"Education through self-help is our motto" - KARMAVEER
Rayat Shikshan Sanstha's
DAHIWADI COLLEGE, DAHIWADI
Tal. Man, Dist. Satara : 415 508
[Arts, Science, Commerce, BCA, B.Voc.Agri., Bank Management, Defence Studies & Vocational Education]
Estd : 1965
Jr.College No. J-21.06.001
M.C.V.C. No. J-21.06.901
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Founder : Padmabhushan Dr. Karmaveer Bhaurao Patil D.Litt.
[NAAC Third Cycle Reaccredited 'A' Grade (with CGPA 3.25)]
(Affiliated to Shivaji University, Kolhapur) Web. : www.dahiwadicollege.in E-mail : dcdprincipal@gmail.com

Bachelor of Science (B.Sc.)

(Department of Zoology)

Programme Outcomes (PO's)

After completing B.Sc. programme the student will be able to:

PO1: Bachelor of Science offers theoretical as well as practical knowledge about different special subject areas.

PO2: This course forms the basis of science for coherent understanding of the academic field to pursue multi and interdisciplinary science careers in future. These subject areas include, Chemistry, Physics, Botany, Zoology, Mathematics, Microbiology and Computer Science.

PO3: Able to plan and execute experiments or investigations, analyze and interpret data information collected using appropriate methods.

PO4: It helps to develop scientific temper, attitude and thus can prove to be more beneficial for the society as the scientific developments and make a nation or society to grow at a rapid pace through research.

PO5: Think critically, follow innovations and developments in science and technology.

PO6: Understand the issues of environmental contexts and sustainable development.

PO7: Acquire the skills and ability to engage in independent and life-long learning in the broadest context socio technological changes.

PO8: To demonstrate professional and ethical attitude with enormous responsibility to serve the society.

Programme Specific Outcomes (PSO's)

PSO1: Understand the nature and basic concepts of cell biology, genetics,taxonomy,Physiology, ecology and applied Zoology

PSO2: Perform procedures as per laboratory standards in the areas of Taxonomy,Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science,tools and techniques of Zoology, Toxicology, Entomology,Fisheries, Sericulture, Biochemistry, Animal biotechnology, Immunology

PSO3: Apply the knowledge of internal structure of cell, its functions in control of various

Metabolic functions of organisms.

PSO4: To analysis the relationship among animals with their ecosystem

PSO5: To understand the application of zoology in agriculture, medicine, industries, Medicine and daily life

PSO6: Contribute the knowledge for nation building

Course Outcomes (CO's)

B.Sc. I (Semester I)

Paper I – Animal Diversity I

CO1: Define terms related to classification of animals and kingdom protista with suitable example, locomotion in protozoa

CO2: Outline the names of protozoan,Tapeworm andascaris, to illustrate their life cycles and pathogenicity.

CO3: Demonstrate the structure and functions of spicule of sponges and Classify the sponges on the basis of their skeleton.

CO4: Explainthecanal system of sycon and its functions.

CO5: Classifywith phylum coelenterata and its class with suitable example, Explain the polymorphism

CO6: To compare the phylum annelida, Mollusca, Arthopoda and Echinodermata with suitable example

Paper II – Animal Physiology

CO7: To study structure of neuron, origin of action potential membrane and its mechanism. Ultrastructure of muscle and its mechanism

CO8: Explain the digestion in alimentary canal. Its role of absorption in carbohydrates, protein and lipid.

CO9: Illustrate the mechanism of pulmonary ventilation and transport of gases

CO10: To analyze the structure of nephron and to understand the mechanism of urine formation

CO11: To generalize structure of heart and conduction of cardiac impulse

CO12: To justify the composition of blood and cardiac cycle.

Semester II

Paper III Cell Biology and Evolutionary Biology

CO13: Define the terms related to cell structure and diversity

CO14: Describe the structure of nucleus and nucleolus and its role

CO15: To illustrate the morphology of chromosome and organization of nucleolus.

CO16: To study major events of life history and introduction of evolutionary theories

CO17: To compare the ultrastructure of GC, ER, lysosome, Mitochondria and Plasma membrane and its function.

CO18: To justify the fossils and role of extinction and its dating of fossils

Paper IV Genetics

CO19: Define different terminology of the genetics. Describe the concepts of Genetics, gene interaction,lethal genes,euploidy,aneuploidy,sexlinked inheritance and

principles of inheritance.

CO20: Explain and differentiate between multiple alleles and multiple genes.Explain the pattern of inheritance of complementary, supplementary,inhibitory and duplicate factors.

CO21: Execute the crosses of sex-linked inheritance,I nheritance of blood groups,monohybrid cross,dihybridcross andthe testcross.

CO22: Differentiate the autosomes and sex chromosomes,euchromatin and hetrochromatin

CO23: Describe types of mutation and its role of human being

CO24: To determine theory of sex determination and its example

B.Sc. II (Semester III) Paper V Animal Diversity – II

CO25: IdentifytheProtochordates and describeclassification of protochorataes with suitable example

CO26: Explain the division agnatha with classify cyclostomes with suitable example

CO27: Describe characteristics of Pisces, amphibia and mechanism of respiration in fish

CO28: To distinguish between poisonous and nonpoisonous snake

CO29: To compare the digestive and respiratory system of aves

CO30: To specify the classification and circulatory system of mammals

Paper VI Biochemistry

CO31: DescribeanddiscussthebasicconceptNucleic acid and structure of DNA and RNA

CO32: ExplainGlycolysis, Krebs Cycle, Pentose phosphate pathway, Gluconeogenesis, Glycogenolysis., Review of electron transport chain.

CO33: To illustrate the biosynthesis of lipid metabolism with Beta oxidation

CO34: DifferentiatebetweenTransamination, Deamination and Urea Cycle

CO35: To specify the classification of enzyme with suitable example

CO36: To assess mechanism of action, Enzyme Kinetics, Inhibition and Regulation. Isoenzymes, Co-enzymes and Co-factors.

Semester IV Paper VII Reproductive biology

CO37: Outline and histological structure of female reproductive system in rat and human; Ovary: folliculogenesis, ovulation, corpus luteum formation and regression; Steroidogenesis and secretion of ovarian hormones.

CO38: Describe histology of male reproductive system of human

CO39: To compare hormonal regulation of male and female reproductive system

CO40: Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST

CO41: To specify the Modern contraceptive technologies

CO42: To determine the male and female reproductive systems

Paper VIII Applied Zoology I

CO43: Define host and host parasite relationship with suitable example

CO44: To describe Transmission, Prevention and control of diseases: Tuberculosis,

Typhoid.

CO45: To compare Rickettsia prowazekii, Borrelia recurrentis and Treponema pallidum..

CO46: Summarize various types of insects and economic importance

CO47: Explain the biology of Helicoverpa armigera, Pyrilla perpusilla and Papilio demoleus, Callosobruchus chinensis, Sitophilus oryzae and Tribolium castaneum

Zoology Practical I

CO48: Identify the birds on the basis of beak and feet. Discriminate, poisonous and non-poisonous snakes with the help of identification

CO49: Classify the vertebrates, reptiles, aves, mammals

CO50: Demonstrate brain of fowl.

CO51: Estimation of total protein in given solutions by Lowry's method/ Quantitative estimation of amino acids by using Ninhydrin reaction.

CO52: Assess the effect of Temperature, pH and salinity of activity of salivary amylase.

CO53: To DNA isolation from plant/animal

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Zoology Practical II

CO54: Outline of set up and maintenance of animal house, breeding techniques, care of normal and experimental animals..

CO55: Explain the principles of surgery in endocrinology. Ovarectomy, hysterectorny, castration and vasectomy in rats

CO56: To compare histological slides of testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.

CO57: To examine of Sperm count and sperm motility in rat/ Any mammal.

B.Sc. III SEMESTER V Paper IX: Comparative anatomy of vertebrates

CO58: Describe concept integuments: soft and hard derivatives

CO59: Differentiate between digestive system and respiratory system of vertebrates

CO60: Illustrate the structures of vertebral column and appendicular skeleton

CO61: Explain the evolution of heart and aortic arches

Paper X: Molecular cell biology and animal biotechnology

CO62: Outline concept of DNA Replication and mechanism of replication

CO63: Describe the regulation of gene expression and operon concepts

CO64: To illustrate the properties of genetic code, codon assignment and Wobble hypothesis

CO65: To differentiate the translation and transcription in eukaryotes

Paper XI Biotechniques and biostatistics

CO66: Describe statistical data representation and interpretation methods

CO67: Explain collection, presentation of statistical data and various methods of presenting data

CO68: Illustrate descriptive statistical methods like Mean, Median and Mode, measures of Dispersion

CO69: Differentiate between Nuclear transplantation, retroviral methodsand DNA Microinjection

Paper XII: Aquatic biology

CO70: To compare Different stages of stream development b. Physico-chemical Environment c. Adaptation of hill stream fishes

CO71: Explain the Study of endocrine glands – Anatomy and histology

CO72: Compare the hormones thyroid gland, parathyroid gland, adrenal gland and islets of Langerhan

CO73: To determine the physicochemical parameter in environment

Semester VI

Paper XIII Development biology of vertebrates

CO74: To illustrate structure of chick embryology Structure of sperm, egg, vitellogenesis Fertilization and cleavage

CO75: To analyze the foetal membrane and significance

CO76: Discriminate the features ofImplantation of embryo in human being

CO77: To compare types of placenta and their significance

Paper XIV Immunology

CO78: Define immunology and basic concepts of innate and adaptive immune system

CO79: Classify, categorize, and identify differential WBCs of Immune system with functional attributes

CO80: Study and applications of Haematopoeisis and immune responses- Humoral and cell mediated

CO81: To compare the B and T cell epitopes and their properties

CO82: To draw the structure of antibody and its significance

Paper: XV Applied Zoology

CO83: Describe the concepts of apiculture, importance of bee keeping, traditional and modern bee keeping methods.

CO84: Discuss the medical properties of honey and its application in various fields, its nutrients and composition.

CO85: To identify the indigenous and exotic breeds of cattle

CO86: Explain and analyze the species of oyster Process of Pearl formation: natural and artificial Maintenance of oysters Harvesting and Importance of Pearl

CO87: Appraise the process of prawn culture, goat farming and their importance

Paper XVI Insect vector and Histology

CO 88: Describe the Dipteran as important insect vectors a. Mosquitoes b. Sand fly c. Houseflie

CO89: Discus the mosquito born diseases – a. Malaria b. Dengue c. Chikungunya d. Viral Encephalitis e. Filariasis 3. Control measures of Mosquitoes

CO90: Apply the knowledge of house fly as important mechanical vector a. Myiasis, Control of house fly

CO91: Explain the study of Flea-borne diseases a. Plague b. Typhus fever

Zoology Practical – I
(Comparative anatomy and developmental biology of vertebrates)

CO92: Identify and describe the V. S. of skin in vertebrates with suitable example
CO93: Identity and explain the Digestive system of vertebrates, Respiratory system of vertebrates, Heart of vertebrates and Brain of vertebrates
CO94: Demonstrate the method for preparation of whole mount of chick embryo
CO95: Compare the histological structures of different organs and explain their Characteristics.

Zoology Practical –II Applied Zoology – II and Immunology

CO96: Identify and describe the cast of honey bee Pollen Basket d. Sting Apparatus e. Honey f. Newton's model of Bee Hive g. Bee keeping Equipments

CO97: Identity and explain the species of pearl culture
CO98: Demonstrate the method Preparation of stained blood smears to study various types of blood cell
CO99: Comparethehistologicalstructuresofdifferentorgans andexplaintheircharacteristics.

Zoology Practical–III (Molecular biology, Animal biotechnology, Biostatistics & Biotechniques)

CO100: Define micro technique and Preparation of permanent histological slides by HE technique.
CO101: Explain the Chromatography and process of Separation of amino acid by paper chromatography
CO102: Demonstrate the method of DNA isolation and DNA feulgan techniques
CO103: To compare the Southern blotting b) Northern blotting c) Western blotting d) DNA sequencing (Sangers method) PCR and DNA fingerprinting

ZOOLOGY PRACTICAL: IV (Aquatic biology, insect vector & diseases)

CO104: Identify the zooplanktons present in Lake Ecosystem
CO105: Explain the Mouth parts in insects
CO106: StudyandapplicationsofEndocrine glands (Anatomy and Histology) – Thyroid, Parathyroid, Adrenal and Pancreas
CO107: Identify the insect disease vectors- Malaria, dengue, chikungunya, encephalitis, filariasis, Cutaneous leishmanians, Phlebotomus fever, Myiasis, Plague, typhu
CO108: Determination of turbidity or transparency from nearby lake or water body, dissolved Oxygen