



**(Master of Science in Statistics) (Master of Science)**  
**(M. Sc.) (Statistics) Semester (II)**

Course Code	PS02CSTA54	Title of the Course	THEORY OF SAMPLE SURVEYS
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	<ol style="list-style-type: none"><li>1. To obtain the maximum information about the characteristics of the population with the available resources using various sampling methods.</li><li>2. To obtain the best possible estimates of the population parameter.</li></ol>
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Course Content		
Unit	Description	Weightage* (%)
1.	General principles of sample surveys. Basic ideas in estimation from probability sampling. Varying probability sampling: PPS sampling with replacement and without replacement, Horvitz-Thompson estimator, Random group method, PPS systematic sampling, Midzuno-sen sampling, Lahiri's sampling scheme	25
2.	Use of univariate and multivariate auxiliary information for estimation: Ratio, Product, Difference and Regression methods of estimation with their properties. Unbiased and almost unbiased ratio estimators.	25
3.	Cluster sampling with equal and unequal cluster sizes, optimum values of sample size and cluster size, PPS estimation for cluster sampling, cluster sampling for estimation of population proportion.  Two-stage sampling with equal and unequal first stage units. Optimum values of sample size and subsamples size. SRSWOR (SRSWR) used at both stages.	25
4.	Two-phase (Double) sampling for PPS estimation, ratio and regression estimators and stratified sampling.  Non-sampling errors, response and non-response errors and their treatments, randomized response techniques.	25

Teaching-Learning Methodology	
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will	
1.	have knowledge of basic concepts and terminology of sample surveys.
2.	have knowledge of various probability and non-probability sampling methods.
3.	know various methods of estimations and be able to apply these methods to obtain efficient estimators of the finite population parameters.
4.	be able to understand sampling and non-sampling errors, non-response errors

Suggested References:	
Sr. No.	References
1.	Cochran, W.G. (2007) Sampling Techniques, 3rd Edition, (Wiley)
2.	Raj, D and Chandhok, P. (1998) Sample Survey Theory (Narosa)
3.	Mukhopadhyay, P. (2008). Theory and Methods of Survey Sampling, 2nd Edition, PHI
4.	Murthy, M.N. (1967) Sampling Theory and Methods
5.	Sampath, S. (2001). Sampling Theory and Method, Narosa Publishing House
6.	Särnagl, C. E., Swensson, B. and Wretman, J. (1992). Model-Assisted Surveys Sampling, pringer, NY
7.	Singh S. (2003). Advanced Sampling Theory with Applications: How Michael 'selected' Amy, Vol. 1 & 2, Springer





7.	Sukhatme P.V, Sukhatme, B.V., Sukhatme S. and Asok C. (1984) Sampling Theory of Surveys with Applications (Indian Soc. for Agricultural Statistics, New Delhi).
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On-line resources to be used if available as reference material
On-line Resources

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