

DEPARTMENT OF ZOOLOGY

COURSE CURRICULUM AND MARKING SCHEME

Syllabus for Ph. D. Course Work

SESSION: 2022-23



**GOVT. V.Y.T. PG AUTONOMOUS COLLEGE,
DURG, 491001 (C.G.)**

(Former Name – Govt. Arts & Science College, Durg)

NAAC Grade- 'A⁺', CPE Phase-III, DBT-Star College

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Department of Zoology
Govt. V.Y.T. PG Autonomous College, Durg (C.G.)
Session 2022-23

Learning Outcome Based curriculum for Ph.D. Course Work Zoology

Program Specific Outcome (PSO): Ph.D. Zoology

The programme enables the students:

- To give comprehensive understanding about research methodology
- To acquire knowledge to use modern sophisticated equipments and tools and techniques used worldwide in the field of zoology
- To develop insight and improve their analytical and communication skills of quantitative data
- To understand the applications of computer in the field of research

Name and Signatures

<p>Chairperson /H.O.D University Nominee Subject Expert Subject Expert Representative from Industry/entrepreneur Student representative Other Prof. from Science faculty </p>	<p>Departmental members</p> <p>1. 2. 3. 4. 5. 6. 7. 8.</p>
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Ph.D. Course Work Syllabus of Zoology

Syllabus for Ph.D. Course Work in Zoology for the year 2022-23			
One Semester			
There are Two papers; each with 100 maximum marks. The candidate must obtain 50% or more marks in each paper independently to qualify in the course work. The answer papers will be assessed independently by two examiners.			
Paper-I: Research Methodology, Advanced Tools & Techniques, Quantitative Data Analyses and Computer Fundamentals			
		Lectures	Marks
A	Research Methodology:	20	25
	Introduction and Scope Research problem: Identification, Selection, Formulation of research objectives	2L	
	Research design: Components, Importance, Types	3L	
	Types of data, Data collection - Methods and Tools	2L	
	Research ethics, Institutional ethics committee	2L	
	Plagiarism - Pitfall	2L	
	Patents and IPR: Patent laws, process of patenting a research finding, Copy right, Cyber laws	3L	
	Bibliometrics: Measurement of academic output- Citation Index: Science Citation Index (SCI), h-index, i-10-index. Journal Impact Factor (JIF); Style of Bibliography, Project, research paper and review writing	6L	
B	Advanced Tools & Techniques	20	25
	Microscopic techniques : Electron microscopy and Confocal microscopy	5L	
	Principle, protocol and application of Chromatography – GLC & HPLC, Electrophoresis and its application	5L	
	PCR, Real time PCR, DNA microarray, DNA sequencing	5L	
	Protein microarray and Protein sequencing	5L	
C	Quantitative Data Analyses	20	25
	Hypothesis testing	2L	
	Normal and Binomial distributions and their property	3L	
	Tests of significance: Student t-test, F-test, Chi-square test	5L	
	Correlation and Regression	4L	
	ANOVA – One-way and Two-way, Multiple-range test	6L	
D	Computer Fundamentals	20	25
	Introduction to MS-Office software: MS-Word (Track change)	2L	
	MS-Excel	2L	
	MS-Power Point	2L	
	MS-Access	2L	

2. Research and Publication Ethics (RPE)

- **RPE 01: PHILOSOPHY AND ETHICS (3 hrs.)**

1. Introduction to philosophy: definition, nature and scope, concept, branches
2. Ethics: definition, moral philosophy, nature of moral judgements and reactions

- **RPE 02: SCIENTIFIC CONDUCT (5 hrs.)**

1. Ethics with respect to science and research
2. Intellectual honesty and research integrity
3. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)
4. Redundant publications: duplicate and overlapping publications, salami slicing
5. Selective reporting and misrepresentation of data

- **RPE 03: PUBLICATION ETHICS (7 hrs.)**

1. Publication ethics: definition, introduction and importance
2. Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.
3. Conflicts of interest
4. Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types
5. Violation of publication ethics, authorship and contributorship
6. Identification of publication misconduct, complaints and appeals
7. Predatory publishers and journals

PRACTICE

- **RPE 04: OPEN ACCESS PUBLISHING (4 hrs.)**

1. Open access publications and initiatives
2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
3. Software tool to identify predatory publications developed by SPPU
4. Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

- **RPE 05: PUBLICATION MISCONDUCT (4hrs.)**

- A. Group Discussions (2 hrs.)**

1. Subject specific ethical issues, FFP, authorship
2. Conflicts of interest
3. Complaints and appeals: examples and fraud from India and abroad

- B. Software tools (2 hrs.)**

- Use of plagiarism software like Turnitin, Urkund and other open source software tools

- **RPE 06: DATABASES AND RESEARCH METRICS (7 hrs.)**

- A. Databases (4 hrs.)**

1. Indexing databases
2. Citation databases: Web of Science, Scopus, etc.

- B. Research Metrics (3 hrs.)**

1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score
2. Metrics: h-index, g index, i10 index, altmetrics

Paper – II

Review of Literature in Concerned Subject, Seminar/ Project Report – 100 Marks

SUGGESTED READING MATERIALS - (ALL LATEST EDITION).

- **Biostatistics:** P. Ramakrishnan, Saras Publication
- **Research and methodology- Methods and technique:** C. R. Kothari and Gaurav Garg, New Age International Publisher
- **Tools and Techniques:** Wilson and Walker
- **Fundamentals of Computers:** Reema Thareja, Oxford Publication

Course Outcomes

After successful completion of these courses the student would be able:

- To understand the research methodology
- To use modern sophisticated equipments and tools and techniques used worldwide in the field of zoology
- To acquire an in-depth knowledge on the field of Biostatistics, data analysis and communication
- To understand the basic of computer and its applications in the field of research

The syllabus for Ph.D. Course Work is hereby approved for the Session 2022 -23

Name and Signatures

<p>Chairperson /H.O.D <i>[Signature]</i> 25/7/22</p> <p>University Nominee</p> <p>Subject Expert <i>R.P.T.</i> <i>[Signature]</i></p> <p>Subject Expert <i>[Signature]</i> 25/7/22</p> <p>Representative from Industry/entrepreneur <i>[Signature]</i></p> <p>Student representative <i>[Signature]</i></p> <p>Other Prof. from Science faculty <i>[Signature]</i></p>	<p>Departmental members</p> <p>1. <i>[Signature]</i> 25/7</p> <p>2. <i>[Signature]</i></p> <p>3. <i>[Signature]</i></p> <p>4. <i>[Signature]</i></p> <p>5.</p> <p>6.</p> <p>7.</p> <p>8.</p>
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