



RANI CHANNAMMA UNIVERSITY

BELAGAVI

**REVISED CURRICULUM FRAMEWORK FOR
UNDER GRADUATE COURSE**

STRUCTURE & SYLLABUS OF BACHELOR OF SCIENCE

ZOOLOGY

1ST TO 2ND Semesters

w.e.f.

Academic Year 2024-25 and Onwards

Submitted by

Chairman,
Board of Studies (UG),
Bachelor of Science,
Rani Channamma University, Belagavi.

RANI CHANNAMMA UNIVERSITY, BELGAVI
VIDYASANAGAMA
Accredited with B+ Grade by NAAC

FACULTY OF SCIENCE: DEPARTMENT OF ZOOLOGY

Board of Studies in ZOOLOGY

Sl. No.	Name and Address	Designation
01	Prof. Basavaraj Padmashali Department of Chemistry Rani Channamma University Belagavi-591156	Chairman
02	Shri G.M. Karki Maratha mandal College Belagavi	Member
03	Smt. Surekha Deshapande Basaveshwara Science College Bagalkot	Member
04	Dr. Umesh M Shaygoti jSS College Gokak	Co-opt member

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FACULTY OF SCIENCE: DEPARTMENT OF ZOOLOGY

COURSE STRUCTURE FOR B.Sc. PROGRAMME

Semester	Subjects	Teaching Hours/week	Duration of Exams	Marks			Credits
				IA	Exam	Total	
1	Major1 Theory	04	03	20	80	100	03
	Major1 Practical	04	04	10	40	50	02
	Major2 Theory	04	03	20	80	100	03
	Major2 Practical	04	04	10	40	50	02
	Major3 Theory	04	03	20	80	100	03
	Major3 Practical	04	04	10	40	50	02
	Language1	04	03	20	80	100	04
	Language2	04	03	20	80	100	04
	Compulsory-1	02	02	10	40	50	02
2	Major1 Theory	04	03	20	80	100	03
	Major1 Practical	04	04	10	40	50	02
	Major2 Theory	04	03	20	80	100	03
	Major2 Practical	04	04	10	40	50	02
	Major3 Theory	04	03	20	80	100	03
	Major3 Practical	04	04	10	40	50	02
	Language1	04	03	20	80	100	04
	Language2	04	03	20	80	100	04
	Compulsory-2	02	02	10	40	50	02
Total							50

First Semester B.Sc. Zoology Theory

Paper Title: Zoology-1T	Marks: Th-80+IA-20
Paper Code : SEPBSZOOT01	Total hours: 60
Teaching Hours: 4 Hours/Week	Credits : 03

UNIT-I	15 Hours
Animal Diversity: Brief History and General Principles of Animal classification. Prokaryotes and Eukaryotes. Phylum Protozoa- General characters and classification up to classes with one example for each class. Locomotion in Protozoa Phylum Porifera: General characters and classification up to classes with one example for each class. Canal System in <i>Sycon</i> Phylum Coelenterata: General characters and classification up to classes with one example for each class. Polymorphism Phylum Platyhelminthes: General characters and classification up to classes with one example for each class. Parasitic adaptations Phylum Nemathelminthes: General characters and classification up to classes with one example for each class. Life history of <i>Ascaris</i> . Parasitic adaptations in roundworms	
UNIT-II	15 Hours
Phylum Annelida: General characters and classification up to classes with one example for each class. Metamerism in Annelida Phylum Arthropoda: General characters and classification up to classes with one example for each class. Metamorphosis in Insects. Life history of <i>P. americana</i> Phylum Mollusca: General characters and classification up to classes with one example for each class. Phylum Echinodermata: General characters and classification up to classes with one example for each class. Water-vascular system in Asteroidea	
UNIT-III	15 Hours
Phylum Chordata: Characters of chordates. Differences between chordates and non-chordates. General features of Protochordata (Brief note on Hemichordata, Urochordata, Cephalochordata) Agnatha and Gnathostomata: General features of Agnatha and Gnathostomata. Classification of cyclostomes up to classes Pisces: General features and classification up to living orders. Scales in fishes Migration in Fishes Amphibia: General features and classification up to living orders. Parental care in amphibians Reptiles: General features and Classification up to living orders. Differences between poisonous and non-poisonous snakes. Snake bite and treatment	
UNIT-IV	15 Hours
Aves: General features. Salient features of Passeriformes, Pisciformes, Columbiformes, Mammals: General characters. Salient features of Monotremes, Marsupialia, Insectivora, Rodentia, Perissodactyla, Chirpotera, Edentata, Cetaceae and Primates with one example for each. Ear ossicles in mammals.	

References

1. Agarwal V. P. and Dalela R. C. (1975): Textbook of Vertebrate Zoology. Jai Prakashnath Co.
2. Barnes, R.D. (1982): Invertebrate Zoology. Fifth edition
3. Barnes, R.D. (1982): Vertebrate Zoology. Fifth edition
4. Barnes, R.S.K., Calow, P., Olive, P.J.W. Golding, D.W. and Spicer, J.I. (2002): The Invertebrates: A New Synthesis, III Edition, Blackwell Science
5. Barrington E. J. W. (1981): Invertebrate structure and Function. ELBS. Dhami P.S. and Dhami J. K.
6. (2000): Chordate Zoology. S. Chand & Co. Dhami P.S. and Dhami J. K. (2000):

- Invertebrate Zoology. S. Chand & Co.
8. Ekambaranatha Iyer M. and Anantakrishnan T. N. (1990): A manual of Zoology. Vol. I. Invertebrata (Part 1 & 2). S. Vishwanathan Pvt. Ltd.
 9. Ekambaranatha Iyer M. and Anantakrishnan T. N. (1990): A manual of Zoology. Vol. II. Chordata S. Vishwanathan Pvt. Ltd.
 10. Jordan E. L. and Verma P.S. (1976): Chordate Zoology. S. Chand & Co. Jordan E. L. and Verma
 11. P.S. (1976): Invertebrate Zoology. S. Chand & Co.
 12. Kotpal R. L. (1993): Protozoa- Echinodermata (all volumes). Rastogi Publ.
 13. Pough H (2004): Vertebrate life, VIII Edition, Pearson International.
 13. Ruppert and Barnes, R.D. (2006): Invertebrate Zoology, VIII Edition. Holt Saunders International Edition.

First Semester B.Sc. Zoology Practical-1

Paper Title: Zoology-1P	Marks: Th-40+IA-10
Paper Code : SEPBSZOOP01	Total hours: 60
Teaching Hours: 4 Hours/Week	Credits : 02

ZOOLOGY PRACTICAL-I

1. Study of the following specimens making use of permanent slides / specimens:

Study of unicellular and cellular grade organized animals: *Amoeba*, *Euglena*, *Paramecium* and *Sycon*
Study of tissue grade organized animals: *Obelia*, *Physalia*, *Aurelia*, *Metridium*, Study of flat worms: *Planaria*, *Taenia solium*
Study of round worms: Male and female *Ascaris lumbricoides*
Study of segmented Animals: *Nereis*, *Pheretima*, *Hirudinaria*,
Study of animal forms with jointed appendages: *Palaemon*, *Cancer*, *Limulus*, *Apis*,
Study of soft bodied animals: *Chiton*, *Dentalium*, *Pila*, *Unio*, *Loligo*, *Sepia*,
Study of spiny skinned animals: *Pentaceros*, *Ophiura*, *Echinus*, *Cucumaria* and *Antedon*
Study of Protochordates: *Balanoglossus*, *Herdmania*, *Branchiostoma*
Study of Fishes: *Torpedo*, *Labeo*, *Exocoetus*, *Anguilla*
Study of Amphibians: *Ichthyophis*, *Salamandra*, *Bufo*, *Hyla*
Study of Reptiles: *Chelone*, *Chamaeleon*, *Draco*, *Vipera*, *Naja*
Study of Birds: *Duck*, *Cuckoo*, *Wood pecker*, *Kingfisher*, *Owl*, *Peacock*
Study of Mammals: *Duck billed platypus*, *Manis*, *Bat*, *Loris*
Mounting of setae, blood glands, nephridia in Earthworm
(Collect the dead worms from vermicompost pits of farmers and preserve)
Mounting of mouth parts of honeybee, cockroach, housefly, mosquitoes
Mounting of brain in fowl / rat (collect dead fowl / rat heads and preserve)
Study tour / field visit: Compulsory tour / visit to understand faunal diversity

References

1. Ruppert and Barnes, R.D. (2006): Invertebrate Zoology, VIII Edition. Holt Saunders International Edition.
2. Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002): *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science
3. Young, J. Z. (2004): *The Life of Vertebrates*. III Edition. Oxford university press.
4. Pough H (2006): *Vertebrate life*, VIII Edition, Pearson International.
5. Hall B.K. and Hallgrímsson B. (2008): Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.
6. P. S. Dhami and J. K Dhami (2000): Practical Zoology S. Chand and Co, New Delhi

Second Semester B.Sc. Zoology Theory

Paper Title: Zoology-2T	Marks: Th-80+IA-20
Paper Code : SEPBSZOOLT02	Total hours: 60
Teaching Hours: 4 Hours/Week	Credits : 03

UNIT-I:	15 Hours
Integument in different classes of chordates: (fishes, amphibian, reptilian, aves and Mammalia) Skeletal System (Girdles): Pectoral girdle and pelvic girdle in Frog, Varanus, Fowl and Rabbit Digestive System: Brief account of alimentary canal (digestive tract) of different vertebrates	
UNIT-II:	15 Hours
Respiratory System: Brief account of gills, lungs, trachea and air sacs in vertebrates Circulatory System: Comparative account of heart in different vertebrates Nervous System: Comparative account of brain in different vertebrates	
UNIT-III:	15 Hours
Early Embryonic Development: Gametogenesis (Spermatogenesis and oogenesis), Fertilization, Types of Eggs and Patterns of Cleavage, Types of Eggs and Patterns of Cleavage, Placenta types, functions and structure	
UNIT-IV:	15 Hours
Early Development: Frog development up to Gastrulation. Organizer phenomenon. Development of chick (Fertilization, structure of egg, cleavage, blastulation) chick embryo. Human Development – up to implantation	

References

1. Comparative anatomy of vertebrates By R. K. Saxena
2. Comparative Anatomy by Aurora M. Sebastiani and Dale W. Fishbeck
3. Developmental biology By Rastogi & Jayraj. Kedarnath Ramnath publishers, Meerut.
4. Introduction to Embryology B I Ballinsky Publisher: Thomson
5. Learning Patten's foundation of Embryology Bruce M Carlson Publisher: McGraw Hill Education Principles of Embryology Waddington C H Publisher: Macmillan, New York.
6. Developmental Biology Scott F Gilbert. Publisher: Sinauer Associates Inc., U.S
7. Developmental Biology –a modern Synthesis By K Vasudev Rao. Published by The Associated Pub, Ambala Cantt.
8. Embryology By Mohan Arora. Himalaya Publishing House Pvt. Ltd, New Delhi.
9. Embryology – Constructing the Organism Scott F Gilbert. Publisher: Sinauer Associates Inc., U.S.
10. Elements of Developmental Biology Dr P.C. Jain Vishal Publishing Co. New Delhi
Vertebrate Embryology N N Majumdar Publisher: McGraw-Hill Education

Second Semester B.Sc. Zoology Practicals

Paper Title: Zoology-2P	Marks: Th-40+IA-10
Paper Code : SEPBSZOLP-02	Total hours: 60
Teaching Hours: 4 Hours/Week	Credits : 02

1. Osteology: Disarticulated skeleton of frog and rabbit
2. Comparative study of girdles: Pectoral girdle and pelvic girdle in Frog, Varanus, Fowland Rabbit (Three practical)
3. Comparative account of heart in different vertebrates
4. Comparative account of brain in different vertebrates
5. Embryology: Study of developmental stages – Whole mounts and sections through permanent slides, specimens: cleavage stages, blastula, gastrula
6. Chick embryo mounting -24 hour.
7. Chick embryo mounting -36 hour.
8. Chick embryo mounting - 48hour
9. Revision
10. Test

References

1. Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*. IV Edition. McGraw-Hill Higher Education.
2. Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*. IX Edition. The McGraw-Hill Companies.
3. Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.
4. Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House.
5. Gilbert, S. F. (2006). *Developmental Biology*, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA.
6. Balinsky, B.I. (2008). *An introduction to Embryology*, International Thomson Computer Press.
7. Carlson, Bruce M (1996). *Patten's Foundations of Embryology*, McGraw Hill, Inc.