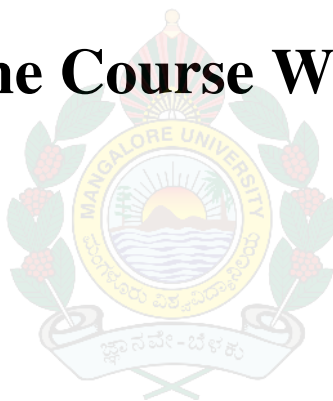


MANGALORE



UNIVERSITY

**Scheme of Examination and Syllabus for
PhD Programme Course Work in Statistics**



**DEPARTMENT OF POST-GRADUATE STUDIES
AND RESEARCH IN STATISTICS
MANGALAGANGOTRI-574 199
2022**

Course Work PhD in Statistics Syllabus

Preamble:

The present syllabus of Ph. D. course work was prepared and implemented during 2016. There was a need to revise the Syllabus to accommodate new research areas. A draft syllabus was placed before the PG board of studies. PG board of Studies in Statistics thoroughly discussed and modified the draft syllabus. The syllabus was prepared as per the regulations of Ph. D. Programme adapted by Mangalore University. There are three papers in the course work for Ph.D

Paper1:ResearchMethodology

Paper 2: Research and Publications Ethics

Paper3 :Reviewofliterature

Papers	Particulars	Hoursof Instruction Perweek	Duration of the exam(Hrs)	Marks			
				IA	Theory	Total	Credits
Paper-1	ResearchMethodology	4	3	30	70	100	04
Paper	Research and Publications Ethics	2	3	30	70	100	02
Paper-III	ReviewofLiterature Viva	08	-	-	-	150	08
		-	-	-	-	50	
Total						400	14

Program Specific Objectives (PSOs):

PSO 1: Researcher should be able to understand a general definition of research.

PSO 2: Researchers should be able to identify the overall process of designing a research study from its commencement to its final report.

PSO 3: Researchers should be familiar with Ethics in Research, Plagiarism, skills related to writing research paper and thesis, Sources of published literature.

PSO 4: Researchers should be familiar with conducting a literature review for a scholarly educational study with the steps in the overall process.

Paper 1:RESEARCH METHODOLOGY		
Hours/Week: 4 Credits : 4		I.A. Marks: 30 Exam. Marks: 70
Course Objectives (COs) CO1. Understand some basic concepts and properties of research and its methodologies CO2. Identify appropriate research topics through Literature Review CO3. Understanding and avoiding Plagiarisms CO4. Write a research report and thesis CO5. Expertise with different techniques involved in the simulation study and its implementation in R - software CO6. Strengthening the concept of probability theory and Stochastic process to carry out theoretical research.		
	UNIT - I	12 Hrs
Meaning and objectives of research, defining a research problem, literature survey, Sources of published literature – journals, monographs, edited volumes, E-sources, planning a research project. Ethics in Research, Plagiarism, writing research paper and thesis.		
	UNIT - II	12 Hrs
Simulation – Reasons for simulations, dangers of simulations, role of models in simulation, development of good simulation models. Variance reduction techniques, Jack-knifing and Bootstrap methods, MCMC methods. R language and Use of packages in R.		
	UNIT - III	12 Hrs
Probability – Modes of convergence, law of large numbers, Central limit theorems. Stochastic Processes- Classification of general stochastic processes, Markov Chains, Poisson Processes, birth-death processes and applications, Weiner Process.		
	UNIT - IV	12 Hrs
Bayes model and residual error, empirical likelihood, linear methods, Neural network, artificial intelligence, nearest neighbourhood methods and support vector machines. Model selection and Evaluation.		
References: [1] Kothari C R (2004) Research Methodology, Methods and Techniques, New Age International. [2] Jain M.K., Iyengar S.R.K. and Jain R.K. (2003): Numerical Methods for Scientific and Engineering Computation, New Age International. [3] Louis G. Birta and Gilbert Arbez (2007), Modeling and Simulation, Springer. [4] Laha R.G. and Rohatgi V.K. (1979), Probability Theory, John Wiley & Sons. [5] Bhat B.R. (2000): Stochastic Models: Analysis and Applications, New Age International. [6] Medhi J. (1982): Stochastic Processes, Wiley Eastern		

Paper – 2 : Research and Publications Ethics

Instruction hours per week :2hrs

Credits :2

Max. Marks: 100

Course objectives :

- 1) To provide with the fundamental knowledge of bases of philosophy of ethics, research integrity and publications ethics.
- 2) To create awareness about the publications ethics and publications misconducts.
- 3) To make the researcher familiar with indexing and citation database, open access publications, research matrices (citation, h-index, impact factor etc.)

Course outcomes :

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

- 1) Demonstrate research and publication ethics.
- 2) Identify publication misconduct and predatory journals.
- 3) Identify different tools for plagiarism check.
- 4) Utilize various indexing and citation database and outline research matrices.
- 5) Appraise research integrity.

Theory

Unit-1: Philosophy and Ethics (3 hrs)

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

Unit-2: 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.

Unit-3: 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:

Unit-4: Open Access Publishing (4 hrs)

1. Open access publications and initiatives.
2. SHERPA/ROMEIO online resource to check publisher copyright and 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 Suggested etc.

Unit-5: Publication Misconduct (4 hrs)

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

Unit-6: 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

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 of Responsible Conduct in Research : Third Edition. National Academies Press.
5. Resnik D.B.(2011), What is ethics in research & why is important. National Institute of Environmental Health Sciences, 1-10 Retrieved from
6. <https://www.njehs.nih.gov/research/resources/bioethics/whatis/index.cfm>
7. Beall J.(2012). Predatory publishers are corrupting open access. Nature, 489(7415), 179-179, <https://doi.org/10.1038/489179a>
8. Indian national science academy (INSA), Ethics in Science Education, Research and Governance(2019), ISBN : 978-81-939482-1-7.
http://www.insaindia.res.in/pdf/ethics_Book.pdf

Hours/Week: 08 Credits : 08	Paper III: LITERATURE REVIEW	Review of Literature: 150 Viva Marks: 50
Contents of the review of literature are based on the research field under the direction of Research Supervisor. Content of the Review report shall include the research problem, summary of the reaserch articles published in the previous years and motivation for the stated research problem.		
Course Outcomes: - CO1. Identify the Research gaps in previous studies and progress over time and therefore establishes a foundation on which current research can be based. - CO2. Collect more information about the current research topic - CO3. Evaluate pertinent theoretical framework for the current research problem - CO4. Discover relevant research methodology i.e. methods and approaches that have been successful in similar studies. - CO5. Validate current arguments based on previous experiential findings - CO6. Differentiate your approach and arguments and demonstrates your thinking on the subject matter - CO7. Avoid plagiarism		

