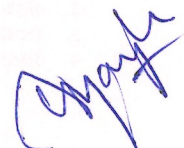


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III & IV

RAICHUR UNIVERSITY, RAICHUR

BACHELOR OF SCIENCE IN ZOOLOGY
PROPOSED SYLLABUS FOR III AND IV SEMESTERS

2024-2025 Onwards



ಆದಿಕವಿ ಶ್ರೀ ಮಹರ್ಷಿ ವಾಲ್ಮೀಕಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ರಾಯಚೂರು
ADIKAVI SRI MAHARSHI VALMIKI UNIVERSITY, RAICHUR
 Krishna Tunga Campus, Mantralay Road (N.H. 167), Yergera -584133, Raichur, Karnataka
ಶೈಕ್ಷಣಿಕ ವಿಭಾಗ Website: <https://raichuruniversity.ac.in>

ಸಂ.ಆಶ್ರೀಮವಾರಾ/ಶೈವಿ/ಯುಜೆ/BOS/2025-26/

ದಿನಾಂಕ:

ಕಚೇರಿ ಆದೇಶ

ವಿಷಯ: 2025-26ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನ ಸ್ನಾತಕ (UG) ಕೋರ್ಸುಗಳ SEP ಪಠ್ಯಕ್ರಮ ತಯಾರಿಸಲು ನಿಯಮಿತ ಅಧ್ಯಯನ ಮಂಡಳಿ (BOS) ರಚಿಸುವ ಕುರಿತು
 ಉಲ್ಲೇಖ: ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ದಿನಾಂಕ:
 ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ಮೇರೆಗೆ, 2025-26ನೇ ಸಾಲಿನ ಪ್ರಾಣಿಶಾಸ್ತ್ರ (Zoology) ಸ್ನಾತಕ (UG) ವಿಭಾಗದ ಈ ಕೆಳಕಂಡ ಆಧ್ಯಕ್ಷರು ಹಾಗೂ ಸದಸ್ಯರುಗಳನ್ನೊಳಗೊಂಡ ಅಧ್ಯಯನ ಮಂಡಳಿಯ(BOS) ನೇಮಕಾತಿಯನ್ನು ಈ ಕೆಳಕಂಡಂತೆ ನೇಮಿಸಲಾಗಿದೆ.

ಕ್ರ.ಸಂ	ಸರು ಮತ್ತು ವಿಳಾಸ	ಪದನಾಮ
1	ಡಾ. ನಾಗಭೂಷಣ ಪ್ರಾಧ್ಯಾಪಕರು, ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಭಾಗ ವಿಜಯನಗರ ಶ್ರೀ ಕೃಷ್ಣದೇವರಾಯ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬಳ್ಳಾರಿ ಮೋ.ನಂ: 9880121090	ಅಧ್ಯಕ್ಷರು
2	ಡಾ. ಮಲಕನಂದ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಭಾಗ ಲಕ್ಷ್ಮೀ ವೆಂಕಟೇಶ ದೇಸಾಯಿ ಮಹಾವಿದ್ಯಾಲಯ, ರಾಯಚೂರು ಮೋ.ನಂ:9480771151	ಸದಸ್ಯರು
3	ಶ್ರೀ. ಎಮ್. ಡಿ ವಾರಿಸ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಭಾಗ ಎಸ್.ಪಿ ಮತ್ತು ಜಿಎಮ್‌ಬಿ ಪದವಿ ಮಹಾವಿದ್ಯಾಲಯ, ಸುರಪುರ ಮೋ.ನಂ:9886213818	ಸದಸ್ಯರು
4	ಡಾ. ಸೋಮನಾಥ ಡಿ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಭಾಗ ಸರಕಾರಿ ಪ್ರಥಮ ದರ್ಜೆ ಕಾಲೇಜು, ರಾಯಚೂರು ಮೋ.ನಂ:9448405795	ಸದಸ್ಯರು
5	ಡಾ. ವಿಜಯಲಕ್ಷ್ಮೀ ಸಿ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಭಾಗ ಲಕ್ಷ್ಮೀ ವೆಂಕಟೇಶ ದೇಸಾಯಿ ಮಹಾವಿದ್ಯಾಲಯ, ರಾಯಚೂರು ಮೋ.ನಂ:9980094573	ಸದಸ್ಯರು

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಉನ್ನತ ಶಿಕ್ಷಣ ಪರಿಷತ್ ರಡಿಸಿದ ಮಾರ್ಗಸೂಚಿ ನಡಾವಳಿಗಳ ಅನ್ವಯ ಆದಿಕವಿ ಶ್ರೀ ಮಹರ್ಷಿವಾಲ್ಮೀಕಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯಕ್ಕೆ 2025-26ನೇ ಸಾಲಿಗೆ ಸ್ನಾತಕ (UG) ಪದವಿಗಳಿಗೆ SEP ಹೊಸ ಪಠ್ಯಕ್ರಮವನ್ನು 3 ರಿಂದ 6ನೇ ಸೆಮಿಸ್ಟರ್‌ರವರೆಗೆ ತಯಾರಿಸಲು ಅಧ್ಯಯನ ಮಂಡಳಿಯ ಸಭೆಯನ್ನು ದಿನಾಂಕ: 12.05.2025ರ ಬೆಳಿಗ್ಗೆ 11. ಗೆ ಆದಿಕವಿ ಶ್ರೀ ಮಹರ್ಷಿವಾಲ್ಮೀಕಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯದ ಆಡಳಿತ ಕಚೇರಿಯಲ್ಲಿ ಅಯೋಜಿಸಲಾಗಿದ್ದು, ಈ ಅಧ್ಯಯನ ಮಂಡಳಿ ಸಭೆಗೆ ಭಾಗವಹಿಸಿ ತಮ್ಮ ವಿಷಯದ ಪಠ್ಯಕ್ರಮವನ್ನು ತಯಾರಿಸಲು ಈ ಮೂಲಕ ತಿಳಿಸಲಾಗಿದೆ.

ಡಾ.ಶಂ . ವಿ
 ಕೆ.ಎ.ಎಸ್ (ಆಯ್ಕೆ ಶ್ರೇಣಿ)
 ಕುಲಸಚಿವರು

ಆದಿಕವಿ ಶ್ರೀ ಮಹರ್ಷಿವಾಲ್ಮೀಕಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ರಾಯಚೂರು.

ಇವರಿಗೆ,

ಅಧ್ಯಯನ ಮಂಡಳಿಯ ಅಧ್ಯಕ್ಷರು, ಸದಸ್ಯರು ಹಾಗೂ ಸಂಬಂಧಪಟ್ಟ ಮಹಾವಿದ್ಯಾಲಯಗಳ ಪ್ರಾಂಶುಪಾಲರುಗಳ ಮಾಹಿತಿಗಾಗಿ.

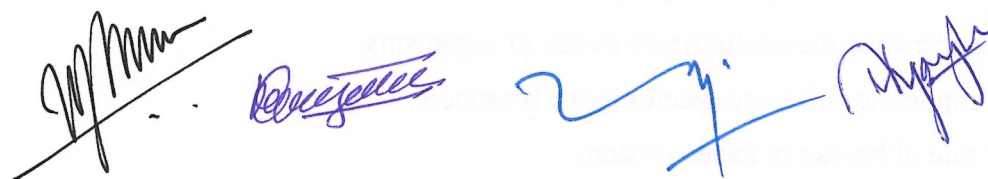
ಪ್ರತಿಗಳು:

1. ಕುಲಸಚಿವರು (ಮೌಲ್ಯಮಾಪನ), ಆದಿಕವಿ ಶ್ರೀ ಮಹರ್ಷಿವಾಲ್ಮೀಕಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ರಾಯಚೂರು.
2. ಹಣಕಾಸು ಅಧಿಕಾರಿಗಳು, ಆದಿಕವಿ ಶ್ರೀ ಮಹರ್ಷಿವಾಲ್ಮೀಕಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ರಾಯಚೂರು
3. ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು/ಕುಲಸಚಿವರು ಆಪ್ತ ಸಹಾಯಕರು, ಆದಿಕವಿ ಶ್ರೀ ಮಹರ್ಷಿವಾಲ್ಮೀಕಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ರಾಯಚೂರು.
4. ಕಚೇರಿ ಪ್ರತಿ.

Internal Assessment for Practical	
Assessment type	Marks
Test/Presentation/Project/Seminars	5
Laboratory Performance/Participation	5
Total	10

Semester End Practical Question Paper Pattern for UG Semester-III (Major)

Q.No.	Duration: 04 Hours	Max Marks: 40
1	Major Experiment	12
2	Minor experiment	08
3	Spotting/Identification	10
4	Record Book / Journal Submission	05
5	Viva	05



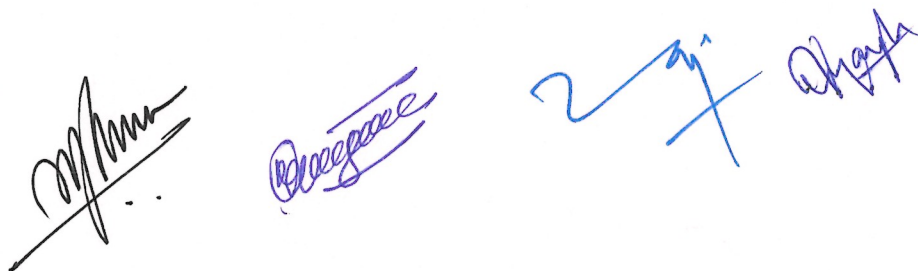
Zoology
B.Sc., Semester – IV (SEP) w.e.f 2025-26
Theory Syllabus

Course Title: Cell Biology, Genetics, Evolution and Ethology	Course Code:
Total Contact Hours: 64	No. of Credits: T=4
L:P	4:0
Internal Assessment Marks: 20	Duration of SEE: 3 Hours
Semester End Exam Marks: 80	

Course Outcomes (COs):

At the end of the course, students will be able to:

1. Understand the structure and functions of a basic unit of life.
2. Gain knowledge about the techniques and experiments in understanding molecular mechanisms.
3. Solve the genetic problems and establish phylogeny.
4. Establish the evolutionary relationship among different organisms.
5. Appreciate and scientifically assess the habit and habitat of different species.
6. Develop the skills to identify various animal behavior patterns.
7. Distinguish uniqueness of a particular animal and appreciate its biological importance in the perspective of conservation point of view.
8. Will be able to understand the evolutionary trends of organisms.
9. Appreciate the importance of every species in the biosphere.
10. Understand the role of human in the ecosystem.



Units	Description	Hours
1	Cellular organization, Structure and function of Cell organelles, Cell theory. Transport across cell membranes, cell junctions. Central dogma of molecular cell biology. Evidences for DNA as a genetic material Structure of dsDNA. Replication models, Transcription and post-transcriptional modification. Translation and post-translational editing of polypeptide. DNA sequencing.	16
2	Elements of heredity, Mendelian principles, Monohybrid and dihybrid cross experiments, Extensions to Mendelian principles; Interaction of genes; complementary genes, supplementary genes and epistasis. Sex linkage; Inheritance of X-linked characters, Sex-limited characters, sex-influenced characters. Multiple allelism, Inheritance of blood groups and Rh incompatibility.	16
3	Biopoiesis and theories of origin of life. Organic Evolution: Lamarckism and neo-Lamarckism, Darwinism, Darwin-Wallace theory of natural selection, modern synthetic theory of evolution. Adaptive radiations: Patterns of evolution (Divergence, Convergence, Parallel, Co-evolution). Fossilization and dating of fossils. Origin and evolution of human. Geological Time Scale. Evidences of evolution: Relationship among organisms, Morphological, Anatomical, Embryological, Paleontological, Bio-geographical, Biochemical, Cytological evidences and current evidences Forces of evolution: mutation, selection, genetic drift. Species Concept: Biological species concept (Advantages and Limitations); Modes of speciation (Allopatric, Sympatric), Mass extinction. Population Genetics: Microevolution and Macroevolution: allele frequencies, genotype frequencies, Hardy-Weinberg equilibrium and conditions for its maintenance.	16
4	Definition and types of animal behaviour, innate behaviour, taxes, reflexes, instincts and motivation. Learned behaviour- habituation, imprinting and conditioned reflexes. Social organization in termites and honey bees.	16

	<p>Migration in fishes and birds.</p> <p>Courtship behavior in amphibians and birds; Nesting behavior in weaver and bayabird.</p> <p>Coloration and mimicry: Aggressive, protective and warning; Batesian and Mullerian mimicry.</p> <p>Ecological aspects of behavior: Habitat selection, food selection, optimal foraging theory, anti-predator defenses. Territoriality, Communication, conflict behavior, courtship behavior and maternal instinct.</p>	
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Suggested references.

1. Alberts, Bray Dennis, Lewis et al., (1994): Molecular Biology of the cell, Garland Publishing Inc. New York.
2. Young: The Life of Vertebrates (3rd ed 2006, ELBS/Oxford).
3. Parker T. S. and Haswell W. A. (1978). TextBook of Zoology, Vol. II, ELBS.
4. R.L Kotpal, Rastogi Publication.

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5. Nagabhushan C M (2019). Advanced Practical Zoology, Edurite publications, Delhi.
6. Brown TA (1998): Genetics a molecular approach, 3rd ed, Chapman and Hall Publishers, London.
7. Gardner E J et al., (1991): Principles of Genetics, 8th ed. John Wiley and Sons Inc.
8. Gerald Karp (2013): Cell and molecular biology, Concepts and experiments, 7th Ed.
9. V K Agarwal (2010): Animal Behaviour, S. Chand Publications.
10. Veer Bala Rastogi (2020): Organic evolution (evolutionary biology), 15th Ed., MT Science Press.

Internal Assessment for Theory

Assessment type	Marks
First Test / Presentation / Project / Seminars / Assignment	10
Second Test / Presentation / Project / Seminars / Assignment	10
Total	20

Semester End Theory Question Paper Pattern for UG Semester-IV (Major)

Paper Code:	Paper Title: Cell Biology, Genetics, Evolution and Ethology
Duration of Exam: 3 Hours	Max Marks: 80

Section-A/ ವಿಭಾಗ-ಎ. A. Answer any TEN of the following questions. Each question carried two marks. ಈ ಕೆಳಗಿನ ಯಾವುದಾದರೂ ಹತ್ತು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಎರಡು ಅಂಕಗಳು	10 x 2 = 20 Marks
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.	
Section-B / ವಿಭಾಗ-ಬಿ. B. Answer any SIX of the following. Each question carries five marks. ಈ ಕೆಳಗಿನ ಯಾವುದಾದರೂ ಆರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಐದು ಅಂಕಗಳು	6 x 5 = 30
1. 2. 3. 4. 5. 6. 7. 8.	
Section-C / ವಿಭಾಗ-ಸಿ. C. Answer any THREE of the following. Each question carries ten marks. ಈ ಕೆಳಗಿನ ಯಾವುದಾದರೂ ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಹತ್ತು ಅಂಕಗಳು	3 x 10 = 30
1. 2. 3. 4. 5.	

Zoology
B.Sc., Semester – IV (SEP)
Practical Syllabus

Course Title: Cell Biology, Genetics, Evolution and Ethology.	Course Code:
Total Contact Hours: 64	No. of Credits: P = 2
Contact hours per week: 4	L:P (0:4)
Internal Assessment Marks: 10	Duration of SEE: 3 Hrs
Semester End Exam Marks: 40	

Course Outcomes (COs):

At the end of the course, students will be able to:

1. Understand and appreciate the composition of cell.
2. Learn the structure and function of cell organelles.
3. Develop the skills to draw the chromosomes and cell structure.
4. Gain the skills micro-preparation techniques.
5. Enhance basic laboratory skills, observation and drawing.
6. Demonstrate the genetic solutions for the problems.
7. Explain the osteological characters.
8. Understand evolutionary relationship among vertebrates.
9. Take up research in biological sciences.
10. Observe the ethological behavior among species.

List of Experiments

1. Micro-preparation of onion-root tips for mitosis and testes of grass hopper/flower buds for meiosis.
2. Study of permanent slides of mitosis and meiosis stages.
3. Study of giant chromosomes using *Chironomous* larva/permanent slides.
4. Genetics problems (monohybrid, dihybrid, blood groups, X-linkage, epistasis)
5. Genetic pedigree analysis chart preparation.
6. Study of genetic characteristics using animal samples.
7. Determination of human blood groups.
8. Study of Darwin's finches.
9. Study of HMS Beagle track history.
10. Types of fossils.
11. Study of homologous and analogous organs.
12. Mimicry.
13. Classical conditioning experiment.
14. Trial and error theory of learning.
15. Colonies and castes of Honey bee and Termites.
16. Social organization in honey bees.

***Note:** i) Students should draw the diagrams rather than just pasting the pictures in the records.

ii) Practicals are subject to the availability of resources and may be modified accordingly on consent with BoS members. At least 12 practical experiments covering the course title is advisable.

Internal Assessment for Practical	
Assessment type	Marks
Test/Presentation/Project/ Seminars	5
Laboratory Performance/Participation	5
Total	10

Semester End Practical Question Paper Pattern for UG Semester-IV (Major)

Q.No.	Duration: 04 Hours	Max Marks: 40
1	Major Experiment	12
2	Minor experiment	08
3	Spotting/Identification	10
4	Record Book / Journal Submission	05
5	Viva	05

Zoology
B.Sc., Semester – IV (SEP)
DISSERTATION (PROJECT)

Course Title: Dissertation (Project work)	Course Code:
Total Contact Hours: 2	No. of Credits: P = 2
Contact hours per week: 2	L:P (1:2)
Internal Assessment Marks: 10	Duration of SEE: 04 Hrs.
Semester End Exam Marks: 40	

Course Outcomes (CO's):

At the end of the course, students will be able to:

1. Understand the research and develop scientific temper.
2. Learn to state research problems / hypothesis.
3. Develop the detailed in-sights into observation, analysis, interpretation of data.
4. Inculcate the knowledge of problem solving using scientific temperament.
5. Develop scientific attitude.
6. Carryout independent research at local, national and international standard.

Aim: (a) Application of knowledge to real life situation (b) to introduce research methodology.

The topic of dissertation may be laboratory-oriented / field-oriented or combined or computational project work across the branches of zoology is to be undertaken by every student to gain research insights in the relevant areas of interest and with an emphasis on originality of approach. The course involves framing a problem statement (define hypothesis / alternate hypothesis), design a research program and investigate to find out the possible solution for it. It may be started early and shall be completed by the end of the 4th semester. The Dissertation to be submitted should include (a) background information in the form of introduction (b) objectives of the study (c) materials and methods employed for the study (d) results and discussion thereon (e) summary and conclusions and (f) bibliography. Apart from these sections, importance of the results, originality and general presentation also may be taken into consideration for evaluation. At the end of the course, each student should submit the findings of his/her research in a printed and bound form of book.



Internal Assessmentfor Dissertation	
Assessment type	Marks
Test/Presentation/Project/ Seminars	5
Laboratory Performance/Participation	5
Total	10

Semester End Examination for UG Semester-IV (Major)		
Q. No.	Duration: 04 Hours	Max. Marks: 40
1	Submission of dissertation and oral (includesMS Office Power Point) presentation.	30
2	Viva-Voce	10
Total		40

