

PROPOSED SYLLABUS
B.SC ZOOLOGY FOR I & II SEMESTER

Under

SEP-2024

CHOICE BASED CREDIT SYSTEM

With effect from academic year 2024 – 25



DEPARTMENT OF ZOOLOGY
GOVERNMENT COLLEGE, KALABURAGI – 585105
(AN AUTONOMOUS INSTITUTION)



Government of Karnataka
Department of Collegiate and Technical Education

GOVERNMENT COLLEGE KALABURAGI (AN AUTONOMOUS INSTITUTION)-585105.

Phone: 08472-245064

(Re-Accredited by NACC with "B+" Grade) www.gcak.ac.in

DEPARTMENT OF ZOOLOGY

**Program Structure & Proposed Scheme of Teaching & Evaluation for BSc
I & II Semester (With effect from Academic Year-2024-25 and onwards)**

Semester I									
Sl. No.	Course Code	Title of the course	Category of the course	Teaching hours per week (L+T+P)	Exam Duration	SEE	IA	Total Marks	Credits
01	BSc-1.1	Animal Systematics & Biology of Non-Chordata	ZOODSCT-1.1	3+0+0	3 hrs	80	20	100	3
02	BSc 1.2	Practical- I	ZOODSCP-1.2	0+0+4	2 hrs	40	10	50	2
Total for 1st Semester						120	30	150	05

Semester II

Sl. No	Course Code	Title of the course	Category of the course	Teaching hours per week (L+T+P)	Exam Duration	SEE	IA	Total Marks	Credits
1	BSc-2.1	Biology of Chordata	ZOODSC T-2.1	3+0+0	3 hrs	80	20	100	3
2	BSc-2.2	Practical -II	ZOODSC T-2.2	0+0+4	2 hrs	40	10	50	2
Total for 2nd Semester						120	30	150	05

Note: 1.ZOO- Zoology, DSC- Discipline core, T-Theory/P-Practical.

Semester Main Examination and Internal Examination shall be conducted as per the regulation /directions of the examination branch of GCAK



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Ref No.: GCAK(AI)/BOS(UG)/2024-25/190

Date :

To,
The Dean(UG Science)
Academic Section
Govt College (Autonomous) Kalaburagi

Sir,
Sub : Submission of BOS Approved Syllabus under SEP Scheme.
Ref : 1) HOD meeting Resolution dated 30/07/2024
2) Department council meeting Resolution dated 1/08/2024
3) BOS Meeting and Proceeding dated

With reference to above subject, I am submitting BOS Approved Syllabus of B.Sc I and II Sem in (Zooology Dept) as per reference No 1. We have proceeded with Dept meeting and hence finally discussed in BOS & as per discussion and suggestion Draft Syllabus prepared then it is Approved by BOS as per ref 2 & 3 along with Blue Print and Model Question Paper as well as Practical in Core Papers and External examiners list.

In the same BOS Meeting Modified BOS under SEP also Approved.

Thanking you,

Encl:
1) Approved Signed BOS formats
2) Approved Syllabus of B.Sc I & II Sem.Core Papers along with blue print and model question paper.
3) Approved BOS proceeding copy
4) Approved External Examiner list.

Your's faithfully,

Copy: To Principal for information.



Proceedings of the Board of Studies (UG) in Zoology

The meeting of the Board of Studies (UG) in Zoology for the year 2024-25 was held on ----- at 11 AM, in the department of Zoology, Government College, and Kalaburagi. The committee discussed on Draft syllabus (revision/new Course) of undergraduate courses of Zoology of B. Sc I to II Semester and approved as below, Panel of examiners also approved.

Program Name	Course Code	Course Name	Revision /New course	%of Revision in case of revision	Remarks
BSc 1st Semester					
B.Sc.	ZOODSCT - 1.1	Animal systematic & Biology of Non-Chordata	New Course	100	
	ZOODSCP - 1.2	Practical- I	New Course	100	
BSc IInd Semester					
B.Sc.	ZOODSCT- 2.1	Biology of Chordata	New Course	100	
	ZOODSCP- 2.2	Practical- II	New Course	100	

The Committee also approved the list of board of examiners

Item-II: To approve the pattern of question paper for DSCT and DSCP
It is resolved to adopt the following pattern of question papers

Question Paper Pattern for Semester end theory examination (Final)
For B.Sc I/II Semester DSCT (SEP).

Duration: **3 hrs**

Maximum Marks: **80**

Instructions: **Attempt All Sections**

SECTION-A		
QI.	Answer Any TEN of the following	10X2 = 20
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
SECTION-B		
QII.	Answer Any SIX of the following	6X5 = 30
13		
14		
15		
16		
17		
18		
19		
20		
SECTION-C		
QIII.	Answer Any THREE of the following	3X10 =30
21		
22		
23		
24		

NOTE: While selecting the questions, All the units in the syllabus must be given equal weightage.

DSCP1.1 - Animal Systematics and Biology of Non-Chordates

Time: 2 Hrs

Max. Marks: 40

- Q.I. Dissect and Display the _____ of Earthworm / Cockroach **08**
- Q.II. 1. Identify, Classify & Give reasons _____ **10X2=20**
2. Identify, Classify & Give reasons _____
3. Identify, Classify & Give reasons _____
4. Identify and Describe _____
5. Identify and Describe _____
6. Identify and Describe _____
7. Identify and Comment on _____
8. Identify and Comment on _____
9. Identify and Comment on _____
10. Identify, sketch and Label _____
- Q.III. Preparation of temporary mount of Cockroach mouth parts / Setae of earthworm **05**
- Q. IV. Viva-voce **03**
- Q. V Certified Practical Record Book **04**



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DEPARTMENT OF ZOOLOGY

Board of Studies (UG) in ZOOLOGY

Sl No.	Name of the Members Present in the meeting		Designation	Signature
1.	Dr. Meenakshi. C	CHAIRMAN	ASSOCIATE PROFESSOR & HOD	
2.	Prof. DINESH	CONVENOR	ASSISTANT PROFESSOR & P.G CO- ORDINATOR	
3.	DR. K. VIJAYKUMAR	UNIVERSITY NOMINEE	SENIOR PROFESSOR, DFO & FORMER VC	
4.	DR. SOMNATH REDDY C. PATIL	EXTERNAL	ASSOCIATE PROFESSOR & HOD	
5.	Prof. ARJUMAND AZHER	EXTERNAL	ASSOCIATE PROFESSOR & HOD	
6.	DR. HEENA MUBEEN	EXTERNAL	ASSISTANT PROFESSOR	
7.	HANMANATH VIDYASAGAR KODLI	EXTERNAL	QUALITY CONTROL OFFICER	
8.	DR. ASHOK PRATHAN	ALUMINI	ASSISTANT PROFESSOR	
9.	PAVAN MOHANRAO	ALUMINI	ASSISTANT PROFESSOR	



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Ref No.: GCK (AI)/BOS (UG)/2024-25/190

Date : 29/07/2024

OFFICE ORDER

Subject: Appointment of members of Board of Studies (UG)

Reference: 1. UGC Revised Guidelines for Autonomous Colleges dt. : 19.01.2018

2. Registrar, GUK Letter No. ಗುವಿಕ/ವಿಪುವಿ/ಬಿಬಿಎಸ್/2024-25/190 Dated 29.07.2024

3. Resolution of the DC meeting held on

Advert to the cited subject and references, the Board of Studies (UG) in has been constituted as shown below.

Board of Studies (UG) in ZOOLOGY

Sl. No.	Name of the Members	Designation	Address with Phone No & Email	Appointed as
1.	Dr. Meenakshi. C	ASSOCIATE PROFESSOR & HOD	Department of Zoology, Government College Kalaburagi (Autonomous) -585105 9980161932 meenakshichengata@gmail.com	Chairman
2.	Prof. DINESH	ASSISTANT PROFESSOR	Department of Zoology, Government College Kalaburagi (Autonomous) -585105 8892261922 Mehtredinesh143@gmail.com	CONVENOR
3.	Dr. K. Vijaykumar	SENIOR PROFESSOR, CHAIRMAN, DFO FORMER VC, GUK	Department of Zoology Gulbarga University Kalaburagi-58506 9480060508 katepaga@rediffmail.com	University Nominee
4.	Dr. Somnath Reddy C Patil	ASSOCIATE PROFESSOR & HOD	Department of Zoology, Government College Raichur somnath.sairam@gmail.com	EXTERNAL MEMBER (other than Parent University)
5.	DR. ARJUMAND AZHER	ASSOCIATE PROFESSOR & HOD	Department of Zoology, Government College Bidar arjumand@outlook.in 9972079959	EXTERNAL MEMBER (other than Parent University)

6.	DR. HEENA	ASSISTANT PROFESSOR	Department of Zoology, KBN University, Kalaburagi heenamubeen323@gmail.com 8904782504	EXTERNAL MEMBER (other than Parent University)
7.	Hanmanth Vidyasagar Kodli	QUALITY CONTROL OFFICER	Kalaburagi Cement Private Limited, Chatrasala Unit, Tq: Chincholi Dist: Kalaburagi 9964577754 hvrudnur@gmail.com	External Member Representing Industry/ Corporate Sector/ Allied area
8.	DR. ASHOK PRATHAN	ASSISTANT PROFESSOR	Department of Zoology Department of Zoology, Government College Kalaburagi (Autonomous) -585105 Prathanashok32@gmail.com 7676392672	ALUMINI
9.	PAVAN MOHANRAO	ASSISTANT PROFESSOR	Department of Zoology, SB College of Science, Kalaburagi 7349324506 mkpavan2995@gmail.com	ALUMINI

The term of nominated members shall be 03 years from the date of this Order.

Copy to:

1. Chairman, Board of Studies (UG) in ZOOLOGY
2. All the members of the BOS in ZOOLOGY
3. Academic Dean (UG) Govt. College (Autonomous), Kalaburagi
4. Office Copy.

BSc Ist SEMESTER ZOOLOGY CORE COURSE CONTENT
DSCT 1.1: Animal Systematics & Biology of Non-Chordates

Course Title: Animal Systematics & Biology of Non-Chordates	Course Credits: 3
Total Teaching Hours: 48	Course Code: ZOODSCT-1.1
Teaching hours/Week: 3 Hours	Max. Marks: 100 (SEE - 80+I.A – 20)

Course Outcomes (COs):

After the successful completion of the course, the student will be able to:

1. Group animals on the basis of their morphological characteristics/ structures.
2. Demonstrate comprehensive identification abilities of Non-Chordate diversity.
3. Explain structural and functional diversity of Non-Chordates
4. Develop understanding on the diversity of life with regard to protists, non-chordates and chordates.
5. Examine the diversity and evolutionary history of a taxon through the construction of a basic Phylogenetic/ Cladistics tree.

Contents	48 Hrs
Unit-I	12
Unit 1: Animal Taxonomy and systematics. 1.1 Terms and definitions of systematics and significance of taxonomy, 1.2 Traditional and Modern Concepts (Linnaean and Cladistic) Species Concepts 1.3 Outline Classification of Kingdom Animalia upto the level of phyla	

Unit-II	12
<p>Unit 2 – Protozoa, Porifera, and Coelenterates</p> <p>2.1 Protozoa – General Characters, Classification up to Classes with examples Type Study of Amoeba (Morphology, Locomotion, Nutrition and Reproduction).</p> <p>2.2 Porifera – General Characters, Classification up to Classes with examples Type Study of Sycon (Morphology, Canal system and Skeletal elements).</p> <p>2.3 Coelenterata or Cnidaria – General Characters and Classification up to Classes with examples Type Study of Hydra (Morphology, Polymorphism and Reproduction).</p>	
Unit-III	12
<p>Unit 3 – Platyhelminthes, Nematoda, and Annelida</p> <p>3.1 Platyhelminthes – General Characters, Classification up to Classes with examples Type Study of Taenia solium (Tapeworm) (Morphology, Life Cycle, and Pathogenicity)</p> <p>3.2 Nematoda – General Characters, Classification up to Classes with examples Type Study of Ascaris lumbricoides (Roundworm) Morphology, Life Cycle, and Pathogenicity</p> <p>3.3 Annelida – General Characters, Classification up to Classes with examples Type Study of Pheretima posthuma (Earthworm) (Morphology, Life Cycle, and Reproduction).</p>	

Unit-IV	12
<p>Unit 4 – Arthropoda, Mollusca, and Echinodermata</p> <p>4.1 Arthropoda – General Characters, Classification up to Classes with examples</p> <p>General topic; Peripatus and its affinities, Insect metamorphosis.</p> <p>Type Study of Cockroach (Mouth parts, Digestive, Nervous and reproductive system)</p> <p>4.2 Mollusca – General Characters, Classification up to Classes with examples</p> <p>General topic; Torsion and Detorsion in Gastropod.</p> <p>Type study of Pila (Morphology, Shell, Respiration and Nervous system).</p> <p>4.3 Echinodermata – General Characters, Classification up to Classes with examples</p> <p>General topic; Larval forms in Echinodermata.</p> <p>Type study of Star fish (Morphology and water vascular system).</p>	

References

1. Barnes, R.S.K.; Calow, P.; Olive, P.J.W.; Golding, D.W.; Spicer, J.I. (2002) *The Invertebrates: Synthesis*, Blackwell Publishing.
2. Hickman, C.; Roberts, L.S.; Keen, S.L.; Larson, A. and Eisenhour, D. (2018) *Animal Diversity*, McGraw-Hill.
3. Holland, P. (2011) *The Animal Kingdom: A Very Short Introduction*, Oxford University Press
4. Kardong, K.V. (2006) *Vertebrates: Comparative Anatomy, Function, Evolution (4th edition)*, McGraw-Hill.
5. Barrington, E.J.W. (1979) *Invertebrate Structure and Functions. II Edition*. E.L.B.S. and Nelson.
6. Boradale, L.A. and Potts, E.A. (1961) *Invertebrates: A Manual for the use of Students*. Asia Publishing Home.
7. Boradale, L.A. and Potts, E.A. (1961) *Invertebrates: A Manual for the use of Students*. Asia Publishing Home.
8. *Invertebrate Structure & Function* by E.J. Barrington and Nelson, London Publishers.
9. *Invertebrate Zoology* by P.S. Dhama and J.K. Dhama. R-Chand & Company
10. *Invertebrate Zoology* by Ruppert and Barnes. Holt Saunders Publishers
11. *Modern Textbook of Zoology: Invertebrates* by R.L. Kotpal. Rastogi Publishers
12. *Invertebrate Zoology* by E.L. Jordan and P.S. Verma. S.Chand Publishers
13. *Principles and Practices of Animal Taxonomy* by V.C. Kapoor. Science Publishers.
14. *A Manual of Practical Zoology* by P.S. Verma.

BSc. I Semester Zoology Practical Content
DSCP 1.1: ANIMAL BIOSYSTEMETICS AND BIOLOGY OF NON-CHORDATA

Course Title: ANIMAL BIOSYSTEMETICS AND BIOLOGY OF NON-CHORDATA	Course Credits: 2
Total Contact Hours: 48	Course Code: ZOODSCP-1
Teaching hours/Week: 4 Hours	Max. Marks: 50 (SEE – 40 + 10 = 50)

Course Outcomes (COs):

At the end of the course the student should be able to:

1. Understand basics of classification of non-chordates.
2. Learn the diversity of habit and habitat of these species.
3. Develop the skills to identify different classes and species of animals.
4. Know uniqueness of a particular animal and its importance
5. Enhancement of basic laboratory skill like keen observation and drawing.

Slide study of Protozoa: <i>Paramecium, Euglena, Amoeba, Trypanosoma and Plasmodium.</i>
Museum study of Porifera: <i>Sycon, Spongilla, Euplectella, Hyalonema, Euspongia.</i>
Museum study of Coelenterata: <i>Obelia, Hydra, Physalia, Metridium.</i>
Museum study of helminthes: <i>Planaria, Taenia, Fasciola, & Ascaris, Ancylistoma dudodenale, Filaria and Wucheria Bancrofti</i>
Annelida: <i>Nereis, Aphrodite, Pheritema, Hirudinaria,Chaetopterus,Sabella & Terebelle.</i>
Museum study of Arthropoda: <i>Palaemon, Limulus, Julus, Scolopendra, Termite , wasp,Peripatus,Balanus,Cancer,Butterflies,Honey Bee.</i>
Museum study of Mollusca: <i>Octopus, Chiton, Pila, Unio, Aplysia , Sepia ,Dentalim,Mytilus & Patella.</i>
Echinodermata: <i>Asterias, Echinus, Antedon , Holothuria,Ophiothrix.</i>
Dissection of Earthworm/Cockroach –Nervous system, Digestive System.
Dissection of Pila -Nervous system (Virtual)
Dissection of Star fish- Water vascular system (Virtual)
Preparation of temporary mount of Cockroach mouth parts & Setae of Earthworm

BSc IInd SEMESTER ZOOLOGY CORE COURSE CONTENT
DSCT 2.1: Biology of Chordates

Course Title: Biology of Chordates	Course Credits: 3
Total Teaching Hours: 48	Course Code: ZOODSCT-2.1
Teaching hours/Week:3 Hours	Max. Marks:100 (SEE - 80+I.A – 20)

Course objective: *This course is designed to give a learner the fundamental understanding of taxonomy and the diversity of chordate phyla with emphasis on their key characteristics, classification and functioning.*

Learning outcome: *After the completion of this course, a student will be able to*

- *Learn basic taxonomy skills and demonstrate identification and classification of chordates*
- *Understand the general and distinct characters of chordate phyla*
- *Comprehend and explain evolutionary relationship among various chordate groups*

Content	Teaching Hrs	Credits
Unit-I: Introduction of Chordates	12	4
1.1 Theories, General characteristics and outline classification of Phylum Chordata. 1.2. General characteristics and classification of sub-phylum Hemichordata, Urochordata and Cephalochordate up to Classes with examples. Retrogressive metamorphosis in Ascidia. 1.3 General characteristics and classification of cyclostomes up to order with examples.		
Unit-II: Pisces	12	
2.1. Pisces: General characteristics and classification of Pisces up to order with examples. 2. 2. Distinctive features of Chondrichthyes & Osteichthyes with examples. 2.3. Accessory respiratory organ, Migration in fishes; Parental care in fishes.		

Unit-III: Amphibia and Reptiles	12
<p>3.1 Amphibia: General characteristics and classification up to order with examples.</p> <p>3.2 Metamorphosis, Neoteny, Paedomorphosis, Parental care in Amphibia</p> <p>3.3.Reptilia: General characteristics and classification up to living orders with examples.</p> <p>Poison apparatus and Biting mechanism in Snake. Poisonous & Non Poisonous snakes..</p>	
Unit-IV: Aves and Mammals	12
<p>4.1. Aves: General characteristics and classification up to living Sub-Classes; Migration in Birds; Flight adaptations, Flightless Birds.</p> <p>4.2. Mammals: Origin of Mammal. General characters and classification up to orders with examples. Distinctive features of prototheria, metatheria and eutheria.</p> <p>4.3. Comparative account of Digestive system and Circulatory system in Fishes, Amphibian, Reptiles, Birds and Mammals.</p>	

Suggested Books:

- The Life of Vertebrates, III Edition, Oxford University Press. Young, J.Z 2004.
- Vertebrates; Comparative Anatomy, Function, Evolution Zoology McGraw Hill.
- Modern Text Book of Zoology: Vertebrates, Rastogi Publications.
- Biology of Chordates. Vishak Publishing Co. Nigam H.C, 2017.
- Chordata- I, Arora MP. Himalaya Pub House Co.
- Introduction to General Zoology (Vol. 2), Haki K C; Kundu G & Sarkar S. - NCBA, Kolkata.
- Analysis of Vertebrate Structure, Hilderbrand M, Gaslow GE., John Wiley and Sons
Jordan EL,
- Chordate Zoology, Verma PS. 2003.S.Chand & Company Ltd. New Delhi.
- Comparative Anatomy of Vertebrates, Function and Evolution Kardong K V. 2005.;
McGraw-Hill
- Vertebrates: Comparative anatomy, function Evolution, Kardong KV. 2002. Tata
McGraw Hill.
- Comparative anatomy of the Vertebrates. 9th Ed Kent GC, Carr RK. 2001. Mc Graw
Hill.

BSc. II Semester Zoology Practical Content
DSCP 2.1: BIOLOGY OF CHORDATA

Course Title: BIOLOGY OF CHORDATA	Course Credits: 2
Total Contact Hours: 48	Course Code: ZOODSCP-1
Teaching hours/Week: 4 Hours	Max. Marks: 50 (SEE – 40 + 10 = 50)

Protochordata: Balanoglossus, Herdmania & Amphioxus
Agnatha: Petromyzon, Myxine.
Fishes: Scoliodon, Sphyrna, Pristis, Torpedo, Mystis, <i>Labeo rohita</i> , Exocoetus, Hippocampus, Anabas, Notopterus, Anguilla, Protopterus.
Amphibia: Necturus, <i>Bufo</i> (<i>Duttaphrynus melanostictus</i>), <i>Rana</i> (<i>Hoplobatrachus tigrinus</i>), Hyla, Ambystoma, Axolotl larva, Ichthyophis.
Reptilia: Chelone, Hemidactylus, Varanus, Calotes, Chamaeleon, Draco, Vipera, Naja, Hydrophis, Turtle, Tortoise, Alligator.
Aves: Indian Large cuckoo, Hornbill, Woodpecker, House Sparrow, Kingfisher, Parrot, Spotted owl and Comb Duck
Mammalia: Bat (Insectivorous and Frugivorous), Funambulus (Indian Palm squirrel), Echidna and Pangolin.
Skeletal system in Man: -Skull, vertebrae, girdles and limb bones (Except hands and feet)
Comparative account of Heart in Calotes, Pigeon and Man
Comparative account of Digestive system in Shark, Frog and Calotes
Power point presentation on study of habit, habitat or behaviour of any animal by student-for internal assessment only.
Project on local availability of common fishes.

Item-II: To approve the pattern of question paper for DSCT and DSCP

It is resolved to adopt the following pattern of question papers

Question Paper Pattern for Semester end theory examination (Final)

For B.Sc I/II Semester DSCT (SEP).

Duration: 3 hrs

Maximum Marks: 80

Instructions: **Attempt All Sections**

SECTION-A		
QI.	Answer Any TEN of the following	10X2 = 20
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
SECTION-B		
QII.	Answer Any SIX of the following	6X5 = 30
13		
14		
15		
16		
17		
18		
19		
20		
SECTION-C		
QIII.	Answer Any THREE of the following	3X10 =30
21		
22		
23		
24		

NOTE: While selecting the questions, All the units in the syllabus must be given equal weightage.

Model Paper
GULBARGA UNIVERSITY, KALABURAGI
B. Sc. II SEMESTER (SEP)
ZOOLOGY PRACTICAL QUESTION PAPER - 2024-25
DSC- ZP-2
Biology of Chordates

Time: 3 Hrs

Max. Marks: 40

- Q.I. 1. Identify, Classify & Give reasons _____ 10X2=20
 2. Identify, Classify & Give reasons _____
 3. Identify, Classify & Give reasons _____
 4. Identify and Describe _____
 5. Identify and Describe _____
 6. Identify and Describe _____
 7. Identify and Comment on _____
 8. Identify and Comment on _____
 9. Identify and Comment on _____
 10. Identify, sketch and Label _____
- Q.II. Compare _____ of _____ with _____ 05
- Q. III. Viva-voce 05
- Q. IV. Certified Practical Record Book 05
- Q. V. Project Submission 05

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