

Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NMCD530	Sampling Theory	3	0	0	3

Prerequisite
<ul style="list-style-type: none"> Basics of Probability & Statistics
Course Objective
<ul style="list-style-type: none"> Government organizations and industries in private and public sectors need reliable data for precise planning and its implementations. Sampling theory deals with the techniques for collecting such required data in economical way.
Learning Outcomes
<ul style="list-style-type: none"> After completion of this course, students will be equipped with the knowledge of different survey methodologies and data collection techniques required for planning and generation of reliable estimates.

Unit No.	Topics to be Covered	Contact Hours	Learning Outcome
1	Basic principles of sample surveys, simple random sampling with and without replacement and related results.	7	Gives the idea about fundamentals of survey sampling and some basic sampling schemes.
2	Probability proportional to size sampling, Horvitz-Thompson estimator, ordered and unordered estimates, stratified random sampling, allocation problems, post-stratification.	9	Gives the idea and exposure about advance sampling schemes.
3	Use of auxiliary information at estimation stage: Ratio, regression and product methods of estimation for population mean, two-phase (double) sampling, cost consideration under double sampling.	10	Gives the methods and techniques for using the auxiliary information at estimation stage in survey sampling.
4	Cluster sampling, two-stage sampling and systematic sampling.	8	Gives the idea and exposure of sampling schemes applicable in more practicable situations.

5	Non-sampling errors, non-response problems, Imputation, Warner's randomized response technique for sensitive characteristics, measurement errors in sample surveys.	8	Tackles the situations of non-sampling errors arise due to non-response and measurement errors.
Total		42	

Text Books

1. Cochran, W.G , Sampling Techniques, (1977) 3rd Ed, Wiley Eastern Ltd.
2. Mukhopadhyay, P.: Theory and Methods of Survey Sampling, 2nd Ed (2014), PHI Learning Pvt. Limitrd, Delhi.

Reference Books

1. Sukhatme P V., Sukhatme B. V. and Sukhatme S., and Ashok C.:
Sampling Theory of Surveys with Applications, IASRI New Delhi, 1984 Ed.
2. Des Raj and Chandhok P: Sampling Theory, Narosa Publications (1998), New Delhi