ದಾವಣಗೆರೆ ೨೨ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ವಿಭಾಗ, ಶಿವಗಂಗೋತ್ರಿ, ದಾವಣಗೆರೆ–577007

ಸಂಯೋಜನಾಧಿಕಾರಿಗಳು ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ವಿಭಾಗ ದಾವಣಗೆರೆ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಶಿವಗಂಗೋತ್ರಿ ದಾವಣಗೆರೆ–577007

ಸಂಖ್ಯೆ:ದಾವಿವಿ:ಪ್ರಾಅವಿ:2023-24/482

ದಿನಾಂಕ:22.06.2024

ಗೆ, ಕುಲಸಚಿವರು (ಆ), ದಾವಣಗೆರೆ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಶಿವಗಂಗೋತ್ರಿ. ದಾವಣಗೆರೆ–07.

ಮಾನ್ಯರೇ,

ವಿಷಯ: ರಾಜ್ಯ ಶಿಕ್ಷಣ ನೀತಿ–2024 (SEP) ರನ್ವಯ ಸ್ನಾತಕ ಪದವಿಯ 1 ರಿಂದ 2ನೇ ಸೆಮಿಸ್ಟರ್ ಪಠ್ಯಕ್ರಮವನ್ನು ರಚಿಸಿ, ಸ್ನಾತಕೋತ್ತರ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ವಿಭಾಗದ ಮೂಲಕ ನಡಾವಳಿಯನ್ನು ಮತ್ತು ಯು.ಜಿ. ಪಠ್ಯಕ್ರಮವನ್ನು ಸಲ್ಲಿಸುತ್ತಿರುವ ಕುರಿತು.

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ರಾಜ್ಯ ಶಿಕ್ಷಣ ನೀತಿ-2024(SEP)ಯ ಮಾರ್ಗಸೂಚಿಗಳನ್ವಯ ಸ್ನಾತಕ ಪದವಿಯ 1 ಮತ್ತು 2ನೇ ಸೆಮಿಸ್ಟರ್ಗಳ ಪಠ್ಯಕ್ರಮವನ್ನು ರಚನೆ ಮಾಡಲಾಗಿದ್ದು, ಸ್ನಾತಕೋತ್ತರ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ವಿಭಾಗ, ದಾವಣಗೆರೆ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಶಿವಗಂಗೋತ್ರಿ, ಮೂಲಕ ಯು.ಜಿ. ಪಠ್ಯಕ್ರಮವನ್ನು ಮತ್ತು ದಿನಾಂಕ:22.06.2024 ರಂದು ನಡೆದ ಅಧ್ಯಯನ ಮಂಡಳಿ ಸಭೆಯ ನಡಾವಳಿಯನ್ನು ಈ ಪತ್ರದೊಂದಿಗೆ ಲಗತ್ತಿಸಿ ಮುಂದಿನ ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ ತಮ್ಮಲ್ಲಿಗೆ ಕಳುಹಿಸಿಕೊಡಲಾಗಿದೆ.

ವಂದನೆಗಳೊಂದಿಗೆ,

ತಮ್ಮ ವಿಶ್ವಾಸಿ, Contai Sultain Mathemaul., Dayangere University SHIVAGANGOTHRI Davander:

ಈ ಪತ್ರವನ್ನು ಡೀನರು, ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ನಿಕಾಯ, ದಾವಣಗೆರೆ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಶಿವಗಂಗೋತ್ರಿ ಇವರ ಮುಖಾಂತರ ಸಲ್ಲಿಸಲಾಗುತ್ತಿದೆ.

DAVANGERE UNIVERSITY Department of Studies in Zoology, Shivagangothri, Davanagere

Prof. K Vijayakumar

Chairman, BOS in Zoology

Date: 22.06.2024

Proceedings of BOS (UG) meeting

A meeting of Board of Studies in Zoology (UG) was held on 22.06.2024.

Prof. K Vijayakumar, Chairman, B.O.S. in Zoology welcomed the board members through online meeting and briefed about the agenda of the meeting regarding the preparation of program structure and syllabus for Zoology (UG), Davangere University of I and II semester.

- 1) The BOS discussed thoroughly and finalized the I and II semester syllabus for Zoology (UG) based on the guidelines of Davangere University as well as the program structure framed by Karnataka state higher education council, Bangalore.
- 2) The board prepared the syllabus for I and II semesters of B.Sc. degree of Davangere University and resolved to approve the syllabus.
- 3) Examiners list was updated and approved

✓ Chairman
PGBOS in Zoology
Davanagere University

MEMBER PRESENT:

- 1. Prof. K Vijayakumar
 Professor
 Department of Studies in Zoology
 Gulbarga University
 Kalaburgi.
- 2. Mrs. Lolakshi
 Associate Professor
 Department of Studies in Zoology
 Govt. First Grade College
 Davanagere.
- 3. Dr. Muhamd Zafar Iqbal Navalagund Associate Professor Department of Studies in Zoology Govt. Science College Chitradurga.
- 4. Dr. Renuka C Khaple
 Assistant Professor
 Department of Studies in Zoology
 Davangere University
 Davangere.
- 5. Dr. Sathishgouda S
 Associate Professor
 Department of Studies in Zoology
 Govt. Science College
 Chitradurga.

Chairman - BOS

Member 2 1 8 . K.V. 22 6 (2024)

Member

Member

Member

Date: 22.06.2024 Place: Davanagere

DAVANGERE UNIVERSITY DAVANGERE



B.SC. ZOOLOGY SYLLABUS 2024 ONWARDS

Davangere University Bachelor of Science (B.Sc.) Semester Scheme B.Sc. Zoology Course structure (SEP-2024)

Sl.									
No.	Course/Paper Code	Title of the Paper	Subject Category	Teaching Hours/ week	Semester End Exam.	Internal	Total Marks	Credits	Examination Duration
1	2	3	4	5	6	7	8	9	10
		Semester-I							
1	24- SEP-ZT -I Animal Systematics and	Biology of Non-Chordates	MC-T	04	80	20	100	03	3 Hrs
	Chordates	rematics and Biology of Non-	MC-P	04	40	10	50	02	3 Hrs.
	Total			08	120	30	150	05	
		Semester-II							
2	24- SEP-ZT -II Animal Diversity - Biolo	gy of Non-Chordates	MC-T	04	80	20	100	03	3 Hrs.
	Practical – II Animal Div Chordates	ersity - Biology of Non-	MC-P	04	40	10	50	02	3 Hrs.
	Total			08	120	30	150	05	
		Semester-III					100	100	
	24- SEP-ZT -III Animal Physiology and E	Biochemistry	МС-Т	04	80	20	100	03	3 Hrs.
	Practical – III Animal Physiology and Biochemistry		MC-P	04	40	10	50	02	3 Hrs.
-	Elective/Optional – I* Ec	EL/O P-I	02	40	10	50	02	2 Hrs.	
	Total			10	160	40	200	07	
		Semester-IV	· · · · · · · · · · · · · · · · · · ·					14.	
	24- SEP-ZT -IV Genetics and Evolution		MC-T	04	80	20	100	03	3 Hrs.
4	Practical –IV Genetics and Evolution MC-P			04	40	10	50	02	3 Hrs.
	Elective/Optional-II* Fisl	EL/O P-II		40	10	50	02	2 Hrs.	
	Total			10	160	40	200	07	
	04 CED 7T V	Semester-V	h						
	24- SEP-ZT -V Molecular Cell Biology a: 24- SEP-ZT -V	nd Developmental Biology	MC-T			20	100	03	3 Hrs.
	Endocrinology and Histology Practical – V Molecular Cell Biology and Developmental					20	100	03	3 Hrs.
	Biology and Endocrinolog	MC-P	04	40	10	50	02	3 Hrs.	
	Total	Semester-VI		12	200	50	250	08	
	0.4. 0777					•		-	
-	24- SEP-ZT -VI Immunol		MC-T	04	80	20	100	03	3 Hrs.
6	and Animal Behavior		MC-T	04	80	20	100	03	3 Hrs.
	Biology, Environmental B	iology and Animal Behavior	MC-P	04	40	10	50	02	3 Hrs.
		ntion	AEDP	04	40	10	50	02	1 Hr
	Project/Internship/Disserta	ation	AEDP	U4 /	+0	10	150	02	I III.
]	Project/Internship/Disserta 	ation					300	10	

MC: Major Course; MC-T: Major Course Theory; MC-P: Major Course Practical; El/Op: Elective/Optional; AEDP: Apprenticeship Embedded Degree Program. *In Semester-III and Semester-IV elective papers are offered. There shall be 02 elective papers offered during each semester (Semester-III and Semester-IV) by every major subject offering Department, where a student shall choose/select/opt 01 elective paper out of two to study in each semester (Semester-III and Semester-IV).

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Program layout and Credit details for B.Sc.Zoology I and II <u>Semesters</u>

Subject Code	Title of the Paper	IA	Theory	Total	Teaching Hours/Week	Credits	Duration of Examination
24 SEP-ZT -1	Animal Systematics and Biology of Non-Chordates	20	80	100	4	3	3
24 SEP-ZP - 1		10	40	50	4	2	3
24 SEP-ZT - 2		20	80	100	4	3	3
24 SEP-ZP - 2	Animal Diversity – Biology of Chordates	10	40	50	4	2	3
Total						10	

Dr. U.S. MAHABALESHWAR
M.Sc., M.Phil., Ph.D.
Professor & Dean, Science & Technology
Davangere University, Shivagangotri,
Davangere-577 007, Karnataka, India.

Registrar Davangere University Shivagangotri, Davangere.

B.Sc. Zoology Program Outcomes (POs)

1. Knowledge and Understanding

PO1: Demonstrate a comprehensive understanding of the fundamental concepts in zoology, including animal diversity, physiology, genetics, evolution, and ecology.

PO2: Apply theoretical knowledge to analyze and solve problems related to animal biology, behavior, and environmental interactions.

2. Practical Skills

PO3: Acquire and apply practical skills in laboratory techniques, including specimen handling, microscopy, dissection, and experimental methodologies in zoological

PO4: Develop fieldwork skills for observing, collecting, and analyzing data related to animal behavior, ecology, and biodiversity.

3. Critical Thinking and Analysis

PO5: Utilize critical thinking to evaluate scientific literature, interpret data, and draw conclusions related to zoological research and applications.

PO6: Apply quantitative and qualitative analytical methods to investigate biological phenomena and solve biological problems.

4. Communication Skills

PO7: Communicate scientific information effectively through oral presentations, written reports, and scientific papers following standard formats and conventions.

PO8: Engage in scientific discourse, discussions, and collaborations within multidisciplinary teams, demonstrating effective teamwork and leadership.

5. Ethical and Professional Responsibility

PO9: Demonstrate ethical conduct in animal research, conservation practices, and interactions with living organisms, adhering to legal and ethical standards.

PO10: Recognize the importance of lifelong learning and professional development in the field of zoology, staying updated with advancements and ethical considerations.

6. Research and Inquiry

PO11: Design, conduct, and evaluate scientific experiments and research projects in zoology using appropriate methodologies and techniques.

PO12: Apply research findings to address practical issues in zoology, including conservation, biodiversity management, and animal welfare.

7. Interdisciplinary and Global Perspective

PO13: Integrate knowledge from various disciplines such as genetics, ecology, physiology, molecular cell biology, immunology and conservation biology to understand complex biological systems and environmental interactions.

PO14: Appreciate global biological diversity, environmental challenges, and cultural perspectives influencing animal biology and conservation practices.

8. Career Readiness and Adaptability

PO15: Prepare for diverse career pathways in zoology, including research, education, conservation management, wildlife rehabilitation, and environmental consultancy.

PO16: Adapt to emerging trends, technologies, and challenges in zoology and related fields, demonstrating flexibility and innovation in problem-solving.

These Program Outcomes ensure that graduates of a B.Sc. in Zoology program are equipped with a solid foundation in biological sciences, practical skills in laboratory and field settings, critical thinking abilities, and ethical standards necessary for professional success and contribution to society through their knowledge and expertise in animal biology and conservation.

B.Sc. Zoology Program Specific Outcomes (PSOs)

1. Animal Systematics and Biology of Non-Chordates

PSO1: Classify and identify non-chordate animals based on their morphological and anatomical characteristics.

PSO2: Apply evolutionary and phylogenetic principles to analyze and interpret the evolutionary relationships among non-chordate taxa.

PSO3: Demonstrate proficiency in laboratory techniques for the study of non-chordate specimens, including dissection, microscopy, and specimen preparation.

PSO4: Analyze and compare the physiological adaptations and ecological roles of major non-chordate phyla in various habitats.

2. Animal Diversity - Biology of Chordates

PSO1: Identify and classify chordate animals based on their anatomical features and evolutionary relationships.

PSO2: Analyze the adaptive morphological and physiological characteristics of different chordate groups.

PSO3: Demonstrate competence in conducting comparative anatomical studies and identifying key adaptations in chordate species.

PSO4: Evaluate the ecological roles and conservation status of diverse chordate taxa in different ecosystems.

3. Animal Physiology and Biochemistry

PSO1: Explain the physiological mechanisms underlying cellular processes, including metabolism, respiration, circulation, and excretion in animals.

PSO2: Apply biochemical principles to analyze molecular pathways and regulatory mechanisms in animal physiology.

PSO3: Perform and interpret experimental data from biochemical and physiological investigations, utilizing appropriate laboratory techniques.

PSO4: Evaluate the impact of environmental factors and stressors on animal physiology and biochemical processes.

4. Genetics and Evolution

PSO1: Understand the principles of Mendelian inheritance, population genetics, and evolutionary theory.

PSO2: Apply genetic techniques, including PCR, DNA sequencing, and genetic mapping, to study evolutionary processes.

PSO3: Analyze genetic data to infer phylogenetic relationships and evolutionary histories of animal species.

PSO4: Critically evaluate scientific literature on current topics in genetics and evolution, demonstrating a comprehensive understanding of theoretical concepts.

5. Molecular Cell Biology and Developmental Biology

PSO1: Describe the molecular mechanisms governing cellular processes such as cell division, differentiation, and signaling in animal development.

PSO2: Apply molecular biology techniques, including gene cloning, expression analysis, and genome editing, to study developmental processes.

PSO3: Analyze the role of developmental genes and signaling pathways in patterning and morphogenesis in animal embryos.

PSO4: Interpret experimental data from developmental biology studies to understand the genetic basis of developmental disorders and evolutionary change.

6. Endocrinology and Histology

PSO1: Explain the structure and function of endocrine glands and their role in regulating physiological processes in animals.

PSO2: Apply histological techniques to study tissue structure and identify cellular components in animal organs.

PSO3: Analyze the hormonal control mechanisms involved in growth, metabolism, and reproduction in different animal species.

PSO4: Evaluate histopathological changes and disorders affecting animal tissues and organs, linking structural abnormalities to physiological dysfunction.

7. Immunology and Parasitology

PSO1: Describe the components and functions of the immune system in animals, including innate and adaptive immunity.

PSO2: Identify and classify parasitic organisms based on their life cycles, host interactions, and pathogenic mechanisms.

PSO3: Apply immunological techniques, such as ELISA and flow cytometry, to study immune responses and diagnose parasitic infections.

PSO4: Evaluate the impact of parasitic diseases on animal health, ecosystems, and human welfare, proposing strategies for disease prevention and control.

8. Wildlife Biology, Environmental Biology, and Animal Behaviour

PSO1: Assess the ecological interactions and behavioral adaptations of wildlife species in their natural habitats.

PSO2: Analyze the impact of environmental factors, including climate change and habitat fragmentation, on wildlife populations and biodiversity.

PSO3: Apply field research methods, including observational studies and ecological surveys, to assess wildlife populations and habitats.

PSO4: Develop conservation strategies and management plans for wildlife species, integrating biological knowledge with environmental sustainability principles.

These Program Specific Outcomes (PSO) ensure that graduates of the B.Sc. Zoology program have specialized knowledge, skills, and competencies relevant to each course, preparing them for careers in research, conservation, education, industry and other fields related to animal biology and environmental sciences.

B.Sc. Zoology - I Semester Course Outcomes (COs)

Title of the Course: Animal Systematics and Biology of Non-Chordates

Unit - I

Chapter 1: Animal Systematics

CO1: Explain the concepts of evolutionary groups, including monophyletic, polyphyletic, and paraphyletic groups.

CO2: Differentiate between evolutionary systematics, numerical systematics, and phylogenetic systematics.

CO3: Apply molecular approaches to systematics and construct phylogenetic trees.

CO4: Understand and apply the rules of zoological nomenclature.

Chapter 2: Developmental Biology and Body Plans

CO1: Describe the formation and roles of germ layers in animal development.

CO2: Compare different types of body symmetries and their evolutionary advantages.

CO3: Explain the concepts of metamerism and its occurrence in different animal groups.

CO4: Differentiate between acoelomates, pseudocoelomates, and coelomates, and discuss the origin of the coelom.

CO5: Understand the developmental differences between protostomes and deuterostomes.

Chapter 3: Protozoa

CO1: Identify the general characteristics and classification of protozoa up to the class level.

CO2: Describe various types and mechanisms of nutrition in protozoa.

CO3: Explain the reproductive strategies in protozoa, including both sexual and asexual reproduction.

Unit - II

Chapter 4: Porifera

CO1: Recognize the general characteristics and classification of sponges up to the class level.

CO2: Identify and describe the different cell types in sponges and their functions.

CO3: Explain the structure and function of spicules and gemmules in sponges.

CO4: Understand the canal system in sponges and its role in water circulation and feeding.

Chapter 5: Cnidaria and Ctenophora

CO1: Identify the general characteristics and classification of cnidarians up to the class level.

CO2: Explain polymorphism in cnidarians and its ecological significance.

CO3: Provide an account of corals and coral reefs, including their formation and importance.

CO4: Describe the general characteristics and classification of ctenophores and their affinities with other phyla.

Chapter 6: Platyhelminthes and Nematodes

CO1: Recognize the general characteristics and classification of platyhelminthes up to the class level.

CO2: Identify the general characteristics and classification of nematodes up to the class level.

Unit - III

Chapter 7: Annelida, Onycophora, and Arthropoda

CO1: Describe the general characteristics and classification of annelids up to the class level.

CO2: Understand the general characteristics and classification of onycophorans, their taxonomic position, and their affinities with annelids and arthropods.

CO3: Identify the general characteristics and classification of arthropods up to the class level.

CO4: Explain metamorphosis in insects and larval forms in crustacea.

CO5: Describe the role of invertebrate hormones and pheromones in arthropod physiology.

Chapter 8: Mollusca

CO1: Recognize the general characteristics and classification of mollusks up to the class level.

CO2: Explain torsion and detorsion in gastropods and their evolutionary significance.

CO3: Describe the larval forms in mollusks and their developmental stages.

Chapter 9: Echinodermata and Hemichordata

CO1: Identify the general characteristics and classification of echinoderms up to the class level.

CO2: Explain the structure and function of the water vascular system in echinoderms.

CO3: Describe the larval forms in echinoderms and their evolutionary significance.

CO4: Recognize the general characteristics and classification of hemichordates up to the class level and explain their affinities with chordates and non-chordates.

Unit - IV

Chapter 10: Applied Zoology - Pearl Culture

CO1: Understand the biology of Pinctada (pearl oyster) and the process of pearl formation.

CO2: Describe the techniques and economic significance of pearl culture.

Chapter 11: Applied Zoology - Vermiculture and Apiculture

CO1: Explain the types of earthworms used in vermiculture and the methods for cultivating phytophagus and geophagus earthworms.

CO2: Understand the process and benefits of vermicomposting.

CO3: Describe modern beekeeping methods, equipment used, and artificial bee rearing techniques (Newton box).

Chapter 12: Applied Zoology - Sericulture

CO1: Provide an introduction to mulberry and non-mulberry silk moths and their lifecycle.

CO2: Explain the techniques of sericulture, including rearing methods and common diseases affecting silk production.

These course outcomes are designed to ensure that students acquire a comprehensive understanding of key concepts in zoology, develop practical skills, and apply their knowledge to real-world problems in animal biology and applied zoology.

B.Sc. Zoology - II Semester Course Outcomes (COs)

Title of the Course: Animal Diversity - Biology of Chordates

Unit - I

Chapter 1: Urochordates, Cephalochordata, and Cyclostomata

CO1: Identify and classify urochordates up to the order level, and explain the concept of retrogressive metamorphosis using Ascidia as an example.

CO2: Describe the general characters and classification of cephalochordates up to the order level, with a detailed understanding of the external features and feeding mechanisms of Amphioxus.

CO3: Recognize the salient features of cyclostomes, particularly Petromyzon and Myxine.

Chapter 2: Chondrichthyes and Osteichthyes

CO1: Identify and classify Chondrichthyes up to the order level with relevant examples, and understand their general characteristics.

CO2: Identify and classify Osteichthyes up to the order level with relevant examples, and understand their general characteristics, including types of scales and fins.

CO3: Explain the phenomenon of fish migration and its ecological significance.

Chapter 3: Amphibia

CO1: Identify and classify amphibians up to the order level with relevant examples, and understand their general characteristics.

CO2: Explain the process and significance of regeneration in amphibians.

Unit - II

Chapter 4: Reptilia

CO1: Identify and classify reptiles up to the order level with relevant examples, and understand their general characteristics.

CO2: Describe the temporal fossae in reptiles and their adaptations for terrestrial life.

CO3: Differentiate between venomous and non-venomous snakes and understand their ecological roles.

Chapter 5: Aves

CO1: Identify and classify birds up to the order level with relevant examples, and understand their general characteristics.

CO2: Explain the adaptations for flight, including modifications in feet and beaks, and understand the phenomenon of bird migration.

Chapter 6: Mammals

CO1: Identify and classify mammals up to the order level with relevant examples, and understand their general characteristics.

CO2: Describe the unique features of monotremes and marsupials.

CO3: Explain the adaptations and diversity in primates and cetaceans.

Unit – III (Osteology)

Chapter 7: Endoskeleton of Frog

CO1: Describe the osteological features of the frog's endoskeleton, including the skull, vertebrae, pectoral and pelvic girdles, and limb bones.

Chapter 8: Endoskeleton of Birds

CO1: Describe the osteological features of a bird's endoskeleton, including the skull, vertebrae, pectoral and pelvic girdles, and limb bones.

Chapter 9: Endoskeleton of Humans

CO1: Describe the osteological features of the human endoskeleton, including the skull, vertebrae, pectoral and pelvic girdles, and limb bones.

Unit – IV (Comparative Anatomy)

Chapter 10: Comparative Anatomy of Aortic Arches and Heart

CO1: Compare the anatomical features of the aortic arches and heart from Chondrichthyes to mammals.

Chapter 11: Comparative Anatomy of Brain

CO1: Compare the anatomical features of the brain from Chondrichthyes to mammals.

Chapter 12: Comparative Anatomy of Urogenital System

CO1: Compare the anatomical features of the urogenital system from Chondrichthyes to mammals.

This mapping ensures that each course outcome is aligned with the relevant program outcomes, helping to achieve the overall educational objectives of the B.Sc. Zoology program.

Semester 1 Syllabus

24 SEP-ZT -1: Animal Systematics & Diversity - Biology of Non-Chordates

Unit - I

12 Hours

Chapter 1.

Animal Systematics – Evolutionary groups (Monophyletic, Polyphyletic & Paraphyletic), Evolutionary Systematics, Numerical Systematics & Phylogenetic Systematics. Molecular approaches in Systematics. Rules of Zoological nomenclature.

Chapter 2.

Germ layers, Body Symmetries, Metamerism, Body cavities (Acoelomates, Pseudocoelomates and Coelomates) Origin of Coelom. Protostomes & Deuterostomes.

Chapter 3.

Protoza: General characters and classification with examples up to classes. Types and mechanisms of nutrition, Reproduction in Protozoa.

Unit - II

12 Hours

Chapter 4.

Porifera: General characters and classification with examples up to classes, Cell types (Choanocytes, porocytes, amoebocytes, sclerocytes and pinacocytes) Spicules & Gemmules, Canal system in sponges.

Chapter 5.

Cnidaria: General characters and classification with examples up to classes, Polymorphism in cnidaria, Brief account of corals and coral reefs

Ctenophora: General characters and classification with examples and their affinities

Chapter 6.

Platyhelminthes: General characters and classification with examples up to classes.

Nematodes: General characters and classification with examples up to classes.

Professor & Dean, Science & Technology Davangere University, Shivagangotri, Davangere-577 007, Karnataka, India. Davangere University

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Unit – III

12 Hours

Chapter 7.

Annelida: General characters and classification with examples up to classes.

Onycophora: General characters and classification with examples up to classes, Taxonomic position of Peripatus and its affinities with Annelida and Arthropoda.

Arthropoda: General characters and classification with examples up to classes, Metamorphosis in insects, larval forms in Crustacea. Invertebrate hormones and pheromones.

Chapter 8

Mollusca: General characters and classification with examples up to classes. Torsion & detorsion in Gastropoda, Larval forms in Mollusca.

Chapter 9

Echinodermata: General characters and classification with examples up to classes, Water vascular system, larval forms in Echinodermata and its evolutionary significance.

Hemichordata: General characters and classification up to classes, Tornaria larvae, Affinities with chordates and non-chordates.

Unit - IV

12 Hours

Chapter 10.

Applied Zoology: Pearl culture: Pinctada (Pearl oyster), Pearl formation

Chapter 11

Applied Zoology: Vermiculture: Epigenic, endogenic and anecic earthworms, Methods of vermiculture of phytophagus and geophagus earthworm. Vermicompost and its uses

Applied Zoology: Apiculture, Modern bee keeping methods and equipment, Artificial bee rearing (Newton box)

Chapter 12

Applied Zoology: Sericulture: Introduction to mulberry and non-mulberry silk moths, Lifecycle of Bombyx mori. Rearing techniques and diseases.

> DOS in Zoology Davangere University

Davangere - 577 007

Practicals

B.Sc. I Semester Zoology

24 SEP-ZP - 1: Animal Systematics and Biology of Non-Chordates

List of Experiments:

1: Protozoa: Amoeba, Euglena, Paramaeceum, Oplina, Volvox

2. Porifera: Sycon, Spongilla, Spicules and Gemmules

3. Cnidaria: Hydra, Physalia, Brain Coral

4. Platyhelminthes: Liver fluke, tapeworm, Planaria, Ascaris (Male and female)

5. Annelida: Neris, Earthworm, Peripatus, Stick insect, Prawn, Limulus, Nauplius larva

6. Mollusca:Chiton, Octopus, Nautilus

7: Echinodermata:Starfish Sea urchin, Balano-glosus

8: Mount and display - Nephridia, Setae, Blood glands, Testis / ovary in Earth worm

9: Display- Digestive system, Nervous system in Cockroach/Earth worm

10: Applied Zoology- Apis cerana indica, By-products of Honey Bee.

Life cycle of Bombyx Mori- Silk moth, Egg, Laral instars, Pupa, Cocoon.

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Semester II Syllabus

24 SEP-ZT - 2: Animal Diversity - Biology of Chordates

Unit - I

12 Hours

Chapter 1.

Urochordates: General characters and classification up to orders. Retrogressive metamorphosis. Example: Ascidia

Cephalochordata: General characters and classification up to orders.

Example: Amphioxus - Externals & Feeding mechanisms

Cyclostomata: Salient features of Petromyzon, Myxine.

Chapter 2.

Chondrichthyes: General characters and classification up to orders with examples.

Osteichthyes: General characters and classification up to orders with examples. Types of scales and fins, Migration in fishes.

Chapter 3.

Amphibia: General characters and classification with examples up to orders. Regeneration in amphibians.

Unit - II

12 Hours

Chapter 4.

Reptilia: General characters and classification with examples up to orders. Temporal fossae in reptiles, Adaptations of reptiles for the terrestrial mode of life. Venomous and non-venomous snakes.

Chapter 5.

Aves: General characters and classification with examples up to orders. Flight adaptations, Foot and beak modifications. Migration in birds.

Chapter 6.

Mammals: General characters and classification with examples up to orders. Monotremata, Marsupials. Adaptations and diversity in primates. Adaptations and diversity of Cetacea.

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Unit - III

12 Hours

Chapter 7. (Osteology)

Endoskeleton of frog – Skull, vertebrae and pectoral and pelvic girdles, Limb bones.

Chapter 8

Endoskeleton of birds – Skull, vertebrae and pectoral and pelvic girdles, Limb bones.

Chapter 9

Endoskeleton of Human – Skull, vertebrae and pectoral and pelvic girdles, Limb bones.

Unit – IV (Comparative Anatomy)

12 Hours

Chapter 10

Comparative anatomy of aortic arches and heart (Chondrichthyes to Mammals)

Chapter 11

Comparative anatomy of brain (Chondrichthyes to Mammals)

Chapter 12

Comparative anatomy of urogenital system (Chondrichthyes to Mammals)

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Practicals

B.Sc. II Semester Zoology

24 SEP-ZP - 2: Animal Diversity - Biology of Chordates

List of Experiments:

- 1. Study of the following specimens
 - a. Ascidia, Amphioxus, Petromyzon
 - b. Scoliodon, Sting ray, Hippocampus, Clarias batrachus
 - c. Rana tigrina/Bufo , Salamander, Icthyophis
 - d. Naja naja, Rat snake, Turtle
 - e. King fisher, Owl
 - f. Pangolin, Bat & Loris
- 2. Foot & Beak modification of Parrot, Pigeon & Humming bird
- 3. Osteology
 - a. Skull of Amphibia, Aves & Mammals
 - b. Pectoral & Pelvic girdles of Frog, Bird & Mammals
- 4. Comparative Anatomy
 - a. Aortic arches
 - b. Heart
 - c. Brain
- 5. Mounting of Scales in fishes (Placoid. Ctenoid & Cycloid)

6. Study of Fins in Fishes

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References:

I Semester

- 1. R.L Kotpal, Modern textbook of Zoology Invertebrates, Recent Edition.
- 2. E.J.W Barrington. Invertebrate structure and function
- 3. Barness and Fox. Invertebrate Zoology.
- 4. Jordan and Verma. Invertebrate Zoology.
- 5. Ernest Mayr. Principles of Systematic Zoology, Tata-McGraw-Hill, New Delhi, 1997.
- Simpson, G.G. Principles of Animal taxonomy. Columbia University Press, New York, 1961.
- 7. Kapoor, V.C. Theory of Animal Taxonomy, Oxford IBH Co. Pvt. Ltd., New Delhi, 1998.
- 8. Hawksworth, D.L. (Ed). Biodiversity: Measurement and Estimation, Chapman and Hall, 1961.
- 9. Khan, T.I and Y.S. Shishodia. Biodiversity Conservation and Sustainable Development. Pointer Publications, Jaipur, 1998
- 10. Dasmann. F Raymond. Wildlife Biology. Wiley Eastern Ltd. India. 1982.
- 11. Encyclopedia of Nature and Science. Vols 1-18. Bay Books Pvt.Ltd. Sydney, 1974.
- 12. Singh, M.P. 2009. Biodiversity. APH Publishing Corporation, New Delhi.
- 13. Kotwal, P.C. and Banerjee, S. 2004. Biodiversity Conservation in managed forests

II Semester

- 1. R.L Kotpal, Modern textbook of Zoology Vertebrates, Recent Edition.
- 2. Marshall, A.J. and Williams W.D. (Ed). Text Book of Zoology: Vertebrates-VII (Ed.) Vol. II AITBS Publishers and Distributors, 1995.
- 3. Young, J.Z. The Life of Vertebrates. III Ed Clarendon Press, Oxford, 1981.
- 4. William, N. Mcfarland, F. and Harvey Pough Tom J.C. and Heiser J.B. Vertebrate Life. Collier-Macmillan Publihers, London, 1979.
- 5. Romer, W.B. The Vertebrates Body. Saunders, Philadelphia, 1956
- 6. Book of Indian Birds, Salem Ali. BNHS

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THEORY EXAMINATION QUESTION PAPER PATTERN (Semesters I –VI)

B.Sc. Degree Examination; 2024-25 onwards (SEP Scheme; New Syllabus: 2024-25)

SUBJECT: ZOOLOGY

Paper:		Paper Code:			
Time: 3 Hours		Max. Marks: 80			
Instructions to candidates: 1) All section 2) Draw a ne	ns are compulsory eat and labelled diagrams whereversely.	ver necessary.			
1. Answer all the following questions:		(2×10=20)			
a)					
b)					
c)					
d)					
e)	*_ ·				
f) g)					
h)					
i)					
j)					
	SECTION-B				
Answer any SIX of the following:		(5×6=30)			
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.	SECTION -C				
Answer Any Three of the following: (10	and the second s				
10. From Unit-I	//3-30)				
11. From Unit-II					
12. From Unit-III					
13. From Unit-IV					
14. From any of the Unit I to IV					

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PRACTICAL EXAMINATION QUESTION PAPER PATTERN (Semesters I –VI)

B.Sc. Degree Examination; 2024-25 onwards (SEP Scheme; New Syllabus: 2024-25)

SUBJECT: ZOOLOGY

Paper:

Time: 3 Hours

Paper Code:

Max. Marks: 40

Duration: 3Hrs

- 1. Experimentation (Major & Minor/Spotters) --- ------30 Marks
- 2. Viva Voice ----- 05 Marks
- 3. Submission Practical Record ----- 05 Marks

Total 40 Marks

Internal Assessment for Zoology Theory Paper I-VI semesters

Internal Assessment Maximum Marks – 20

Components for internal assessment:

- (1) Attendance -5 Marks.
- (2) Assignment/Seminars —5Marks
- (3) Internal test with proper record for assessment –10Marks

Total 20 Marks

Attendance Marks-breakup

<75% - 00 Marks

76-80% - 01 Mark

81-85% - 02 Marks

86-90% - 03 Marks

91-95% - 04 Marks

>95% - 05 Marks

Internal Assessment Marks for Zoology Practical Paper I-VI semesters

- 1) Attendance 05 Marks
- 2) Practical Internal test 05Marks

Total -- 10 Marks

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