

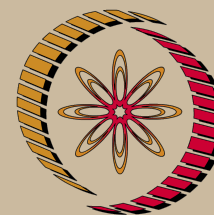
# Sampling Theory - Web course

## COURSE OUTLINE

The course will start with the fundamentals steps involved in the development of any sample survey. The advantages over the complete enumeration will also be discussed. The methodology of simple random sampling in -with and without replacement - cases will be detailed and its use in estimating the population mean along with the derivation of statistical properties will be discussed. How to choose the sample size based on various criteria will be detailed. The use of stratified sampling, sampling unit allocation schemes and how to estimate the population mean will be described. The ratio and regression methods for the estimation of population mean will be detailed and the statistical properties of the estimators under various conditions will be derived and discussed. When the probability of selection of sampling units are unequal, then the use of varying probability sampling schemes in -with and without replacement - cases along with probability proportional to size sampling scheme will be discussed. Several popular estimators and their statistical properties will also be described. Other type of sampling schemes, viz., double sampling, two stage sampling, systematic sampling and cluster sampling under various conditions will be described and their use in estimating the population mean will be detailed along with the derivation of statistical properties of the estimators. The topics of sampling in successive occasion and non-sampling errors in sample surveys will also be discussed.

## COURSE DETAIL

Module No.	Topics	No. of Lectures
1	Fundamentals of sampling	2
2	Simple random sampling	4
3	Stratified sampling	4
4	Ratio method of estimation	3
5	Regression method of estimation	3
6	Varying probability sampling	5
7	Double sampling	4
8	Two stage sampling	4
9	Systematic sampling	4



NP-TEL

# NPTEL

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## Mathematics

### Pre-requisites:

Knowledge of basic statistics

### Coordinators:

**Prof. Shalabh**  
Department of  
Mathematics &  
Statistics IIT Kanpur

10	Cluster sampling	4
11	Sampling in successive occasion	2
12	Non-sampling errors	2
<b>Total</b>		<b>41</b>

**References:**

1. Sampling methodologies and applications : P.S.R.S. Rao, Chapman and Hall/CRC 2000
2. Elements of sampling theory and methods : Z. Govindrajalu, Prentice Hall, 1999
3. Sampling : P. Mukhopadhyaya , Prentice Hall of India, 1998.
4. Sampling techniques : W.G. Cochran, Wiley
5. Theory of sample surveys with applications: P.V.Sukhatme, B.V.Sukhatme, S. Sukhatme and C. Asok, IASRI, Delhi, 1984.