and Para- Sympathetic Nervous system.
- Difference between poisonous and non-poisonous snakes
- Exoskeletal structure in birds and mammals

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Zoology (Major)

Course Structure

Year	Semester	Paper	Content	Marks
1 st Year	Semester I	Paper -1	U-I. Non Chordates I (Without Coelom) U-II. Non Chordates II (With Coelom) U-III. Chordates (Protochordates to mammals) U-IV. Taxonomy and Classification	100
	Semester II	Paper-2A	U-I. Cell Biology, Histology and Developmental Biology U-II. Applied Zoology	60
		Paper -2B	Practical based on theory of Paper II-A	40
2 nd Year	Semester - III	Paper-3A	U-I. Genetics U-II. Ecology	60
		Paper-3B	Practical based on theory of Paper -III-A	40
	Semester-IV	Paper -4A	U-I. Microbiology, Parasitology & Immunology U-II. Tools and Techniques in Biology	60
		Paper -4B	Practical Based on Theory of Paper -IV-A	40
3 rd Year	Semester- V	Paper-5A	U-I. Adaptation, Zoogeography and Ethology U-II. Comparative Animal Physiology U-III. Biodiversity and Conservation U-IV. Biostatistics	100
		Paper-5B	Practical Based on Theory of Paper-V-A	100
	Semester-VI	Paper -6A	U-I. Evolutionary Biology U-II. Biochemistry U-III. Endocrinology and Reproductive Biology U-IV. Molecular Biology and Genetic Engineering	100
		Paper -6B	Practical based on Theory of Paper VI-A	100

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Zoology (Major)

Semester I

Paper - I

Unit-I: Non-chordates-I (without Coelom):

- **Protozoa:** Locomotion in protozoa [Amoeboid (*Amoeba*), Cilliary (*Paramecium*), Flagellar (*Euglena*); Morphology and reproduction in *Paramecium* .
- **Porifera:** *Sycon*- skeletal and canal system.
- **Cnidaria:** Polymorphism in *Siphonophora*; Coral and Coral reef formation
- **Helminthes:** Excretory and Nervous system in *Helminthes*.

Unit -II: Non-Chordates-II (With Coelom)

- Coelom: origin, types and function
- Nature, origin and significance of metamerism
- Morphology, Digestive and excretory system of leech
- Morphology, digestive, respiratory, excretory and reproductive system of cockroach
- Morphology, digestive, respiratory and nervous system of *Pila*
- Morphology and water vascular system of *Asterias*
- Echinoderm larvae and their evolutionary significance

Unit-III: Chordates (Protochordate to Mammals):

- **Protochordata:** Structural organization, ciliary mode of feeding and excretion in *Branchiostoma*; Life history of *Ascidia* & evolutionary significance of Ascidean tadpole; Affinities & evolutionary position of *Balanoglossus*.
- **Cyclostomata:** Comparative Study of *Petromyzon* & *Myxine*; Amocoetes larva and evolutionary significance.
- **Pisces:** Difference between osteichthyes and chondrichthyes; *Labeo*: Morphology, Respiratory & Reproductive system; Scales and fins in fishes; Accessory respiratory organs; General characters, distribution, affinities and evolutionary significance of Dipnoi.
- **Amphibia** -Neoteny and Pedomorphosis
- Comparative anatomy of heart and aortic arches in vertebrates
- Poisonous and Non-Poisonous Snake (Comparative account), Poison apparatus, mechanism of feeding and biting in snakes
- Functional anatomy of lungs in Birds and Mammals
- Specialization of digestive system in ruminant and non-ruminant mammals
- Integuments and its derivatives in birds and mammals

Unit -IV: Taxonomy and Classification

- Taxonomy, its history and relationship with systematics
- **Definition:** Classification, Phenon, Taxon, Category, Binomial and trinomial classification with examples, Rules of Zoological nomenclature
- **Kinds of Zoological Classification:** Components of Classification, Linnaean hierarchy
- **Concept of Species:** Typological, Nominalistic, Biological and Evolutionary

- **General Characteristics and Classification up to sub class: a) Porifera, Annelida, Arthropoda, Mollusca and Echinodermata and Order in b) Pisces, Amphibia, Reptilia and Mammalia**
- **Basic Concept of Six Kingdom Classification**