Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE
(AUTONOMOUS)
NODAL RESOURCE CENTRE & AU CENTRE FOR RESEARCH
Maddilapalem, Visakhapatnam – 530013, Andhra Pradesh.
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DEPARTMENT OF ZOOLOGY
2019-2020

COURSE OUTCOMES

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PROGRAMME OUTCOMES

POs	Programme Outcomes
PO1	**Critical Thinking:** Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO2	**Effective Communication:** Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology.
PO3	**Social Interaction:** Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	**Effective Citizenship:** Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO5	**Ethics:** Ability to recognize different value systems includingy our own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO6	**Environment and Sustainability:** Ability to understand the issues of environmental contexts and sustainable Development.
PO7	**Employabilityskills:** Equipping graduates with the essential abilities and knowledge to excel in their choosen careers.
PO8	**Entrepreneurships kills:** Seeks to empower students with the competencies needed to be successful entrepreneours, enabling themto launch, operate,and innovate in their own businesses or entrepreneurial ventures.
PO9	**Self0directed and Life0long Learning:** Acquire the ability to engage in independent and life0long learning in the broadest context socio0technological changes.

Program Specific Outcomes (PSOs)

PSOs	Program Specific Outcomes (PSOs)
PSO1	Ability to apply the knowledge of Chemistry, Botany and Zoology in addressing the real0time problems of the world
PSO2	Understanding the key aspects of structure, physiology, reproduction and developmental aspects of plant and animal communities and Show empathy towards animals and consider them as his/her fellow0beings
PSO3	A step forward for the sustainable development of the nation by understanding the values embedded in studying the environment and ecology
PSO4	Life-long learning in the broadest context of technological advancements in various fields of biology.
PSO5	Understand the concepts of biology to create start-ups and apply the knowledge to get self-employed

Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)
(w.e.f. 2019-20)
ZOOLOGY SYLLABUS FOR I SEMESTER
ZOOLOGY - PAPER -I
ANIMAL DIVERSITY – BIOLOGY OF NON-CHORDATES

Periods: 60 **Max. Marks: 100**

Learning Outcomes: **On Completion of the course, the students will be able to**
CO1: Understand different levels of biological diversity through the systematic classification of invertebrate fauna
CO2: Familiarize the student with the distinguishing characters of various phyla of Non0chordates by type studies and the study of specialized systems like canal system, water vascular system, torsion etc.
CO3: Understand the evolutionary relationships of different Invertebrate phyla with the study of connecting links like *Peripatus*, *Balanoglossus* and larval forms
CO4: Knowledge on the economic importance of sponges, corals, coral reefs, pearl oysters etc.
CO5: Application of knowledge for the preservation of animals and taxa – level identification of invertebrates

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(w.e.f. 2019-20)
ZOOLOGY SYLLABUS FOR II SEMESTER
ZOOLOGY - PAPER – II

ANIMAL DIVERSITY II – BIOLOGY OF CHORDATES

Periods:60 **Max. Marks: 100**

Learning Outcomes: On Completion of the course, the students will be able to	
CO1:	Acquire in - depth knowledge on the diversity of chordates and their systematic position.
CO2:	Understand the characteristics and evolutionary importance of Prochordates
CO3:	Understanding the external features, internal anatomy and physiology of various classes of chordates by type studies
CO4:	Study and analyze the specialized features of various chordates such as types of scales and migration in fishes, identification of snakes, flight adaptations and migration in birds, Dentition in mammals etc.
CO5:	Taxonomic identification of chordates by observing preserved and taxidermic specimens of chordates

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(w.e.f. 2019-20)

ZOOLOGY SYLLABUS FOR III SEMESTER

ZOOLOGY - PAPER -III

CYTOLOGY, GENETICS AND EVOLUTION

Periods:60 **Max. Marks:100**

Learning Outcomes: On Completion of the course, the students will be able to	
CO1:	Understand the importance of cell as a structural and functional unit of life, differences between prokaryotic and eukaryotic cells and Viruses as connecting links between life and non0life
CO2:	Thorough understanding of the structure and functions of various cell organelles and the role of nucleus and chromosomes in heredity
CO3:	Understanding the origin and evolution of the concept of heredity & variations by Mendelian experiments and Non0Mendelian principles of gene interactions
CO4:	Study and analyze the importance of linkage and crossing over in bringing about variations and the role of cytoplasm and sex in inheritance
CO5:	Understand and acquire knowledge on the origin of life and critical evaluation of various theories of evolution, forces of evolution and Origin of new species

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(w.e.f. 2019-20)

ZOOLOGY SYLLABUS FOR IV SEMESTER

ZOOLOGY – PAPER – IV

EMBRYOLOGY, PHYSIOLOGY AND ECOLOGY

Periods: 60 **Max. Marks: 100**

Learning Outcomes: On Completion of the course, the students will be able to	
CO1:	Understanding the key events in embryonic development from gametes to gastrulation
CO2:	Acquisition of knowledge on functioning of various physiological aspects of the body
CO3:	Critical analysis of various endocrine glands and associated disorders and role of hormones in controlling the reproduction in mammals
CO4:	Understand and evaluate the key concepts in ecology with emphasis on role of biotic and abiotic factors, interactions among different species, concept of ecosystem, food chain and food web and community interactions and application of the concepts for a sustainable environment
CO5:	Critical study and evaluation of the underlying concept of distribution of animals on earth

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ZOOLOGY SYLLABUS FOR V SEMESTER
(w.e.f. 2019-20)

ZOOLOGY - PAPER - V

ANIMAL BIOTECHNOLOGY

Periods:60 **Max. Marks:100**

Learning Outcomes: On Completion of the course, the students will be able to
CO1: Understand the Principles of Cloning strategies, gain knowledge on enzymes and cloning vectors and their uses in gene cloning technologies
CO2: Understand the gene delivery mechanisms, to acquire skills in PCR, Sanger's sequencing methods, blotting techniques
CO3: To acquaint students with latest biotechnology techniques like cell culture, tissue culture, stem cell technology and hyridoma technology to foster a spirit of inquiry and orientation to research
CO4: Understanding the assistive reproductive technologies and production of transgenic animals
CO5: Understanding the applications of bio0technology in fields of Industry and Agriculture including animal cell and tissue culture.

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ZOOLOGY SYLLABUS FOR V SEMESTER
(w.e.f. 2019-20)
ZOOLOGY - PAPER - VI

ANIMAL HUSBANDRY

Learning Outcomes: On Completion of the course, the students will be able to
CO1: Understanding the key concepts of poultry farming with reference to poultry housing and management of poultry chicken which makes the student self0employable
CO2: Knowledge on poultry feed and poultry diseases which helps the student to take up a start0up with a minimum investment for producing and supplying poultry feed
CO3: Knowledge on hatching, selection, testing of poultry eggs and sexing of chicken
CO4: Empower the student with the principles of dairy farming in terms of selection of site, dairy housing, identification of breeds and techniques involved in breeding so that he/she can get an employment in dairy industry
CO5: Understand and acquire knowledge on the care and management of dairy animals

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ZOOLOGY SYLLABUS FOR VI SEMESTER
(w.e.f. 2019-20)
ZOOLOGY –ELECTIVE PAPER:VII-(A)

IMMUNOLOGY

Periods: 60 **Max. Marks: 100**

Learning Outcomes: On Completion of the course, the students will be able to	**Correlation with Bloom's Taxonomy Learning Levels**	**CO Learning Level Index**	**CO Attainment**
CO1: Overview of the immune system including organs, cells and types of Immunity	Level 1 (Knowledge) Level 2 (Understanding)	1.5	**2.7814**
CO2: Understand the concept of foreignness of antigen and receptors and factors associated with immunogenicity	Level 1 (Knowledge) Level 2 (Understanding) Level 3 (Application)	1.5	**2.7814**
CO3: Understanding the role of antibodies (immunoglobulins) in immunity and applications of monoclonal antibodies	Level 1 (Knowledge) Level 2 (Understanding) Level 3 (Application)	2.0	**2.7086**
CO4: Understand and analyze the role of Major histocompatibility complexes and cytokines in controlling the growth and activity of other immune system cells and blood cells	Level 2 (Understanding) Level 4 (Analyzing)	3.0	**2.5629**
CO5: Knowledge on the key concepts of immune disorders associated with autoimmunity and hypersensitivity, apply the knowledge in combating various diseases through vaccines and evaluate the health benefits thereof	**Level 1 (Knowledge)** Level 3 (Application) Level 5 (Evaluation)	3.0	**2.5629**

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ZOOLOGY SYLLABUS FOR CLUSTER ELECTIVE VIII-B: VI SEMESTER

(w.e.f. 2019-20)

AQUACULTURE

Cluster Elective Paper: VIII-B-1

PRINCIPLES OF AQUACULTURE

Periods: 60 **Max. Marks: 100**

Learning Outcomes:On Completion of the course, the students will be able to
CO1: Understanding the basics and history of aquaculture, identification of cultivable species and selection of site for aquaculture practices
CO2: Application of the knowledge of different types of aquaculture in various culture systems and practices
CO3: Create knowledge ecosystem in designing, construction and maintenance of aquafarms and appreciate the seed resources and nutritional requirements
CO4: Understand the culture of carps and shrimps and application of the knowledge in starting bio start0ups and make students self0employable
CO5: Application of culture aspects in cultivating sea weeds, shrimps, pearl oysters and ornamental fishes for aesthetic and economical purposes

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ZOOLOGY SYLLABUS FOR CLUSTER ELECTIVE VIII-B: VI SEMESTER

(w.e.f. 2019-20)

AQUACULTURE

Cluster Elective Paper: VIII-B-2

AQUACULTURE MANAGEMENT

Periods: 60 **Max. Marks: 100**

Learning Outcomes:On Completion of the course, the students will be able to
CO1: Understanding the concept of breeding of shrimps and management of shrimp hatchery
CO2: Understanding the importance of water quality and soil quality in culture ponds and application of aeration and liming principles for improving the quality respectively
CO3: Knowledge on Live feeds used in aquafarms and application of the knowledge in feed formulation and preparation
CO4: Understanding the health management of aqua farms, immunization and vaccination
CO5: Understanding economics, extension and marketing aspects of aquaculture application of genetics to fish reproduction and preservation of gametes

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ZOOLOGY SYLLABUS FOR CLUSTER ELECTIVE VIII-B: VI SEMESTER

(w.e.f. 2019-20)

AQUACULTURE

Cluster Elective Paper: VIII-B-3

POST HARVEST TECHNOLOGY

Periods: 60 **Max. Marks: 100**

Learning Outcomes: On Completion of the course, the students will be able to
CO1: Understanding the importance of handling, temperature, radiation and spoilage in fish preservation
CO2: Understanding the different types of traditional and advanced methods of fish preservation and application of the technology for self0employment
CO3: Application of the knowledge on the consumptive, economic and therapeutic value of fish products, fish byproducts and sea weed products
CO4: Understanding the significance of sanitation at personal and industry level and quality control of fishery products
CO5: Evaluation of processing industries based on national and international standards and understanding the maintenance of quality in industries