

# Programme outcome and course outcome

## Curriculum for 3-Year B. Sc (General) in Zoology

### B.Sc. (General) Program specific outcomes

1 <sup>st</sup> Semester	DSC-1A (Animal Diversity)	The objective of this program is to familiarise pupils with the wide range of animal species, including both invertebrates and vertebrates. The students will receive instruction on invertebrates and vertebrates through the use of observational techniques, museum specimens, and field reports.
2 <sup>nd</sup> Semester	DSC-1B (Comparative Anatomy and Development Biology of Vertebrates)	An organism's diverse forms, size, and structural traits are produced by a range of interconnected processes.
3 <sup>rd</sup> Semester	DSC-1C (Physiology and Biochemistry)	Enhancing comprehension of biological ideas by researching them at the biochemical, molecular, and cellular levels, as well as investigating physiology and reproduction at the organism level, and examining the ecological influence on animal behaviour.
	SEC-1 (Apiculture)	Acquiring knowledge in animal science to apply it in the fields of apiculture.

4 <sup>th</sup> Semester	DSC-1D (Genetics and Evolution Biology)	Understanding the fundamental principles of biosystematics, evolutionary biology, and biodiversity will equip students with the skills to address biological issues pertaining to the environment.
5 <sup>th</sup> Semester	DSE-1A (Aquatic Biology)	Acquiring knowledge in animal science to apply it in the fields of aquaculture, and fisheries.
	SEC-3 (Medical Diagnostics)	Acquiring knowledge in animal science to apply it in the fields of contemporary medicine.
6 <sup>th</sup> Semester	DSE-1B (Animal Biotechnology)	Exhibiting a thorough comprehension of the principles, methodology, and applications of biotechnological techniques within the realm of animal biology. They will get a comprehensive range of skills and knowledge that will equip them for diverse employment opportunities in research, conservation, and industries associated with animal sciences.
	SEC-4 (Sericulture)	Acquiring knowledge in animal science to apply it in the fields of silkworm rearing, sericulture.

Course Outcome (CO)

DSC-1A (CC-1): Animal diversity

DSC1AT: Animal diversity

Outcomes

1. The students will learn about general characters and classification of protozoans and their locomotory organelles and locomotion.
2. The students will learn about general characters and classification of poriferan and the canal System in *Sycon*.
3. The students will learn about general characters and classification of cnidarians and polymorphism in *Hydrozoa*
4. The students will learn about general characters and classification of platyhelminthes and life history of *Taenia solium*.
5. The students will learn about general characters and classification of nemathelminthes and life history of *Ascaris lumbricoides* and parasitic adaptations.
6. The students will learn about general characters and classification of annelids and their metamerism.
7. The students will learn about general characters and classification of arthropods, metamorphosis in insects, vision of arthropods.
8. The students will learn about general characters and classification of molluscs and torsion in gastropods.
9. The students will learn about general characters and classification of echinoderms and water vascular in Asteroidea
10. The student will learn about general features and Phylogeny of Protochordata
11. The student will learn about general features of Agnatha and classification of cyclostomes up to classes.
12. The student will learn about general features and classification up to orders and osmoregulation in fishes.
13. The student will learn about general features and classification up to orders and Parental care in amphibians
14. The student will learn about general features and classification up to orders in reptiles, poisonous and non-poisonous snakes, biting mechanism in snakes
15. The student will learn about general features and classification up to orders in birds; flight adaptations in birds
16. The student will learn about classification up to orders and origin of mammals

## DSC1AP: Animal diversity (Practical)

### Outcomes

1. The students will learn to identify different animal specimens
2. The students will learn to identify permanent slides of different animal sections
3. The students will learn to identify the poisonous and non-poisonous snakes using keys

## DSC-1B (CC-2): Comparative Anatomy and Developmental Biology of Vertebrates

### DSC1BT: Comparative Anatomy and Developmental Biology of Vertebrates

### Outcomes

1. The students will learn about the integumentary derivatives.
2. The students will learn about the evolution of visceral arches.
3. The students will learn about the alimentary system and digestive glands.
4. The students will learn about the gills, lungs, air sacs and swim bladder.
5. The students will learn about the evolution of heart and aortic arches.
6. The students will learn about the succession of kidney and evolution of urogenital ducts.
7. The students will learn about the comparative account of brain.
8. The students will learn about the sensory receptors and types.
9. The students will learn about the early embryonic development like gametogenesis, fertilization and organogenesis.
10. The students will learn about the metamorphosis and human placenta.
11. The students will learn about the gene activation, determination, induction, differentiation, morphogenesis, intercellular communication, cell movements and cell death.

## DSC1BP: Comparative Anatomy and Developmental Biology of Vertebrates (Practical)

### Outcomes

1. The students will learn to identify the skull and skeleton of different vertebrates

2. The students will learn to identify the different development stages of frog
3. The students will learn to identify the different types of placenta
4. The students will learn to identify placental development in human using ultrasound scans
5. The students will learn to identify the gametes in frog and rat using permanent slides

#### DSC-1C (CC-3): Physiology and Biochemistry

#### DSC1CT: Physiology and Biochemistry

#### Outcomes

1. The students will learn about nerves and muscles.
2. The students will learn about physiology of digestion in the alimentary canal, absorption of carbohydrates, proteins, and lipids.
3. The students will learn about pulmonary ventilation, respiratory volumes and capacities and transport of oxygen and carbon dioxide in blood.
4. The students will learn about the structure of nephron, mechanism of urine formation, and counter-current mechanism.
5. The students will learn about composition of blood, hemostasis, structure of heart, origin and conduction of the cardiac impulse, cardiac cycle.
6. The students will learn about physiology of male reproduction: hormonal control of spermatogenesis; physiology of female reproduction: hormonal control of menstrual cycle structure and function of pituitary, thyroid, parathyroid, pancreas and adrenal.
7. The students will learn about glycolysis, Krebs's cycle, pentose phosphate pathway, gluconeogenesis, glycogen metabolism, and electron transport chain.
8. The students will learn about biosynthesis and  $\beta$  oxidation of palmitic acid.
9. The students will learn about transamination, deamination and urea cycle.
10. The students will learn about mechanisms of enzyme action, enzyme kinetics, inhibition and regulation.

## DSC1CP: Physiology and Biochemistry (Practical)

### Outcomes

1. The students will prepare slides hemin and hemochromogen crystals.
2. The students will learn to identify histological sections of mammalian pituitary, thyroid, pancreas, adrenal gland.
3. The students will learn to identify spinal cord, duodenum, liver, lung, kidney, bone, cartilage.
4. The students will learn to identify functional groups of carbohydrates in given solutions (Glucose, Fructose, Sucrose, Lactose).
5. The students will learn to estimate total protein in given solutions by Lowry's method.
6. The students will learn to study of activity of salivary amylase under optimum conditions.

## DSC-1D (CC-4): Genetics and Evolutionary Biology

### DSC1DT: Genetics and Evolutionary Biology

### Outcomes

1. The students will learn about Mendel's work on transmission of traits, genetic variation, molecular basis of genetic information.
2. The students will learn about principles of inheritance, chromosome theory of inheritance, incomplete dominance and codominance, multiple alleles, lethal alleles, epistasis, pleiotropy, sex linked inheritance, extra-chromosomal inheritance.
3. The students will learn about linkage and crossing over, recombination frequency as a measure of linkage intensity, two factor and three factor crosses, interference and coincidence, somatic cell genetics – an alternative approach to gene mapping.
4. The students will learn about chromosomal mutations: deletion; duplication; inversion; translocation; aneuploidy and polyploidy; gene mutations: induced versus spontaneous mutations, back versus suppressor mutations.
5. The students will learn about chromosomal mechanisms, dosage compensation and sex determination.
6. The students will learn about major events in the origin of life.

7. The students will learn about Lamarckism, Darwinism, Neo-Darwinism
8. The students will learn about types of fossils, incompleteness of fossil record, dating of fossils, phylogeny of horse.
9. The students will learn about organic variations; isolating mechanisms; natural selection (example: industrial melanism); types of natural selection (directional, stabilizing, disruptive), artificial selection.
10. The students will learn about biological species concept (advantages and limitations); modes of speciation (allopatric, sympatric).
11. The students will learn about macro-evolutionary principles.
12. The students will learn about mass extinction (causes, names of five major extinctions, K-T extinction in detail), role of extinction in evolution.

#### DSC1DP: Genetics and Evolutionary Biology (Practical)

##### Outcomes

1. The students will learn about Mendelian inheritance and gene interactions (Non-Mendelian inheritance) using suitable examples and verify the results using chi-square test.
2. The students will learn about linkage, recombination, gene mapping using data.
3. The students will learn about normal and abnormal human karyotypes.
4. The students will learn about fossil evidences from plaster cast models and pictures.
5. The students will learn about phylogeny of horse and adaptive radiation in Darwin's finches from charts.
6. The students will visit Natural history museums.

#### DSE- 1: Aquatic biology

#### DSE1T: Aquatic biology

##### Outcomes

1. The students will learn about aquatic biomes like freshwater ecosystems (lakes, wetlands, streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs.
2. The students will learn about origin and classification of lakes as an ecosystem, lake morphometry, physico– chemical characteristics like light, temperature, thermal stratification, dissolved solids, carbonate, bicarbonates, phosphates and nitrates, turbidity; dissolved gases (oxygen, carbon dioxide). nutrient cycles in lakes-nitrogen, sulphur and phosphorous; different stages of stream development, physico-chemical environment, adaptation of hill-stream fishes.
3. The students will learn about salinity and density of sea water, continental shelf, adaptations of deep sea organisms, coral reefs, sea weeds.
4. The students will learn about causes of pollution: agricultural, industrial, sewage, thermal and oil spills, eutrophication, management and conservation (legislations), sewage treatment water quality assessment- BOD and COD.

#### DSE1P: Aquatic Biology ( Practical)

##### Outcomes

1. The students will learn to determine the area of a lake using graphimetric and gravimetric method.
2. The students will be able to identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
3. The students will be able to determine the amount of turbidity/transparency, dissolved oxygen, carbon dioxide, alkalinity (carbonates & bicarbonates) in water collected from a nearby lake/ water body.
4. The students will be able to operate the Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler).
5. The students will visit a fisheries institute.

#### SEC-3: Medical Diagnostics



## SEC3T: Medical Diagnostics

### Outcomes

1. The students will be able to learn medical diagnostics and its Importance.
2. The students will be able to learn diagnostics methods used for analysis of blood like blood composition, preparation of blood smear and differential count (D.C) using Leishman's stain, platelet count using haemocytometer, erythrocyte sedimentary rate (E.S.R), packed cell volume (P.C.V.).
3. The students will be able to learn urine analysis like physical characteristics and also abnormal constituents.
4. The students will be able to learn causes, types, symptoms, complications, diagnosis and prevention of Diabetes (Type I and Type II), hypertension (primary and secondary), testing of blood glucose using Glucometer/kit.
5. The students will be able to learn about causes, types, symptoms, diagnosis and prevention of Tuberculosis and Hepatitis.
6. The students will be able to learn about Benign and Malignant tumors, detection and metastasis; medical imaging: X-Ray of bone fracture, PET, MRI and CT Scan using photographs.

## DSE - 2: Animal Biotechnology

### DSE2T: Animal Biotechnology

### Outcomes

1. The students will be able to learn about the concept and scope of biotechnology.
2. The students will be able to learn about Cloning vectors like Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors; Restriction enzymes, Transformation techniques like Calcium chloride method and electroporation; Construction of genomic and cDNA libraries and screening by colony and plaque hybridization Southern, Northern and Western blotting; DNA sequencing: Sanger method; Polymerase Chain Reaction, DNA Finger Printing and DNA micro array.

3. The students will be able to learn about production of cloned and transgenic animals: nuclear transplantation, retroviral Method, DNA microinjection, applications of transgenic animals in production of pharmaceuticals, production of donor organs, knockout mice also production of transgenic plants: *Agrobacterium* mediated transformation, applications of transgenic plants for insect and herbicide resistant plants.
4. The students will be able to learn about animal cell culture, expressing cloned genes in mammalian cells, molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia); recombinant DNA in medicines: recombinant insulin and human growth hormone, gene therapy.

#### DSE2P: Animal Biotechnology (Practical)

##### Outcomes

1. The students will be able to Genomic DNA isolation from *E. coli*.
2. The students will be able to Plasmid DNA isolation (pUC 18/19) from *E. coli*.
3. The students will be able to Restriction digestion of plasmid DNA.
4. The students will be able to construct circular and linear restriction map from the data provided.
5. The students will be able to calculate transformation efficiency from the data provided.
6. The students will be able to learn about Southern blotting, Northern blotting, Western blotting, DNA Sequencing, PCR, DNA fingerprinting
7. The students will be able to learn animal cell culture.

#### SEC4T: Sericulture

##### Outcomes

1. The student will be able to learn about sericulture, its history and present status; silk route, types of silkworms, distribution and races, exotic and indigenous races, mulberry and non-mulberry sericulture.

2. The student will be able to learn about the life cycle of *Bombyx mori*, structure of silk gland and secretion of silk.
3. The student will be able to learn about selection of mulberry variety and establishment of mulberry garden, rearing house and rearing appliances, disinfectants: formalin, bleaching powder, RKO, silkworm rearing technology: early age and late age rearing, types of mountages, spinning, harvesting and storage of cocoons.
4. The student will be able to learn about pests of silkworm like Uzi fly, dermestid beetles and vertebrates, pathogenesis of silkworm diseases: protozoan, viral, fungal and bacterial, control and prevention of pests and diseases.
5. The student will be able to learn about the prospect of sericulture in India; sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture including visit to various sericulture centers.

## B.Sc. Honours in Zoology

### Program specific outcome

Zoology is being taught both as a major subject in Zoology Honours courses and as a combination subject in other Honours subjects. Further Zoology also stands as a major subject component in Biology general courses in Vidyasagar University CBCS curriculum. The aims of studying zoology as an Honours subject at B.Sc. level is manifold.

- Students are enabled to learn diversity of animal world in nature. They will also be able to identify and classify living organisms around them scientifically.
- Students will be aware of existence of numerous kinds of organisms starting from microscopic to giant animals around them in the environment.
- It will also help students understand habit habitat of organisms around them.
- Students will be able to learn the roles of different organism in nature and how a natural balance is maintained depending on co-existence of various species.

- Students will also be able to learn how different body systems evolved from simple organism to advanced individuals through continuous evolutionary process.
- A thorough understanding of the concepts will also enable students gain knowledge about ultrastructure, function of various organs of animal body and also of various organelles inside the cell.
- It will also help students gain insight regarding developmental process of a full-grown organism starting from very moment it is created after fusion of male and female gametes.
- How our body responds to various harmful agents and or organisms is another major aspect that is addressed in the subject.
- Helps students understand how tiny biomolecules inside our cells interact with each other and form metabolic pathways.
- Learners are enabled to understand how genes play role in our hereditary characteristics, how they propagate and how abruption in gene structure results in diseases.

#### Course Outcome

#### C1T and C1P (Non-chordates-I and Non-chordates-I Practical)

#### Outcomes

- Students will get concepts of principles of classification, systematics and taxonomy as well as general characteristics, classification of major lower invertebrate phyla.
- It will also provide type study ideas of certain organisms like *Plasmodium sp.*, *Fasciola sp.*, *Ascaris sp.* to students regarding representatives of major phyla and how these organisms possess harm to mankind.
- Students will be able to identify important members of invertebrate phyla thereby enriching concept of biodiversity.

- This will also enable students learn the mode of transmission of certain diseases caused by certain harmful organisms.
- Students will learn to make permanent slide preparation methods of important organisms.

#### C2T and C2P (Ecology and Ecology Practical)

##### Outcomes

- Students will get concepts of branches ecology and components ecosystem.
- They will be able to learn various population growth curves and factors controlling them.
- They will be able to develop concepts of community, species diversity, ecological succession.
- Students will be aware of concepts of ecosystem and importance of wildlife conservation and management.
- They will be able to measure pH of water bodies, turbidity, dissolved O<sub>2</sub> content and free CO<sub>2</sub> of aquatic ecosystems.
- They will be introduced to various planktons of aquatic ecosystems and will learn the principles of determination of population density using a variety of approaches.

#### C3T and C3P (Non-Chordates-II and Non-Chordates-II Practical)

##### Outcomes

- Students will be familiar to classification and characteristics of major invertebrate phyla including Annelida, Arthropoda, Mollusca.
- Students will learn major body parts/organizations of important members of the above phyla viz. insect vision, termite social life, nervous system torsion in Gastropods that reflects evolutionary process in members of more advanced organisms.

- Students will be able to learn how non-chordate to chordate evolution occurred through emergence of lower chordates.
- Students will be familiar to various members of higher invertebrate phyla and different body systems of these organisms which will help them learn how different body parts developed in members of higher phyla through continuous evolutionary process.
- This content will also help to understand how chordates emerged from non-chordates through the appearance of lower chordates.

#### C4T and C4P (Cell Biology and Cell Biology Practical)

##### Outcomes

- This content will introduce students to basic structure and function of cells and various important cell organelles including plasma membrane, cell junctions, mitochondria, Golgi apparatus, endoplasmic reticulum, centrosomes, and others.
- Students will gain idea regarding molecular motors that help transport of molecules inside the cell. They will also be introduced to how cells communicate to each other via certain receptors.
- Students will be able to learn cell cycle and its regulation, how it is controlled and how disruption in genes that control cell cycle progression leads to abnormal cell growth progressing to cancer.
- Students will learn characteristics of various cell division stages, behaviors of chromosomes through cell division.
- Students will learn basic staining techniques of certain cell organelles including mitochondria as well as of DNA and inactivated chromosomes in human females.

#### C5T and C5P (Chordates and Chordates Lab)

## Outcomes

- Students will learn general characteristics of Chordata, structures and features of certain chordate organs.
- Students will be able to learn certain chordate characteristics and body systems including metamorphosis and parental care in amphibia, poison apparatus and biting mechanisms in snakes, aerodynamics of birds' flight and skeletal derivatives of mammals.
- Students will develop ideas regarding geological time scale and various animals and plant groups that appeared at different times of it. They will be able to learn about fossils and process of fossilization.
- Students will be able to identify various important chordate specimens including poisonous and non-poisonous snakes and different class specific body structures of various chordate organisms.

## C6T and C6P (Animal Physiology: Controlling & Coordinating Systems and Animal Physiology: Controlling & Coordinating SystemsLab)

## Outcomes

- Students will learn structures of various kinds of tissues, bones and cartilages, nerve cells and ultrastructure of skeletal muscles as well.
- They will learn properties of nerve impulse, propagation of nerve impulse and synaptic transmission, physiology of skeletal muscle contraction and characteristic features of muscle fiber.
- Students will learn histology and function of reproductive organs and various endocrine glands that secrete important hormones in our body.
- They will also develop ideas regarding various categories of hormones and how they function at different targets.
- Students will gain knowledge regarding identification of sections of various body organs.
- Students will learn how to make permanent slide preparations of certain tissues through microtomy technique.

## C7T and C7P (Fundamentals of Biochemistry and Fundamentals of Biochemistry Lab)

### Outcomes

- Students will be introduced to structure and properties of four major kinds of biomacromolecules viz. nucleic acids, proteins, carbohydrates and lipids.
- They will be able to learn structure and function of the building blocks of all of these four major classes of biomolecules.
- They will learn how these monomeric building blocks bond together to form higher order structures.
- Students will grow ideas regarding metabolism of all of these biomolecules.
- Students will learn how enzymes function to accelerate biological processes and how they play important roles in metabolic pathways.
- It will also help students develop idea regarding electron transport chain in mitochondria.
- They will be able to estimate protein conc. in a given sample, perform qualitative test for carbohydrates, proteins and lipids.
- They will also learn certain enzymatic activity tests and SDS-PAGE for protein separation.

## C8T and C8P (Comparative anatomy of vertebrates and Comparative anatomy of vertebrates Practical)

### Outcomes

- Students will be able to learn structure, function and anatomy of related body organs/structures across different vertebrate classes.
- Students will also learn how similar body organs across different classes of vertebrates are built on a basic pattern reflecting convergent evolution.



- Students will gain hands on training to understand how circulatory system, nervous system, digestive system, respiratory system and other major body systems are built on a common pattern through various vertebrate classes by performing laboratory works.
- How sensory organs serve to respond to various stimuli across various vertebrate classes will be another major area that students will be able to master.

#### C9T and C9P(Animal Physiology and Life Sustaining Systems and Practical)

##### Outcomes

- Students will learn how different body systems work in our body for sustenance of life.
- Students will learn how digestive system, respiratory system, circulatory system, excretory system and thermoregulatory system work inside our body and perform their respective functions to maintain homeostasis.
- They will gain knowledge regarding physiology and function of heart and cardiac system as well.
- Students will learn principles of blood group determination and will be able to perform blood grouping of their own and other's blood samples.
- Students will learn to perform total count of RBC and will be able to distinguish and count various WBCs which is the basis for differential count experiment.
- They will also learn to measure concentration of hemoglobin in a given blood sample and record blood pressure using sphygmomanometer.
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#### C10T and C10P(Immunology and Immunology Practical)

##### Outcomes

- Students will learn basic concepts of health and diseases, types of immunity and cells that comprise the immune system.
- Students will gain idea regarding self vs non-self-recognition, antigens, antibodies, types and structures of various antibodies and their occurrence. They will also learn the role of

MHC molecules in immune system, components of complement system and how pathways of complement activation merge to destroy pathogens.

- Basic ideas of hypersensitivity and autoimmune diseases will also be provided.
- Students will be able to develop concepts of immunological methods including hybridoma technology and monoclonal antibody production.
- Students will develop concepts regarding vaccine types and types of immunization.

C11T and C11P(Molecular Biology and Molecular BiologyLab)

#### Outcomes

- Students will learn chemical nature of genes, nucleic acids and structure of DNA and RNA.
- They will also learn how DNA is replicated inside cell and how the genetic information present in DNA is transcribed into an RNA and eventually a protein through translation process by ribosomes.
- Students will develop ideas how eukaryotic genes differ from prokaryotic counterparts and how post transcriptional modifications process eukaryotic mRNAs.
- They will also learn how gene functions are regulated through operon concept and regulation of eukaryotic genes at the level of transcription.
- They will be also trained in certain techniques of molecular biology including PCR and blotting techniques.
- They will study and learn behaviors of certain giant chromosomes. They will be able to measure nucleic acid concentration in a given sample and will also be able to check purity of any given sample.
- They will also learn DNA separation technique through agarose gel electrophoresis.

C12T and C12P(Genetics and GeneticsLab)

## Outcomes

- Students will learn principles and extensions of Mendelian Genetics, linkage and crossing over and how these processes are important in establishing genetic variety.
- Mutation, its types, molecular mechanism of induced mutation and chromosomal aberration are the key concepts that students will develop.
- Students will learn the process of sex determination in fruit fly and human.
- They will have ideas about genetic recombination processes in bacteria and viruses as well as f selfish genes.
- They will learn to create conjugation-based linkage maps, identify syndromes based on chromosomal aberrations in human and fruit fly.
- Students will learn to mode of inheritance of certain traits in human through pedigree analysis.

## C13T and C13P(Developmental Biology and Developmental Biology Lab)

## Outcomes

- Students will be enabled to develop ideas regarding phases of development, the role of cell-cell interaction and differential gene expression in growth and development.
- They will learn processes of gametogenesis, fertilization, blastula formation, gastrulation in frog and chick following certain patterns of growth.
- The role of extraembryonic membranes and formation of placenta and its role in fetal development will also be introduced to students.
- They will be introduced to the topic of formation of various organs, regeneration, teratogenesis and potency of fetal cells during embryonic development.
- They will be able to identify chick and drosophila embryo at various stages of development.
- They will be able to grow and culture drosophila in the laboratory for studying developmental stages.

## C14T and C14P(Evolutionary Biology and Evolutionary Biology Lab)

### Outcomes

- Students will develop concepts of evolution, how primitive biomacromolecules formed in early earth's atmosphere and how they self-assemble to create self-replicating life forms.
- They will also have an overview of geological time scale and various life components during major time milestones.
- Students will learn concepts of population genetics, gene flow in population, genetic drift, species concept, isolating mechanisms leading to origin of new species and causes and process of extinction.
- Students will be introduced to origin and evolution of man.
- Students will be able to identify fossils, study Hardy-Weinberg Law by chi square analysis.
- They will also be able to perform homology and analogy analysis of provided specimens.