

**K.L.E Society's
Raja Lakhamagouda Science Institute (Autonomous), Belagavi
(PO's/PSO's/CO's)**

Program: B. Sc. Botany & Zoology (UG01C11)

Programme Outcome

- PO1: Disciplinary knowledge and skills: Capable of demonstrating comprehensive knowledge and understanding of major concepts, theoretical principles and experimental findings in Botany & Zoology and its different subfields.
- PO2: Critical thinker and problem solver: Ability to employ critical thinking and efficient problem-solving skills in the four basic areas of Botany & Zoology.
- PO3: Sense of inquiry: Capability for asking relevant/appropriate questions relating to issues and problems in the field of Botany & Zoology, and planning, executing and reporting the results of an experiment or investigation.
- PO4: Lifelong learners: Capable of self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling.

Programme Specific Outcomes

- PSO1: Students will realize and develop an understanding of the impact Botany & Zoology on society and apply conceptual understanding of the Botany & Zoology in real life.
- PSO2: Perform effectively with professional ethics in analytical, scientific and technical domains.
- PSO3: Demonstrate subject-related and transferable skills that are relevant to Botany & Zoology related job trades and employment opportunities.

Course Outcomes

Semester I

Course Type	Course Code	Course Title	Course Outcome
AECC	21EN101	Generic English-I	CO1: Learn to appreciate literary texts. CO2: Obtain the knowledge of literary devices and genres. CO3: Acquire the skills of creativity to express one's experiences. CO4: Be aware of their social responsibilities. CO5: Develop the critical thinking skills.
AECC	21KA101	Kannada	CO 1: Create appreciation for Kannada language and culture through Kannada literature CO 2: Creating environmental awareness. CO 3: Developing scientific perspective through science literature. CO 4: Know the importance and various forms of Kannada Language
AECC	21HI101	Hindi	CO1: Create interest among the students by reading story. CO2: Will be familiar with the development sequence of modern Hindi story. CO3: Interest towards linguistic correctness will be created. CO4: Will be able to acquire writing skills. CO5: Know the importance and various forms of Hindi Language.
SEC	21CS111	Digital fluency	CO1: Have an intelligent conversation on the key concepts and applications of artificial intelligence (AI), Big data analytics (BDA), internet of things (IOT), Cloud computing, and cyber security. CO2: Develop holistically by learning essential skills such as effective communication, problem solving, design thinking, and team work. CO3: Build his or her personal brand has an agile and expensive learner- one who is interested in horizontal and vertical growth?
DSC	21BO101	Microbial diversity and Technology	CO1: Understand the fascinating diversity, history, evolution in microbes, Microscopy, staining skills and Microbiologists CO 2: Gain knowledge on types of microbial culture media, sterilization techniques, measurement of microbial growth and Nutritional types. CO 3: Gain laboratory skills such as microbial cultures, identification, preservation of microbes, collection for their applications in research and industry. Comprehend the systematic position, structure, physiology, significance and life cycles of Viruses.

			CO 4: Comprehend the systematic position, structure, physiology and life cycles of Bacteria, Fungi, significance and their impact on humans and environment.
OEC	21BO111	Role of Plants in Human Welfare	CO1: Understand the fascinating diversity of plants used as food. CO2: Gain knowledge on types of plant raw materials used in industries. CO3: Understand the medicinal aspects of plants. CO4: To bring in awareness on Conservation of Plant Resources and biodiversity in general. CO5: Recognize the various plants used to increase the aesthetic values and commercial fruit crops.
DSC	21BO102	Microbial diversity and Technology	CO1: To understand the morphological characters and life cycle of Viruses and Bacteria and Grams Staining CO2: To understand the vegetative and reproductive structures of various Algae and Fungi, Bryophytes, Pteridophytes and Gymnosperms. CO3: To understand the growth forms of various Fungal Fruiting bodies, lichens and Mycorrhiza.
DSC	21ZO101	Cytology, Genetics and Infectious Diseases	CO1: Students are able to understand the basic unit of life. CO2: Ability to understand the structure and functions of Nucleus, types of DNA and RNA, ultrastructure of chromosome and importance of cell division. CO3: To impart the knowledge to understand the various principles of Inheritance. CO4: Students are able to gain knowledge of sex-linked inheritance, chromosomal structural and numerical aberrations and also understand various parasites that affect human beings, their life cycle, treatment and preventive measures.
OEC	21ZO111	Economic Zoology	CO1: Students gain knowledge of Sericulture and Apiculture and are able to apply their skill and take up entrepreneurship. CO2: To gain the knowledge of Dairy, Poultry and Aquaculture and are able to apply their talent and acquire the ability of entrepreneurship CO3: Students develop skill in Fish culture, Prawn culture, Vermiculture and Lac culture techniques.
DSC	21ZO102	Cytology, Genetics and Infectious Diseases	CO1: Students gain the knowledge of various parasites that affect human beings, their life cycle, treatment and preventive measures. CO2: Provides knowledge about parasitic Protozoans, Helminthes, and their life cycle, pathogenicity and control measures. CO3: Imparts the knowledge about fundamental techniques used in molecular diagnosis.

Semester II

Course Type	Course Code	Course Title	Course Outcome
AECC	21EN201	Generic English-II	<p>CO1: Learn to appreciate literary texts.</p> <p>CO2: Obtain the knowledge of literary devices and genres.</p> <p>CO3: Acquire the skills of creativity to express one's experiences.</p> <p>CO4: Be aware of their social responsibilities.</p>
AECC	21BO311	Environmental Studies	<p>CO1: define environmental study and ecology with basic principles.</p> <p>CO2: To examine the natural resources their types and utility.</p> <p>CO3: To identify the environmental usages, types of pollutions and their impact.</p> <p>CO4: To outline the diversity and explain the conservations and its significance.</p>
AECC	21KA201	Kannada-II	<p>CO 1: A good personality is formed by literature based on life values.</p> <p>CO 2: Students become ambitious to build a better life by achieving specific goals.</p> <p>CO3: Inspiring to always be enthusiastic in life.</p> <p>CO4: You will get complete knowledge of modern Kannada poetry.</p>
AECC	21HI201	Hindi-II	<p>CO1: Create interest among the students by reading story.</p> <p>CO2: Will be familiar with the development sequence of modern Hindi story.</p> <p>CO3: Interest towards linguistic correctness will be created.</p> <p>CO4: Will be able to acquire writing skills.</p> <p>CO5: Know the importance and various forms of Hindi Language.</p>
DSC	21BO201	Diversity of flowering plants	<p>CO1: Understand the diversity, morphology, anatomy, reproduction and life cycle of Algae, Algal cultivation and Algal products.</p> <p>CO2: Understand the diversity, morphology, anatomy, reproduction and life cycle of Bryophytes and Pteridophytes. Ecological and economic importance of Bryophytes and Bryophyte Fossils.</p> <p>CO3: Understand the diversity, morphology, anatomy, reproduction and life cycle of Gymnosperms. Affinities and evolutionary significance, economic importance of Pteridophytes and Gymnosperms.</p> <p>CO 4: Understand the evolution of plants through Geological Time scale and Palaeobotany.</p>
DSC	21BO202	Diversity of flowering plants	<p>CO1: To know the working mechanism of instruments used to measure microclimatic variables and find pH.</p> <p>CO2: To Understand the morphological adaptations of</p>

			Hydrophytes and Xerophytes. CO3: To Understand the morphology of Angiosperm plant parts and its modification and to draw and formulate floral parts. CO4: To assign a specimen to Family using the Bentham & Hooker's system of classification and preservation of specimens via Herbarium. CO5: Study tour to know the Plant diversity and its habitat.
OEC	21BO211	Bio fertilizers and Organic Farming	CO1: Comprehend the importance of Organic farming and various kinds of manures and bio-fertilizers. CO2: Identify with the methods of recycling of bio-degradable wastes. CO3: Recognize the microbes used as bio-fertilizers and culturing of the same. CO4: Understand the influence of bio-fertilizers on growth and yield of crop plants
DSC	21ZO201	Biochemistry and Physiology	CO1: Students are able to gain knowledge of the various biomolecules and their importance to understand the biochemical reactions in human body. CO2: Helps students to understand the metabolic pathways in human body. CO3: Students acquire knowledge of the process of digestion and respiration in man. CO4: Students gain knowledge about the function of nervous system and understand the major controlling, regulatory and communication system along with endocrine system and muscle contraction.
OEC	21ZO211	Parasitology	CO1: Students gain the knowledge of various parasites that affect human beings, their life cycle, treatment and preventive measures. CO2: Provides knowledge about parasitic Nematodes, Arthropods and Vertebrates and their life cycle, pathogenicity and control measures. CO3: Imparts the knowledge about fundamental techniques used in molecular diagnosis.
DSC	21ZO202	Biochemistry and Physiology	CO1: Students gain the knowledge about various qualitative tests that help to analyze some very important basic parameters of human body. CO2: To impart knowledge in counting of RBC and WBC in blood and is used to evaluate overall health and detect disorders.

Semester III

Course Type	Course Code	Course Title	Course Outcome
AECC	21EN301	Generic English-III	CO1: Acquired enhanced LSRW (Listening, Speaking, Reading, Writing) skills

			<p>CO2: Equipped themselves with interpersonal communication skills</p> <p>CO3: Augmented presentation and analytical skills</p> <p>CO4: Ability to critically analyses, interpret and appreciate literary texts</p> <p>CO5: An awareness of social, cultural, religious and ethnic diversities</p>
AECC	21KA301	Kannada-III	<p>CO 1: By knowing about Bhakti Sahitya, you will have the quality of humanity.</p> <p>CO 2: Through travel literature, people will learn about the life and culture of different regions</p> <p>CO3: The study of ideological literature will lead to revolution.</p> <p>CO4: Know the importance and various forms of Kannada Language.</p>
AECC	21HI301	Hindi-III	<p>CO1: Able to understand One Act plays</p> <p>CO2: Learn to write various types of Letters</p>
SEC-2		Constitution of India	<p>CO1: To realise the significance of constitution of India to students from all walks of life and help them to understand the basic concepts of Indian constitution.</p> <p>CO2: To identify the importance of fundamental rights as well as fundamental duties.</p> <p>CO3: To understand the functioning of Union, State and Local Governments in Indian federal system.</p>
DSC	21BO301	Plant Anatomy and Developmental Biology	<p>CO1: Observation of variations that exist in internal structure of various parts of a plant and as well as among different plant groups in support for the evolutionary concept.</p> <p>CO2: Skill development for the proper description of internal structure using botanical terms, their identification and further classification.</p> <p>CO3: Understanding the basic concepts in plant morphogenesis, embryology and organ development.</p>
DSC	21BO302	Practical	<p>CO1: To study elements of Xylem & phloem maceration technique</p>

			<p>CO2: To understand Comparative Anatomy of primary & secondary structure of Dicot & monocot plant organs</p> <p>CO3: To study anomalous secondary growth in Dicots & monocots</p> <p>CO4: To study microsporogenesis, mega sporogenesis, types of ovules & placenta ion</p>
DSC	21ZO301	Molecular Biology, Bioinstrumentation in Biology	<p>CO 1: Gives an understanding of process of making an RNA copy of a gene's DNA sequence.</p> <p>CO2:It gives insights into how enzymes interact to regulate gene expression.</p> <p>CO3:Able to understand how pigments are separated through chromatographic technique.</p> <p>CO4: Students will be able to understand the key physical properties of study area using pH meter.</p>
OEC	21ZO311	ENDOCRINOLOGY	<p>CO1: Students will be able to classify hormones.</p> <p>CO2: It gives knowledge about mode of action and chemical structures of hormones.</p> <p>CO3: Students will be able to learn Gastro-intestinal hormones and their role in digestion.</p>
DSC	21ZO302	Practical	<p>CO1: It gives extensive knowledge about the use of laboratory equipments and sterilization techniques.</p> <p>CO2: Gives general understanding of DNA handling techniques and isolation of genetic material.</p> <p>CO3: It imparts knowledge about centrifugation techniques in separating components of given mixture.</p>

Semester IV

Course Type	Course Code	Course Title	Course Outcome
AECC	21EN401	Generic English-IV	<p>CO1: Acquired creative, interpretative and critical thinking</p> <p>CO2: Skills to communicate confidently and effectively</p> <p>CO3: Obtained persuasive and creative social media writing skills</p> <p>CO4: Developed analytical and evaluative skills</p> <p>CO5: Learnt to identify and understand social contexts and ethical frameworks in the texts</p>
AECC	21KA401	Kannada-IV	<p>CO 1: Learn to live in harmony by learning about the oppressed race.</p> <p>CO 2: students will live in tolerance with each other.</p> <p>CO 3: By understanding the life of common people, one will know the essence of simple life</p> <p>CO 4: Know the importance and various forms of Kannada Language</p>
AECC	21HI401	Hindi-III	<p>CO1: Able to understand Hindi Novels</p> <p>CO2: Able to understand the importance of Mass Media and Communication</p>
SEC-2		Artificial Intelligence	<p>CO1: To get introduced about the concept of artificial intelligence and machine learning.</p> <p>CO2: Understanding data analysis process i.e. preparation, modelling, visualization.</p> <p>CO3: It is to learn about the robotics, types of robots and also components of robots.</p>
DSC	21BO401	Ecology&ConservationBiology	<p>CO1: Understanding the fundamental concepts in ecology, environmental science and phytogeography.</p> <p>CO2: Concept development in conservation, global ecological crisis, Sustainable development and pros and cons of human intervention.</p> <p>CO3: Enable the student to appreciate bio diversity and the importance of various conservation strategies, laws and regulatory authorities and global issues related to climate change and sustainable development.</p>
DSC	21BO402	Practical-IV	<p>CO1: To Understand the morphological adaptations of Hydrophytes, Xerophytes, Epiphytes</p> <p>CO2: To know to determine the moisture content and water holding capacity of soil and to analyse waste water for its physico-</p>

			<p>chemical properties, pH, turbidity, inorganic elements,</p> <p>CO3: To know the working mechanism of various Ecological instruments and evaluation of the Frequency and density of Plants by Quadrat & Transect method</p> <p>CO4: Project based learning on waste water treatment and pollution.</p>
DSC	21ZO401	Gene Technology, Immunology and Computational Biology	<p>CO1: Gives an understanding of the use of rDNA technology in cloning of commercially important plants and animals.</p> <p>CO2: Gives an understanding of how different lymphocytes interact together to coordinate against disease causing foreign bodies.</p> <p>CO3: It gives understanding of how transplantation is carried out in animals and difficulties faced in transplantation.</p> <p>CO4: It gives knowledge about correlation between attributes in the same population.</p>
OEC	21ZO411	Animal behaviour	<p>CO1: Animal behaviour helps students to learn how animals interact with each other and their surrounding environment.</p> <p>CO2: Students develop the skill of observation & helps them to learn lessons from animals.</p> <p>CO3: Helps the students to understand biological clocks and biological rhythms in animals.</p>
DSC	21ZO402	Practical	<p>CO1: Helps students to understand common techniques used in biological sciences such as PAGE, Agarose gel electrophoresis, and determination of blood groups.</p> <p>CO2: Students will be able to learn handling nucleotide sequence databases.</p> <p>CO3: Helps students to quantify DNA and protein fragments.</p>

