Sri GVG Visalakshi College for Women (Autonomous)	
Name of the Programme: B. Sc. Zoology	
POs, PSOs and COs	
Academic Year 2020-2021	
Programme Education Objectives	
PEO 1	Our Graduates acquire basic knowledge in observation, study of nature, biological techniques, experimental skills and scientific investigation. They understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance.
PEO 2	Our Graduates will have knowledge in basic and modern concepts that cater the day to day needs and advancements in zoology.
PEO 3	Our Graduates apply their knowledge in various branches of Zoology that enable them to undergo higher education and research with holistic, spiritual and ethical values.
PEO 4	Our Graduates will have training exposure in skill enhancement courses, internship and clinical laboratory techniques.
PEO 5	Our Graduates will have exposure in skill development in multidisciplinary fields that facilitate them to get the job or to become an entrepreneur
PEO 6	Our Graduates will render their selfless services for the nation and extend their service to the society
PEO 7	Our Graduates possess the spiritual consciousness and they will do nation building activities through their education.
Programme Outcomes	
PO 1	Will have sound knowledge in the basics in different disciplines of zoology.
PO 2	Will be able to gain the practical knowledge which will enable them to be self-reliant.
PO 3	Will be empowered to become an Entrepreneur.
PO 4	Will be able to pursue higher studies and research.
PO 5	Will become competent in core areas and possess attitudes and character for nation building
Programme Specific Outcomes	
PSO 1	Be an independent individual with excellent employability skills through skill based courses.
PSO 2	Be able to communicate effectively utilizing multiple media

PSO 3	Be able to apply practical and project experience in the related fields to facilitate them to become an entrepreneur.
PSO 4	Be able to gain adequate knowledge in zoology which would enable them to undergo higher education and seek placement.

Course Outcomes		
Course Name		**CO**
PART III – CORE I – NON CHORDATA	CO 1	Discuss the taxonomy of protozoa, type study of Porifera, Type study of paramecium protozoan diseases with pathogenicity, prevention and control.porifera type study of sponges and their economic importance
	CO 2	Recognise the taxonomy of Coelenterates, type study of Obelia and discuss the classification of Platyhelminthes type study of Taenia solium and parasitic adaptations of helminth worms.
	CO 3	Describe the taxonomy of Aschelminthes, type study of Ascaris and common nematodes. Discuss the taxonomy of Annelida, type study of Megascolex mauritii, free swimming polychaetes and vermiculture
	CO 4	Describe the classification of Periplaneta Americana, its type study, and peripatus. the taxonomy of mollusca, type study of Pila globosa and economic importance of mollusca
	CO 5	Discuss the classification of Echinodermata and type tudy of astarias ruben
PART III – Core II – CHORDATES	CO 1	Discuss the taxonomy of Prochordata and Pisces, type study of Balanoglossus and shark and migration in fishes.
	CO 2	Describe the classification of Amphibia, its type study of frog, neoteny and parental care in Amphibia.
	CO 3	Recognise the taxonomy of Reptiles, type study of of Calotes and Sphenodon and indian poisonous snakes.
	CO 4	Discuss the classification of Aves and type study of Pigeon and Ratitae
	CO 5	Describe the taxonomy of mammals, type study of rabbit, monotremes and aquatic mammals.
PART III –	CO 1	identify the Nonchordates and Chordates

CORE PRACTICAL I (Based on Core I, II and III)		
	CO 2	recognise the taxonomy of Nonchordates and Chordates
	CO 3	gain knowledge about biodiversity of organisms
	CO 4	interpret the significance of specific structure and function
	CO 5	implement the biological significance of Nonchordates and Chordates
		evaluate the conservation awareness of the biosphere by field visit
PART III– CORE IV – CELL BIOLOGY AND BIOCHEMISTRY	CO 1	describe the cell structure and their types and demonstrate different microscopes and cytological techniques and structure of plasma membrane and protoplasm.
	CO 2	relate the structure of ER, Golgi complex, mitochondria, lysosome and ribosomes with their functions
	CO 3	explain structure and functions of centrosome, nucleus, chromosomes, structure of DNA and RNAs.
	CO 4	describe the structure of chromatin and define cell division, cancer cells, stem cells and cell aging.
	CO 5	explain the structure and biological significance of carbohydrates, lipids, proteins, DNA and vitamins
PART IV- Non Major Elective – Sericulture	CO 1	discuss history, economic importance of sericulture and architecture and types of pruning of mulberry plants.
	CO 2	explain harvesting of mulberry leaves and varieties of silk worm, life cycle and structure of silk gland in Bombyx mori

	CO 3	describe rearing facilities in silk worm.
	CO 4	discuss rearing of young age and late age silkworms, and mounting, stifling and deflossing of cocoons.
	CO 5	explain reeling and marketing of silk and also pest management in silkworm
Skill Enhancement Course I – Professional English for Zoology	CO 1	Understand their own ability to improve their own competence in using the language
	CO 2	Use language for speaking with confidence in an intelligible and acceptable manner
	CO 3	Understand the importance of reading for life and read independently unfamiliar texts with comprehension
	CO 4	Understand the importance of writing in academic life
	CO 5	Write effective projects proposal and research papers
PART III - CORE V – ENVIRONMENTAL BIOLOGY AND EVOLUTION	CO 1	Describe the characteristics of fresh water ecosystem, marine water ecosystem, soil, light and temperature.
	CO 2	Describe the characteristics of commensalisms, mutualism, parasitism, predation, competition, various chemical cycles and wild life management.
	CO 3	Discuss the various laws available to protect the wild life. Analyze and discuss the various types of pollution, Renewable and Non - Renewable resources.
	CO 4	Describe the physiological, biochemical and structural evidences of evolution, fossils and dating of fossils and theories of evolution.
	CO 5	Expound the types and sources of variation, speciation and adaptive radiation in mammals.
Part IV -	CO 1	identify the different species and caste of honey bees with their life

Skill Enhancement Course II – Apiculture		cycle.
	CO 2	understand the social life, selection of bees for apiculture with structure of hive and methods of bee keeping.
	CO 3	discuss the communication and memory of honeybees with collection of pollen and nectar from flowering plants, Inspection of bee hives, pesticidal poisoning by agriculture.
	CO 4	understand the seasonal management of honeybee colonies and transportation of bee hives, catching the swarm, natural enemies of honeybee and diseases of honeybee with their control.
	CO 5	discuss the chemical composition , nutritive and medicinal values of honey with equipment used for honey extraction.
PART III – CORE PRACTICAL II (Based on Core III and IV)	CO 1	Describe the structure and function of cell and cell organells, basic concepts of cell division and the special types of chromosomes.
	CO 2	Analyse the qualitative and quantitative detection of carbohydrates, proteins and lipids.
	CO 3	Analyse the Physicochemical properties of water
	CO 4	Explain the characteristics of symbiosis and antagonism.
	CO 5	Relate the structure and functions of homologous and analogous organs, evolutionary evidences of man and significance of fossils.
Advanced Learners Course I – Wild life Management	CO 1	explain the habitat of wild life, role of wet land in biodiversity conservation and management of wet land

and Conservation		
	CO 2	describe the management and conservation of wildlife
	CO 3	discuss problems of wildlife management, Endangered and threatened species and current threats to biodiversity
	CO 4	discuss general behaviours and altruistic behaviours of wildlife.
	CO 5	describe animal population and explain Wildlife Tools and census techniques and explain the importance of Wildlife Legislation in wildlife conservation
PART III - CORE VI - PHYSIOLOGY	CO 1	explain the physiology of digestion in man.
	CO 2	discuss respiration and circulation in man.
	CO 3	describe the process of excretion in man and also about dialysis.
	CO 4	explain muscle and nerve physiology in man.
	CO 5	discuss receptors and endocrine glands of man.
PART III - CORE VII - BIOTECHNOLOGY	CO 1	describe the types and importance of IPR, concepts and applications of genetic engineering and organisms, enzymes and vectors important in Biotechnology.
	CO 2	explain the methods and applications of gene cloning, genomic Library, gene therapy and DNA finger printing, importance of biosensors, bio chips, genomics and proteomics.
	CO 3	describe the production and application of monoclonal antibodies, fermentation, SCP, methods and application of blotting techniques, Principles and techniques of plant and animal tissue culture and cell line culture.
	CO 4	explain the methods and applications of protoplast technology, cryopreservation, Human genome project, transgenic organisms and Risks of releasing genetically engineered organisms
	CO 5	explain the importance of drug delivery systems, applications of protein microarray, quantum dot technology, biosynthesis of nanoparticles, methods

		and applications of drug designing.
PART III - CORE VIII - BIO STATISTICS, BIOINFORMATICS AND COMPUTER APPLICATIONS	CO 1	explain the process of data, classification, tabulation and organization.
	CO 2	explain diagramatical and graphical representation of data.
	CO 3	solve problems in mean, median and mode and also standard deviation and correlation
	CO 4	explain the software effectively to extract information from large databases and to develop information in the genomic study, phylogenetic analysis and sequence analysis.
	CO 5	discuss the common threats today in computer network
PART III - Elective I – CLINICAL LABORATORY TECHNIQUES	CO 1	understand the collection and disposal of specimens with reporting pattern and safety measures in clinical lab. First aid for lab accident and test for typhoid and tuberculosis.
	CO 2	analyze the collection of blood, RBC, WBC count, erythrocyte sedimentation rate, Hb estimation, bleeding time, clotting time and types of anticoagulants.
	CO 3	understand the VDRL test, Blood – Urea – Nitrogen estimation of Serum cholesterol ,Blood sugar and Testing the blood donor .
	CO 4	discuss the physico- chemical properties and microscopical examination of urine and stool, identification of intestinal parasite and diagnosis of chronic disease leprosy.

	CO 5	analyze the Fractional test meal, CSF examination, Semen analysis, Pregnancy test investigation of throat swab for Diphtheria and Corona virus infection.
PART III - Elective I – BIOINSTRUMENTATION	CO 1	state the principle and functioning of Laminar airflow, Autoclave, Haemocytometer and employ it in research.
	CO 2	Study the operative method of the pH meter, colorimeter and Centrifuge.
	CO 3	Study the operative method of the working of spectrophotometer and their types, flow cytometry for measurement of cells.
	CO 4	Study the operative method , principle, technique, application of paper chromatography, RIA, ELISA
	CO 5	Study the operative method of the principle, technique, application, advantages and disadvantages of SDS,PAGE and PCR
PART IV- SKILL ENHANCEMENT COURSE II - ORNAMENTAL FISHES	CO 1	distinguish the species of ornamental fishes.
	CO 2	explain the water quality management
	CO 3	examine the feed of ornamental fishes.
	CO 4	specify the brood stock, diseases and transport.
	CO 5	apply breeding methods of ornamental fishes.
	CO 6	operate the packing and transportation of live fishes.
PART III - CORE X -	CO 1	state the basic concepts in genetics.

GENETICS		
	CO 2	enumerate linkage, crossing over and sex determination.
	CO 3	analyse the different blood groups.
	CO 4	discuss cause, symptoms and precautions of genetic disorder.
	CO 5	explain Inborn errors of metabolism
	CO 6	analyze mutagens -physical and chemical mutagens and gene mutation
PART III - CORE XI – DEVELOPMENTAL BIOLOGY	CO 1	Understand the historical review of developmental biology theories and gametogenesis.
	CO 2	Describe the theories of fertilization, cleavage, features, planes and patterns in amphioxus, frog and chick.
	CO 3	Explain morula, blastula, gastrulation, describe fate map in frog and chick and organogenesis development of brain and heart in frog.
	CO 4	Describe the organiser concept, chick embryo development stage (24hrs, 48hrs and 72hrs) Extra embryonic membrane and define in mammals.
	CO 5	Describe sexual cycles, infertility, test tube, parthenogenesis, report on teratogenesis and regeneration.
PART III Core XII– MICROBIOLOGY	CO 1	describe the history and scope of microbiology and structure of Bacteria and their reproduction.
	CO 2	define techniques in culturing, isolation and staining.
	CO 3	explain food microorganisms and preservation of food
	CO 4	explain diary microbiology and describe the diseases of cattle and their control
	CO 5	discuss bacterial, viral and fungal diseases and their control
PART III - Elective II -	CO 1	discuss history, economic importance of sericulture architecture, propagation and irrigation of mulberry plants.

SERICULTURE		
	CO 2	explain types of pruning, harvesting of mulberry leaves and varieties of silk worm, life cycle
	CO 3	describe the morphology and structure of silk gland in Bombyx mori and also rearing facilities in silk worm.
	CO 4	discuss rearing of young age and late age silkworms, mounting, stifling and marketing of cocoons.
	CO 5	explain deflossing, reeling, re-reeling of cocoons and pest management in silkworm
PART III - Elective IV – PESTS AND THEIR CONTROL	CO 1	explain the types of pest, types of demage to plants, causes for pest status, pest surveillance, assessment of insect population
	CO 2	discuss bionomics and control of pest of rice, sugarcane, coconut, groundnut, cotton and brinjal.
	CO 3	explain the pests of stored products and bionomics and control of household pests.
	CO 4	explain the methods and principles of pest control
	CO 5	discuss organic and inorganic pesticides,methods of pesticide applications and first aid precautions
PART III – Core Practical III Based on Core VI, VII, VIII, X, XI & XII	CO 1	estimate oxygen consumption in fish, qualitative detection of excretory products and preparation of haemin crystal in human blood and physiological functions
	CO 2	apply techniques in sterilization, staining and isolation of DNA and separation of proteins by electrophoresis and biotechnological applications
	CO 3	explain Mendelian character and blood grouping and Rh factors in man and observe the frog and chick embryo stages.
	CO 4	Calculate central measures of tendency , computer components and study of genomic sequences

	CO 5	apply culture techniques in hanging drop, bread mould, culture and identification of yeast, Distribution of microbes in soil and water and methylene blue reductase test for milk.
PART III – Elective Practical (Based on Elective I &III)	CO 1	develop skill in hematological practicals of RBC and WBC count, Hb estimation, Bleeding , Clotting time and measurement of BP and heart beat.
	CO 2	develop skill in urine analysis practicals of Specific gravity, Albumen, Sugar, Blood, Bile salt and Bile pigment,
	CO 3	Recognize the Clinical laboratory techniques spotters
	CO 4	Recognize the Sericulture spotters
	CO 5	The practical work done in laboratory must be drawn and submitted as record note.
PART III – Elective Practical (Based on Elective I & III)	CO 1	Do clinical techniques practicals of RBC and WBC count done.
	CO 2	Do clinical techniques practicals of Hb estimation and measurement of BP.
	CO 3	Recognize the Clinical laboratory techniques spotters
	CO 4	Recognize the Pest and their control spotters
	CO 5	The practical work done in laboratory must be submitted as record note for the practical examination.
ADVANCED LEARNERS COURSE –II INSECT, VECTORS	CO 1	discuss the general features of insects and their feeding habits.

AND DISEASES		
	CO 2	discuss carrier and vector, vectorial capacity, and their adaptations.
	CO 3	explain important dipteran vectors and their control
	CO 4	discuss important siphonaptera vectors and their control
	CO 5	discuss bugs as vectors and their control