

Statistics II (STA 159)
Tribhuvan University
Soch College of Information Technology
Bachelor of Science in Computer Science and Information Technology

Course Title: Statistics II

Course no: STA-159 ----- Full Marks: 60+20+20

Credit hours: 3 ----- Pass Marks: 24+8+ 8

Nature of course: Theory (3 Hrs.) + Lab (3 Hrs.)

Course Synopsis: Concept of Sample Survey and Design, and their applications.

Goal: This course makes students able to understand the concept of Sample Survey and Design, and their applications in the area of Science and Technology.

Course Contents:

Unit 1: Sample Survey ----- 10 Hrs.

Concept of Population and Sample; Needs of Sampling; Censuses and Sample Survey; Basic Concept of Sampling; Organizational Aspect of Sample Survey; Questionnaire Design; Sample Selection and Determination of Sample Size; Sampling and Non Sampling Errors.

Unit 2: Sample Survey Methods ----- 13 Hrs.

Types of Sampling; Simple Random Sampling with and without Replacement; Stratified Random Sampling; Ratio and Regression Method of Estimation under Simple and Stratified Random Sampling; Systematic Sampling; Cluster Sampling; Multistage Sampling; Probability Proportion to Size Sampling (PPS), Estimation of population total and its Variance

Unit 3: Design of Experiment ----- 5 Hrs.

Concept of Analysis of Variance (ANOVA), F -Statistic and its Distribution, Linear Model in ANOVA, Analysis of One way, Two Way Classification (1 and m observations per cell) in Fixed Effect Model.

Unit 4: Simple Design ----- 10 Hrs.

Need for Design of Experiment, Fundamental Principles of Design, Completely Randomized Design (CRD), Randomized Block Design (RBD), Latin Square Design (LSD) and their Analysis; Missing Plot Techniques for RBD and LSD (One Observation Missing Only).

Unit 5: Factorial Design ----- 7 Hrs.

22, 23 and 32 Designs; Main Effects and Interaction Effects; Confounding in 23 Factorial Design

Text Books:

Mukhopadhyay P., Theory and Methods of Survey Sampling, Prentice Hall of India, New Delhi, 1998.

Montgomery Douglas C., Design and Analysis of Experiments, 5th edition, John Wiley & Sons Inc., 2001.

Cochran W.G., Sampling Techniques, 3rd edition, John Wiley and Sons, Inc. New York, 1977.

References:

Kemphorane, O., Design and Analysis of Experiments, Wiley Eastern, New York.
Desraj, Pramod Chandhok, Sample Survey Theory, Narosa Publishing House, 1998.