PT. RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR
SCHOOL OF STUDIES IN STATISTICS

Syllabus and Scheme of Examination
Ph. D. Course Work in Statistics, 2023-24

The Ph.D. Course in Statistics shall be of six months.. This course shall have two papers.. Paper I is theory paper and Paper II is project course work. Each paper is of 100 marks .Theory paper will be of 3 hours duration. In paper II, 40% marks will be assigned to seminar which will be evaluated by departmental research committee and 60% marks will be assigned to project work which will be evaluated by external and internal examiner jointly.

Scheme of Examination

Paper	Marks
Paper I : Research Methodology , Quantitative Methods & **Statistical Quality Control**	**100**
Paper II : **Review of Literature concerning the topic of research** **and Seminar/Project report**	**100**
(a) Seminar	40
(b) Project work and Viva Voce	60
Total Marks	**200**

Paper I

Research Methodology, Quantitative Methods & Operations Research

Learning Outcome: This course is useful for understanding the techniques of research, sampling techniques and quality control.

Unit I: Research methodology: An introduction, meaning of research ,objective of research, Research Methods versus Methodology, Selection of research problem, Necessity of defining the problem. Technique involved in Defining a problem. Methods of Data Collection: Collection of Primary data, construction of questionnaire, Collection of data through questionnaire, Difference between questionnaires and schedules, Some other methods of data collections, Collection of Secondary data, Processing and analysis of data. Use of Statistical package, SPSS for data analysis.

Unit II : A review of Simple Random Sampling, Estimation of population proportion, Stratified, Optimum Allocation, Practical difficulty in adopting Neyman Allocation, formation of strata. Systematic sampling.

Unit III : PPS sampling, Desraj Ordered
Estimates, Murthy Unordered Estimators, Horvitz- Thompson Estimator, Yates-Grundy Estimator, Multistage sampling. Ratio and Regression methods of estimation in various sampling designs.

Unit IV: Basic concept of process monitoring and control, process capability and process optimization. General theory and review of control charts for attribute and variable data ; O.C. and A.R.L. of control charts, control by gauging. Moving average and exponentially weighted moving average charts ; Cu-sum charts using V-masks and decision intervals.

Unit V :
Acceptance sampling plans for attribute inspection ; single, double and sequential sampling plans and their properties ; Bayesian sampling plan. Plans for inspection by variables for one-sided and two-sided specifications ; Continuous sampling plans of Dodge type and Wald-Wolfiwitz type and their properties.

References:

1. C.R.Kothari,"Research Methodology",Second Edition,Wishwa Publication,Wiley Eastern Limited, New Delhi.
2. Freedman,P.,"The Principles of Scientific Research,2nd ed., New York Pergamon Press,1960.
3. Gaum, Carl G., Graves ,Harod F.,and Hoffman ,Lyme, S.S., Report Writing ,New York : Barnes & Noble ,Inc,1956.
4. Weller;S.;Romney,A,: Systematic Data Collection (Qualitative Research Method Series 10).
5. Mukhopadhyay, P. (1998): Theory and methods of Survey Sampling , Prentice-Hall of India Pvt. Ltd. New Delhi.
6. Sukhatme ,P.V. Sukhatme,B.V. Sukhatme S. and Ashok,C.(1984):Sampling Theory of Survey with Applications, IASRI Publication, New Delhi.