A.C. : 10.05.2025
Appendix-101

UNIVERSITY OF DELHI

CNC-II/093/1/Misc./2025/ 524
Dated: 17.03.2025

NOTIFICATION

Sub: Amendment to Ordinance V

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

The syllabus of DSE-17 paper titled "Research Methodology" to be offered in Semester-VI by Department of Zoology under Faculty of Science, based on Undergraduate Curriculum Framework-2022, is notified herewith for the information of all concerned as per ***Annexure-1.***

REGISTRAR

DISCIPLINE SPECIFIC ELECTIVE COURSE-17
Research Methodology for Zoology
Zoo-DSE-17

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Research Methodology for Zoology Zoo-DSE-17	04	03	Nil	01	Appeared in Sem V	10+2 with Biology

Learning Objectives

The learning objectives of this course are as follows:

- to develop a comprehensive understanding of research fundamentals, including its meaning, objectives, and motivation.
- to distinguish between various research methods and methodologies, and recognize the significance of different research types.
- to learn the principles of designing robust research studies, including problem identification, experimental planning, and sample design.
- to acquire skills in data collection, processing, analysis, and the effective presentation of research findings using digital tools.
- to enhance the ability to write literature reviews, bibliographies, and references accurately using appropriate software.
- to develop critical thinking and communication skills through oral and poster seminar presentations.
- to gain awareness of ethical aspects in research, including intellectual property rights, plagiarism, patent laws, and guidelines for laboratory animal use.
- to understand the processes involved in obtaining research grants, fellowships, and commercialization of research outputs.

Learning Outcomes

By studying this course, students will be able to

- articulate the purpose and significance of research and differentiate between its various types and methodologies.
- design and implement a well-structured research plan, incorporating sound problem identification, experimentation, and sample design techniques.
- employ appropriate methods for data collection, processing, and analysis, and present findings using clear and effective visuals.

- demonstrate proficiency in writing a literature review, preparing bibliographies, and using referencing tools.
- effectively communicate research findings through oral and poster presentations.
- exhibit ethical conduct in research by adhering to guidelines for intellectual property rights, plagiarism, and laboratory animal usage.
- recognize the importance of research commercialization and navigate processes for securing research grants and fellowships.
- develop a strong foundation in research methodology, enabling lifelong learning and contributions to academic and industrial research.

Syllabus OF DSE-17

Theory **45 hrs**

Unit1: Foundations of Research **12 hrs**

Meaning, Objectives, Motivation: Research Methods *vs* Methodology, Types of Research: Analytical *vs* Descriptive, Quantitative *vs* Qualitative, Basic *vs* Applied and Industrial research.

Unit 2: Research Design **12 hrs**

Need for research design: Features of good study design, Important concepts related to good design-Observation and Facts, Prediction and Explanation, Development of Models. Developing a research plan: Problem identification, Experimentation, Determining experimental and sample designs.

Unit 3: Report Writing **09 hrs**

Literature review writing; Bibliography/References using software; Data Presentation using digital tools. Seminar presentation (oral/poster).

Unit 4: Ethical Issues **12 hrs**

Intellectual Property Rights, Copyright, Royalty, Patent laws, Commercialization, Plagiarism, Citations, Acknowledgement, Research Grants/ Fellowships, Introduction to CCSEA Guidelines for laboratory animals.

Practical **30 hrs**

(Laboratory periods: 15 classes of 2 hours each)

1. Usage of search engine tools for retrieving research/review papers.
2. To generate a hypothesis and design an experiment.
3. Collection of data, interpretation and writing an article (research/review papers).
4. Graphical representation and interpretation of the data provided.
5. Title and abstract writing for a given research paper.
6. Preparation of bibliography/references in different formats as per journal requirements.
7. Usage of software tools for checking plagiarism.
8. Drug designing tools and their usage.

Suggestive readings

1. Anthony, M, Graziano, A.M. and Raulin, M.L. (2009) Research Methods: A Process of Inquiry, Allyn and Bacon.
2. Walliman, N. (2011) Research Methods- The Basics. Taylor and Francis, London, New York, USA.

Suggested Readings

1. Wadhera, B.L. (2002) Law Relating to Patents, Trade Marks, Copyright Designs and Geographical Indications, Universal Law publishing
2. Kothari, C.R. (2009) Research Methodology, New Age International.
3. Coley, S.M. and Scheinberg, C.A. (1990) "Proposal writing". Stage Publications.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.