ಮಂಗಳೂರು **MANGALORE** ವಿಶ್ವವಿದ್ಯಾನಿಲಯ **UNIVERSITY**

(Accredited by NAAC with 'A' Grade)

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR.02/2022-23/A2

ಕುಲಸಚಿವರ ಕಛೇರಿ
ಮಂಗಳಗಂಗೋತ್ರಿ – 574 199
Office of the Registrar
Mangalagangothri – 574 199
ದಿನಾಂಕ/Date:24.06.2022

NOTIFICATION

Sub: Revised syllabus for Ph.D. Coursework in Statistics
Ref: Academic Council approval vide agenda No.:
ಎಸಿಸಿ:ಶೈ.ಸಾ.ಸ.1:3(2022–23) dated 16.06.2022

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The revised syllabus for Ph.D. Coursework in Statistics which has been approved by the Academic Council at is meeting held on 16.06.2022 is hereby notified for implementation with effect from the academic year 2022-23 and onwards.

REGISTRAR

To,
1. The Chairman, Dept. of Post Graduate Studies and Research in Statistics, Mangalore University, Mangalagangothri.
2. The Chairman, P.G. BOS in Statistics, Mangalore University, Mangalagangothri.
3. The Registrar (Evaluation), Mangalore University, Mangalagangothri.
4. The Superintendent (ACC), O/o the Registrar, Mangalore University.
5. The Asst. Registrar (ACC), O/o the Registrar, Mangalore University.
6. Guard File.

MANGALORE UNIVERSITY

Scheme of Examination and Syllabus for

Ph.D Programme Course Work in Statistics

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

Cousre 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
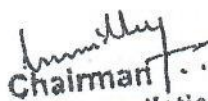
Paper 1: Research Methodology
Paper 2: Research and Publications Ethics
Paper 3 : Review of literature

Papers	Particulars	Hours of Instruction Per week	Duration of the exam(Hrs)	Marks				
				IA	Theory	Total	Credits
Paper-1	Research Methodology	4	3	30	70	100	04
Paper	Research and Publications Ethics	2	3	30	70	100	02
Paper-III	Review of Literature	08	-	-	-	150	08
	Viva	-	-			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.

Chairman
P.G. BOS in Statistics
Mangalore University
Mangalagangothri - 574 199

Paper 1: RESEARCH METHODOLOGY

Hours/Week: 4 Credits : 4		[5]
Course Objectives (COs)		I.A. Mark Exam. Mark

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 (10 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.

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, Neutral network, artificial intelligence, nearest neighbourhood methods and 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]   Oswald Campesato (2020) : Artificial Intelligence Machine Learning and Deep Learning, Mercury Learning And Information, New Delhi

[4] Louis G. Birta and Gilbert Arbez (2007), Modeling and Simulation, Springer.

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[5] Laha R.G. and Rohatgi V.K. (1979), Probability Theory, John Wiley & Sons.

[6] Bhat B.R. (2000): Stochastic Models: Analysis and Applications, New Age International.

[7] 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 slic
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 beh
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/ROMEO 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.
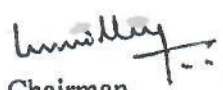3. Complaints and appeals : Examples and fraud from India and abroad.

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)

| Hours/Week: 08 | | Review of Literature: 150 |
| Credits : 08 | Paper III: LITERARTURE REVIEW | 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

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