

SYLLABUS FOR Ph.D. COURSE WORK

Effective from 2020 (Session: July - December)



DEPARTMENT OF STATISTICS

THE UNIVERSITY OF BURDWAN, BURDWAN

Course Outline

Semester	Course Code	Course Title	Credit Value	Marks Distribution
Sem-I	PHDCW-101	Research Methodology	4	50
	PHDCW-102	Research and Publication Ethics (RPE)	2	25
	PHDCW-103	Statistical Computing	4	50
	PHDCW-104	Term Paper	4	50
	Total		14	175

Detailed Syllabus

Semester-I

PHDCW-101

Research Methodology

50 Marks/ 4 Credits

1. Research Methods

25 Marks/ 2 Credits

- Meaning and Definition of Research, Types of Research, Research Process and Steps in it
- Search for existing literature, Review of literature on selected topic, writing up the review
- Review of research articles, Formulation of research problem, Presentation and Discussion of Research Problems
- Research Proposal and Report

References:

- CR Kothari (2004) : Research Mythology: Methods and Techniques, New Age International Publishers, ISBN (13): 978-81-224-2488-1
- Ranjit Kumar (2011) : Research Methodology a Step-by-Step Guide for Beginners, SAGE, ISBN : 978-1-84920-300-5

2. Brief History of Statistics

25 Marks/ 2 Credits

- PREHISTORY, BEGINNING OF HISTORY, AND THE TODDLING PERIOD
- NEW CONCEPTS AND METHODS—PRE-BAYESIAN ERA
- BEGINNING OF THE PRO-SUBJECTIVE APPROACH

References:

- Shoutir Kishore Chatterjee (2003): Statistical Thought: A Perspective and History, Oxford, DOI:10.1093/acprof:oso/9780198525318.001.0001
- Stephen Stigler (1986): The History of Statistics: The Measurement of Uncertainty Before 1900, Harvard University Press, ISBN: 9780674403413

PHDCW -102

Research and Publication Ethics (RPE)

25 Marks/ 2 Credits

- Philosophy and Ethics: Introduction to Philosophy: definitions, nature and scope, concept, branches, Ethics: definitions, moral philosophy, nature of moral judgments and reactions.

- Scientific Conducts: Ethics with respect to science and research, Intellectual honesty and research integrity, scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP). Redundant Publications: duplicate and overlapping publications, salami slicing; Selective reporting and misrepresentation of data.
- Publications Ethics: Publications Ethics: definitions, introductions and importance. Best practices/standards setting initiatives and guidelines: COPE, WAME, etc. Conflicts of interest, Publications misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types. Violations of publications ethics, authorship and contributorship; Identification of publication misconduct, complaints and appeals; Predatory publishers and journals.
- Open access publishing: Open access publications and initiatives, SHERPA/RoMEO online resource to check publisher copyright and self-archiving policies, Software tool to identifying predatory publications developed by SPPU, Journal finder/ journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer journal Suggester, etc.
- Publication Misconduct: Group Discussions: Subject specific ethical issues, FFP, authorship, Conflicts of interest, Complaints and appeals: examples and fraud from India and abroad. Software tools: Use of plagiarism software like Turnitin, Urkund and other open source software tools.
- Databases and Research Metrics: Databases: Indexing databases, Citation databases: Web of Science, Scopus, etc. Research Metrics: Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score, Metrics: h-index, g-index, i10 index, altmetrics.

References:

- Bird, A. (2006). *Philosophy of Science*. Routledge.
- MacIntyre, Alasdair (1967) *A Short History of Ethics*, London.
- P. Chaddah, (2018) *Ethics in Competitive Research: Do not get scooped; do not get plagiarized*, ISBN: 978-9387480865.
- 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.
- Resnik, D.B. (2011). *What is ethics in research and why is it important*. National Institute of Environmental Health Sciences, 1-10, Retrieved from <https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm>
- Beall, J. (2012). *Predatory publishers are corrupting open access*. *Nature*, 489(7415), 179-179. <https://doi.org/10.1038/489179a>
- 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.

PHDCW-103

Statistical Computing

50 Marks/ 4 Credits

- R language and its applications in Statistics
- Python language and its applications in Statistics

References:

- Julian J. Faraway (2014): Linear Models with R , Chapman & Hall/CRC Texts in Statistical Science, ISBN (13): 978-1439887332
- Youngjo Lee, Lars Ronnegard, Maengseok Noh (2017): Data Analysis Using Hierarchical Generalized Linear Models with R, Chapman and Hall/CRC, ISBN (13): 978-1138627826
- Gareth M. James, Daniela Witten, Trevor Hastie, R J Tibshirani (2013): An Introduction to Statistical Learning: With Applications in R, Springer Texts in Statistics, ISBN (13): 978-1461471370

PHDCW -104

50 Marks/ 4 Credits

Term Paper

25 Marks/ 2 Credits

- To write a review literature of a research paper.
- To discuss the result in that paper.
- Developing some results related to the paper.
- To discuss the merits and demerits of the paper.
- To discuss the conclusions according your views.

Presentation and Viva-Voce

25 Marks/ 2 Credits