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
2022-2023

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 real-time problems of the world
PSO2	Understanding the key aspects of structure, physiology, reproduction and developmental aspects of plant and animal communities and Showing empathy towards animals and considering them as his/her fellow-beings
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. 2021-22)
ZOOLOGY SYLLABUS FOR I SEMESTER
ZOOLOGY - COURSE -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. 2021-22)
ZOOLOGY SYLLABUS FOR II SEMESTER
ZOOLOGY - COURSE – 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. 2021-22)

ZOOLOGY SYLLABUS FOR III SEMESTER

ZOOLOGY - COURSE -III

CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND EVOLUTION

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

Learning Outcomes: On Completion of the course, the students will be able to
CO1: Understand life in terms of the basic units of life called Cell and analysis of structure and functions of the various cell organelles including basic life forms such as prokaryotes, virus, viroids and mycoplasma
CO2: Understanding the concepts of History of evolution of Genetics and types of inheritance including polygenic, multiple allelic and sex linked inheritance including sex detemination
CO3: A thorough understanding of various mutations and application of mutagens in causing mutational disorders and knowledge on basic genomics and proteomics
CO4: Understanding and evaluation of the central dogma of molecular biology with the knowledge of DNA Replication, Transcription, Translation and Gene Expression
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. 2021-22)

ZOOLOGY SYLLABUS FOR IV SEMESTER

ZOOLOGY – COURSE – IV

ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY

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:	Acquisition of knowledge on functioning of various physiological aspects of the body and through analysis of the processes of digestion, respiration circulation and excretion	Level 1 (Knowledge) Level 2 (Understanding) Level 4 (Analysis)	**2.3**	**2.9435**
CO2:	Understanding the role of ions in nerve cell transmission, molecules of muscle contraction and Analysis of different hormones and associated disorders	Level 1 (Knowledge) Level 2 (Understanding) Level 3 (Analysis)	**2.3**	**2.9435**
CO3:	Critical analysis of various endocrine glands and associated disorders and role of hormones in controlling the reproduction in mammals	Level 1 (Knowledge) Level 2 (Understanding) Level 4 (Analysing)	**2.3**	**2.9435**
CO4:	Knowledge on the molecules of life including carbohydrates, proteins and lipids, analysis of role of enzymes and evaluation of enzyme action	Level 1 (Knowledge) Level 4 (Analysing) Level 5 (Evaluation)	**3.3**	**2.9189**
CO5:	Understanding the key events in embryonic development from gametes to gastrulation	Level 1 (Knowledge) Level 2 (Understanding) Level 4 (Analyzing)	3.3	**2.9189**

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ZOOLOGY SYLLABUS FOR V SEMESTER
(w.e.f. 2021-22)

ZOOLOGY - COURSE - V

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

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: Understand the principles of the immune system, types of immunity, cells/organs of the immune system and application of the knowledge on Vaccines for the benefit of the humans and other animals	Level 1 (Knowledge) Level 2 (Understanding) Level 3 (Application)	2.0	**3.0000**
CO2: Understand the properties and types of antigens and antibodies and evaluation of their role in immune response	Level 1 (Knowledge) Level 2 (Understanding) Level 5 (Evaluation)	2.7	**2.8305**
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	Level 1 (Knowledge) Level 2 (Understanding) Level 4 (Analysing)	2.3	**2.7712**
CO4: Understanding the Gene Delivery Mechanisms, Concept and applications of assistive reproductive technologies and transgenic animals	Level 2 (Understanding) Level 3 (Application) Level 4 (Analysing) Level 5 (Evaluation)	**3.5**	**2.8051**
CO5: Understanding the applications of biotechnology in fields of Industry and Agriculture including animal cell and tissue culture.	Level 1 (Knowledge) Level 3 (Application) Level 4 (Analysing) Level 5 (Evaluation)	**3.3**	**2.7034**

Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)

ZOOLOGY SYLLABUS FOR V SEMESTER

(w.e.f. 2020-21)

SUSTAINABLE AQUACULTURE MANAGEMENT

(Skill Enhancement Course (Elective) - Credits: 05)

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

Learning Outcomes:On Completion of the course, the students will be able to
CO1: Evaluate the present status of aquaculture at the Global level and National level
CO2: Classify different types of ponds used in aquaculture
CO3: Application of practical knowledge for the induced breeding of carps
CO4: Acquire critical knowledge on commercial importance of shrimps
CO5: Identify and critically evaluate the fin fish and shell fish diseases

Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)

ZOOLOGY SYLLABUS FOR V SEMESTER

(w.e.f. 2020-21)

POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES

(Skill Enhancement Course (Elective) - Credits: 05)

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

Learning Outcomes:On Completion of the course, the students will be able to
CO1: Identify the types of preservation methods employed in aquaculture
CO2: Understand and evaluate the suitable Processing methods in aquaculture
CO3: Application aspects of processing and preservation of fish products and fish byproducts
CO4: Analyze and evaluate the sanitation and quality control measures in fish processing
CO5: Analyze and evaluate the the best Seafood quality assurance system