RKDF University

Ph. D course work

Teaching Scheme

S. No.	Subject code	Subject	Credits*	Hours/week
1	PhD101	Research Methodology	04	4
2	PhD102	Research and Publication Ethics (CPE-RPE)	02	2
3	PhD103	Elective	04	4
4	PhD104	Elective (Practical/Workshop)	02	8
5	PhD105	Project	00	12
Total			12	30

*01 credit=15 hours

Examination Scheme for Ph. D course work

S. No.	Subject code	Subject	Maximum marks	Minimum marks
1	PhD101	Research Methodology	100	50
	PhD102	Research and Publication Ethics (CPE-RPE)	50	25
2	PhD103	Elective	100	50
3	PhD104	Elective (Practical/Workshop)	50	25
4	PhD105	Project	-	-

- Cumulative pass percentage: 65%

Course	Doctor of Philosophy	Semester	First
Branch	All	Contact hours	75 Hrs
Subject Code	PhD101	Subject Name	Research Methodology

Syllabus

Introduction to Research Methodology - Meaning and characteristics of scientific research, validity in research, objectives of research, motivations in research, types of research, research approaches, significance of research, research methods and methodology, research process, research and scientific methods, criteria of good research, review of literature- purpose of the review, sources of the review, preparation of index card for reviewing and abstracting.

Problem Identification and Hypothesis Formation - Problem- meaning and characteristics of a problem, types of problem, generality and specificity of problem; hypothesis- meaning and characteristics of a good hypothesis, types of hypotheses, formulating a hypothesis, ways of stating a hypothesis; testing experimental hypothesis- standard error, test of significance, level of significance, degrees of freedom, errors in hypothesis.

Sampling and Research Design - Meaning and types of sampling; probability and non probability sampling. methods of drawing samples, requisites of a good sampling method, sample size, sampling error; meaning and purpose of research design, types of research design, criteria of a good research design, basic principles of experimental design.

Measurement and Scaling Techniques - Measurement in research, measurement scales sources of errors in measurement, tests of second measurement, techniques of developing measurement tools, meaning of scaling, scale classification bases, important scaling techniques, and scale construction techniques.

Data Collection, Processing and Analysis - Methods of data collection – primary data, secondary data; primary data collection – observation method, interview method, questionnaires, schedules, guideline for constructing questionnaires/schedules, secondary data collection of, selection of appropriate method of data collection; coding, editing and tabulation of data, charts and diagrams used in data analysis, bar and pie diagrams and their significance; measures of central tendency, measures of dispersion; correlation and regression analysis - meaning and uses, methods of calculation of coefficients and their analysis and implication. sampling distribution, sampling schemes and sample sizes, hypothesis testing, test of hypothesis for the population mean, population variance and ratio of two population

variances; applications of z-test, t-test, f-test and chi-square test, association of attributes and techniques of testing, ANOVA.

Optimization and Factorial Design - Definition, need, advantages, meaning of general terms involved in optimization process. Classification of optimization methods. Basic understanding with at least one example of following optimization techniques:-Simplex method, langarengian method, EVOP, Grid search method. 2k and 3k factorial designs.

Regression Analysis - Simple and multiple linear regression and hypothesis testing; response surface methodology-the method of steepness ascent: response surface designs for first-order and second-order models. Evolutionary operation (EVOP)

Ethics - Environmental impacts, ethics issues, ethical committees, commercialization, copyright, royalty, IPR and patent law. Reproduction of published material-plagiarism, citation and acknowledgement.

Report Writing - meaning and significance of report writing, types of report, steps in writing report, layout of the research report, precaution in writing research report, developing thesis report, formatting, inside citations, references and bibliography, knowledge of computer-MS office, MS-Word, excel and power point, statistical software and their application, application of statistical tests/techniques through the use of statistical software like SPSS, SYSTAT for documentation, report generation and importance of effective communication.

Books Recommended:

1. Research Methodology: Methods and Techniques by C. R. Kothari, New Age International Publishers, ISBN:81-224-1522-9
2. Statistical Methods for Research Workers by Fisher R. A., Cosmo Publications, New Delhi ISBN:81-307-0128-6
3. Design and Analysis of Experiments by Montogomery D.C. (2001), John Wiley, ISBN: 0471260088.
4. Dean AM, Vass D (1999). Design and analysis of experiments. Springer.
5. Sinha P.K., Computer Fundamentals, BPB Publishing.
6. Power Analysis for experimental Research: A practical Guide for the Biological, Medical and Social Sciences by R. Barker Baushell, Yu-Fang Li Cambridge University Press
7. Design and analysis of experiments by D.C. Montgomery, 2nd edition John Wiley and sons, NewYork (1984).

Course	Doctor of Philosophy	Semester	First
Branch	All	Contact hours	30 Hrs
Subject Code	PhD102	Subject Name	Research and Publication Ethics (CPE-RPE)

Syllabus

THEORY

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: SCIENTIFICCONDUCT (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 *I* 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 (7hrs.)

A. Databases (4 hrs.)

1. Indexing databases

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

B. Research Metrics (3 hrs.)

l. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score

2. Metrics: h-index, g index, i10 index, altmetrics

References

1. Bird, A. (2006). *Philosophy of Science.* Routledge.
2. Macintyre, Alasdair (1967) *A Short History of Ethics.* London.
3. P. Chaddah, (2018) Ethics in Competitive Research: Do not get scooped; do not get plagiarized, ISBN:978-9387480865
4. National Academy of Sciences, National Academy of Engineering and Institute of Medicine. (2009). *On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition.* National Academies Press.
5. Resnik, D. B. (2011). What is ethics in research & why is it important. *National Institute of Environmental Health Sciences*, 1-1 O. Retrieved from https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm
6. Beall, J. (2012). Predatory publishers are corrupting open access. Nature, 489(7415), 179-179. https://doi.org/10.1038/489179a
7. Indian National Science Academy (INSA), Ethics in Science Education, Research and Govemance (2019), ISBN:978-8 l-939482-1- 7. http://www.insaindia.res.in/pdf/Ethics Book.pdf