

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR01T

Course Title: Non-Chordates I

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will have learning about the basic taxonomy and systematics and classification of Protozoa, Porifera, Cnidaria and Helminth groups. (Level 2: Classify Level)
CO-2:	They also will remember the biology of these taxonomic categories as well as about some acoelomate plus pseudocoelomate parasites for their life cycles epidemiology pathology diagnosis symptoms and treatments. (Level 1: Remember Level)
CO-3:	They can describe about the basics of parasitology such as origin and evolution of parasitism, role of vectors, parasitoids, host-parasite interactions etc. (Level 1: describe Level)

Course Code: ZOOHCOR1P

Course Title:– NON- CHORDATES

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Able to mount of <i>Euglena</i> , <i>Amoeba</i> details. .(Level 2: understand level)
CO 2	The practical included in the course will enable the students to identify some selective specimens of protozoa along with their significance.(Level 2: understand level)
CO 3	The practical included in the course will enable the students to identify some selective specimens of the different phylum of invertebrates mentioned in the theory syllabus along with their evolutionary significance and systematic position. .(Level 3: apply level)
CO4	Understand what is Staining/mounting. They can gain ability of Staining/mounting of any protozoa/ helminth from the gut cockroach.(Level 2: understand level)

Course Code: ZOOHCOR02T

Course Title: Perspectives in Ecology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand the various features and aspects of population ecology, community ecology and ecosystem ecology.(Level 2: understand level)
CO-2:	They will understand about environmental biology in details.(Level 2: understand level)
CO-3:	They will apply this knowledge about various tools and techniques in field ecology.(Level 3: apply level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR2P

Course Title:– Perspectives in Ecology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	This course will enable the students to understand and analyse ecological parameters by using, Shannon-Weiner index, Winkler's method, survivorship curve, COD, CO etc. (Level 2: understand level)
CO-2:	Identified different kinds of phytoplankton and zooplankton. (Level 2: identify level)
CO3	The inclusion of National Park/Biodiversity Park/ Wild Life Sanctuary visit in the course will expose the students to new ideas and provide the opportunity to observe many things that are not available at class room. They introduced to the real world of their subject. They can prepare a field report on the basis of their observation during excursion. (Level 2: understand level)

Department of Zoology
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Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR03T

Course Title: Non-Chordates II

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will be learning about classification of coelomate invertebrates and the structure, function plus biology of these taxonomic categories as well. (Level 2: understand level)
CO-2:	They will understand about different vector born diseases and the related life cycles, epidemiology, pathology, diagnosis, symptoms and treatments. (Level 2: understand level)
CO-3:	They will apply the basics of sericulture & apiculture. (Level 3: apply level)

Course Code: ZOOHCOR03P

Course Title: Non-Chordate -II

(COs)

After completion of this course successfully, the students will be able to

CO-1:	The practical included in the course will enable the students to identify some selective specimens of the different phylum of invertebrates mentioned in the theory syllabus along with their evolutionary significance and systematic position. (Level 2: understand level)
CO-2:	They are able to display different parts of digestive system, septal nephridia and pharyngeal nephridia of earthworm. (Level 4: analyze level)
CO-5:	Able to mount mouth parts of <i>Periplaneta</i> . Able to prepare a project report on larval forms of crustacean, mollusca and echinoderm).

Course Code: ZOOHCOR04T

Course Title: Cell Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. (Level 2: understand level)
CO-2:	They will illustrate about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signalling and cancers. (Level 4: illustration level)
CO-3:	They will apply measure and stain of different cell types. (Level 3: apply level)

Department of Zoology
Bajkul Milani Mahavidyalaya

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Course Code: ZOOHCOR04P

Course Title:– Cell Biology

(COs)

After completion of this course successfully, the students will be able to

CO-1:	The practical included in the course will enable the students to visualize chromosome behaviour during cell division in onion root tip and grasshopper testis. (Level 4: demonstrate level)
CO-2:	The students will able to visualize the presence of barr body. (Level 4: demonstrate level)
CO-3:	The students will learn to demonstrate the presence of DNA by Feulgen reaction, Cell viability study by Trypan blue staining and Mitochondria identification through vital stain. (Level 4: demonstrate level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

CourseCode: ZOOHCOR05T

Course Title: Diversity of Chordates

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand the classification, structure, function and biology of chordates of different taxonomic classes. (Level 2: understand level)
CO-2:	They will also describe some special topics like zoogeography, metamorphosis, snake bites, migration of birds, parental care of amphibian, echolocation of mammals, poultry managements and different breeds of domestic animals. . (Level 1: describe level)

Course Code: ZOOHCOR05P

Course Title:— DIVERSITY OF CHORDATA

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Explain and identify poisonous and non-poisonous snakes. (Level 1: describe level)
CO-2:	They are able to display pecten of fowl, brain and pituitary of <i>Tilapia</i> through dissection. (Level 4: demonstrate level)
CO-3:	Able to discuss some animal's features, systematic position, significance, conservation status etc. through Power Point presentation. (Level 1: describe level)

Course Code: ZOOHCOR06T

Course Title: Physiology: Controlling and Coordinating Systems

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand about basics of histology and tissue staining. (Level 2: understand level)
CO-2:	They will also understand the physiology of muscles, nerves, reproductive systems and bone. (Level 2: understand level)
CO-3:	They will learn details of endocrinology with classification of hormones, their biosynthesis, receptors, mode of molecular actions, physiological function, feedback controls and related disorders(Level 2: classify level)

Course Code: ZOOHCOR06P

Course Title: Physiology: Controlling and Coordinating Systems

Course Outcome (COs)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

After completion of this course successfully, the students will be able to

CO-1:	Hands-on learning by applying electrical stimuli and observe muscle twitch. (Level 3: apply level)
CO-2:	They will also learn to demonstrate the unconditioned reflex action. (Level 4: demonstrate level)
CO-3:	The ability of practical understanding must be gain on preparation of permanent slide of any five mammalian (Goat/white rat) tissues with the help of microtome. (Level 2: understand level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR07T

Course Title: Fundamentals of
Biochemistry

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand the basic and fundamental biochemistry of carbohydrates, proteins, lipids and nucleic acids. (Level 2: understand level)
CO-2:	They will also understand the nature, mechanism, and kinetics of enzyme action. (Level 2: understand level)
CO-3:	They can experiment microscopy, chromatography, electrophoresis, centrifugation, spectrophotometry etc will also be learnt. (Level 4: experiment level)

Course Code: ZOOHCOR07P

Course Title: FUNDAMENTALS OF BIOCHEMISTRY.

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	The practical included in the course can help the students to test qualitatively the presence of functional groups in carbohydrates, proteins and lipids and also working principle of salivary amylase. (Level 4: experiment level)
CO-2:	Students can learn the separation techniques of amino acid and protein by paper chromatography and SDS-PAGE. (Level 2: understand level)
CO-3:	Learn measurement of some selected enzyme's activity, kinetics and assay. (Level 3: calculate level)

Course Code: ZOOHCOR08T

Course Title: Comparative Anatomy of Vertebrates

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will have understood the structures of different systems such as, integumentary, skeletal, digestive, respiratory, circulatory, urinogenital, nervous and sensory organs in comparative way among the vertebrate groups. (Level 2: understand level)
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Course Code: ZOOHCOR08P

Course Title: Comparative Anatomy of
Vertebrates

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	The practical included in the course are enable the students to practically visualize and demonstrate different types of scales in fishes, disarticulated skeleton of some amphibian and mammals, carapace and plastron in tortoise and carnivorous and herbivorous mammalian skull. (Level 4: visualize level)
CO-2:	They are able to display different parts of circulatory system, urinogenital system, pituitary and brain of <i>Tilapia</i> through dissection. (Level 2: understand level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR09T

Course Title: Physiology: Life Sustaining Systems

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand the physiology of digestion, respiration, circulation, excretion and adaptation. (Level 2: understand level)
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Course Code: ZOOHCOR09P

Course Title: Animal Physiology: Life Sustaining Systems

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	The practical can help the student to demonstrate and determine the ABO blood group through hand on experiment; enumeration of RBC, WBC and haemoglobin; preparation of haemin crystal. (Level 2: determine level)
CO-2:	Hand on practice of recording of blood pressure using sphygmomanometer. (Level 4: compute level).

Course Code: ZOOHCOR10T

Course Title: Immunology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand structures and function of immune cells, immunoglobulins, antigens and their interactions with antibodies. (Level 2: understand level)
CO-2:	They can classify MHC molecules, cytokines, hyper sensitivity reactions and cellular mode of immunity development. (Level 2: classify level)
CO-3:	They can understand the immune diffusion technique and ELISA. (Level 2: understand level)

Course Code: ZOOHCOR10P

Course Title: Immunology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Understand the characteristic and function of lymphoid organ. The students are able to identify the histological slides of different section of tissue
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Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

	(spleen, thymus and lymph nodes) associated with immunology. (Level 2: Understand level)
CO-2:	Able to determine ABO blood group. (Level 2: determine level)
CO-3:	Understand working principle and application of ELISA. (Level 2: understand level)

Course Code: ZOOHSEC02T

Course Title: SEC- Sericulture_

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Identify and describe the fundamentals and scientific basis of sericulture. (Level 1 - describe)
CO-2:	Able To understand the taxonomy & morphology of mulberry plant. (Level 2- Understand)
CO-3:	Explain in detail on silkworm rearing. Able to understand the floral biology of the mulberry plant. (Level 2-Understand)
CO-4:	Understand future prospects and potentiality of sericulture. (Level 2-Understand)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR11T

Course Title: Molecular Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern, northern and western blotting, recombinant DNA technology etc. (Level 2: understand level)
CO-2:	They will apply the knowledge about various tools and techniques related to molecular biology. (Level 3: apply level)

Course Code: ZOOHCOR11P

Course Title: Molecular Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	The ability of practical understanding must be gain on Demonstration of polytene and lampbrush chromosome from photograph. (Level 2: understand level)
CO-2:	Able to hand on practice of Agarose gel electrophoresis for DNA and Isolation and quantification of genomic DNA using spectrophotometer (A260 measurement). (Level 2: analyze level)

Course Code: ZOOHCOR12T

Course Title: Principles of Genetics

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will understand the fundamental genetics like Mendelian and Non Mendelian inheritances, linkages, mutations, sex determination of various animals, extrachromosomal inheritances, transposable genetic elements etc. (Level 2: understand level)
CO-2:	They will also understand the various aspects of biostatistics such as central tendency, t-test, chi-square, ANOVA, correlations and regression. (Level 2: understand level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR12P

Course Title: Genetics

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	The ability of practical understanding must be gain on Chi-square analyses. (Level 2: understand Level)
CO-2:	Student understand whether there is a significant difference between an expected value and an observed value.(Level 2: understand Level)
CO-3:	The ability of practical understanding must be gain on Identification of chromosomal aberration in Drosophila and man from photograph.(Level 2: understand Level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHCOR13T

Course Title: Developmental Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will remember the different aspects of early, late and post embryonic developments. (Level 1: remember level)
CO-2:	They will have the knowledge about implications of developmental biology in various fields, such as in teratogenesis, stem cell biology, in vitro fertilization, cryopreservation, cord blood transfusion etc. (Level 3: apply level)

Course Code: ZOOHCOR13P

Course Title: Developmental Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	The students able to identify developmental stages of chick and <i>Drosophila</i> , different section of placenta. (Level 2: determine Level)
CO-2:	How to prepare a project report on developmental biology topic, especially on <i>Drosophila</i> culture/chick embryo development.(Level 4:Analyze Level)

Course Code: ZOOHCOR14T

Course Title: Evolutionary Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will analyze population genetics, human evolution, various concepts about origin of species, extinctions, phylogenetic tree making. (Level 3: analyze level)
CO-2:	They will also understand few basic of bioinformatics. (Level 2: understand level)

Course Code: ZOOHCOR14P

Course Title: Evolutionary Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Understand homology and analogy through example. (Level 2: understand level)
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Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

CO-2:	Graphical preparation of height/weight relation with age/sex of 100 samples. (Level 4:Analyze Level)
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Course Code: ZOOHDSE1T

Course Title: Fish and Fisheries

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Students will remember details about taxonomy and biology of fishes. (Level 1: remember level)
CO-2:	They can apply various aquaculture techniques in details. (Level 3: apply level)

Course Code: ZOODSE01P

Course Title: Fish and Fisheries

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Understand different morphometric and meristic characters used in fish identification. (Level 2: understand Level)
CO-2:	Hand on identification of some selected fishes of different families. Identification of different kinds of fishing gear and craft and their uses. (Level 2: identification Level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHDSE2T

Course Title: Animal Biotechnology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Understand prokaryotic and eukaryotic genome, the function of genes and other elements in the genome. (Level 2: understand level)
CO-2:	Explain working principal and application of Molecular Techniques like PCR, Western and Southern blot, Northern Blot, Sanger DNA sequencing, DNA fingerprinting, DNA microarray etc. (Level 3: apply level)
CO-3:	Student understand <i>genetically modified</i> organism (GMO) is any organism whose genetic material has been altered using genetic engineering techniques (Level 2: understand level)
CO-4:	Determine molecular basis of some genetic disease like Cystic fibrosis, Sickle cell anemia. (Level 2: Determine level)

Course Code: ZOOHDSE02P

Course Title: Animal Biotechnology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Demonstration on the technique like PCR, Western and Southern blot, Northern Blot, Sanger DNA sequencing and DNA fingerprinting. (Level 4: demonstration level)
CO-2:	Hand on practices of isolation of genomic DNA and Plasmid DNA from <i>E. coli</i> . (Level 3: apply level)

Course Code: ZOOHDSE3T

Course Title: Endocrinology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Understand neurohormones and neurosecretions and their transport mechanism in biological system. (Level 2: understand level)
CO-2:	Analyze how hormone maintain homeostasis. (Level 4: Analyze level)
CO-3:	Illustrate hormonal control of menstrual, estrus cycle and parturition. (Level 4: Illustrate level)
CO-4:	Apply working principal and process of bioassays of hormones using RIA & ELISA. (Level 3: apply level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHDSE3P

Course Title:- Endocrinology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Able to display different endocrine gland of cultured rat through dissection. (Level 4: analyze level)
CO-2:	Understand primer designing for hormone (Level 2: understand level)

Department of Zoology
Bajkul Milani Mahavidyalaya

Name of the Academic Program: B.Sc(H)

Course Code: ZOOHDSE4T

Course Title:- Biodiversity and Wild Life Conservation

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Student can analyze the various issues related to biodiversity loss and conservation as well as status, conditions and conservation of forests and wildlife. (Level 4: analyze level)
CO-2:	They can apply various tools used in field biology. (Level 3: apply level)

Course Code: ZOOHDSE4P

Course Title:- Wild Life Conservation and Management

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Able to estimate diversity and abundance of animal through the visit on National Park/Biodiversity Park/ Wild Life Sanctuary or form the indirect evidence. They introduced to the real world of their subject. They can prepare a field report on the basis of their observation during excursion. (Level 2: estimate level)
CO-2:	Develop an understanding of how animals interact with each other and their natural environment. Students Will gain practical knowledge on wildlife management and conservation (Level 2: understand level)