St. Xavier's College (Autonomous), Ahmedabad

FACULTY OF ARTS

DEPARTMENT OF ECONOMICS (SF)

BA. Hons. (Economics) SF

SEMESTER-2

Minor Course – 1: Statistics for Economics-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-requisite(s) of the Course (if any)
	Lectures	Tutorial	Practical / Practice		
Statistics for Economics-2 (ECH-2101)	4	0	0	10 + 2 from a recognized board in any stream	None

Learning Objectives (LO):

1. Understand fundamental probability concepts, random variables, and probability distributions.
2. Analyze joint distributions, correlation, and dependence between random variables.

Course Outcomes (CO):

1. Apply probability theory to model real-world uncertainty and random processes.
2. Use probability distributions and moment-generating functions in statistical inference.

Chapter-1: Continuous Probability Distributions

Uniform Probability Distribution, Area as a Measure of Probability, Normal Probability Distribution, Normal Curve, Standard Normal Probability Distribution, Computing Probabilities for Any Normal Probability Distribution, Grear Tire Company Problem, Normal Approximation of Binomial Probabilities, Exponential Probability Distribution, Computing Probabilities for the Exponential Distribution, Relationship Between the Poisson and Exponential Distributions.

Chapter-2: Sampling and Sampling Distributions

Sampling Problem, Selecting a Sample, Sampling from a Finite Population, Sampling

from an Infinite Population, Point Estimation, Practical Advice, Introduction to Sampling Distributions, Sampling Distribution of x, Expected Value of x, Standard Deviation of x, Form of the Sampling Distribution of x, Sampling Distribution of x for the EAI Problem, Practical Value of the Sampling Distribution of x, Relationship Between the Sample Size and the Sampling Distribution of x, Sampling Distribution of p, Expected Value of p, Standard Deviation of p, Form of the Sampling Distribution of p, Practical Value of the Sampling Distribution of p, Properties of Point Estimators, Unbiased, Efficiency, Consistency, Other Sampling Methods, Stratified Random Sampling, Cluster Sampling, Systematic Sampling, Convenience Sampling, Judgment Sampling, Big Data and Standard Errors of Sampling Distributions, Sampling Error, Nonsampling Error.

Chapter-3: Interval Estimation

Population Mean: σ Known, Margin of Error and the Interval Estimate, Practical Advice, Population Mean: σ Unknown, Margin of Error and the Interval Estimate, Using a Small Sample, Summary of Interval Estimation Procedures, Determining the Sample Size, Population Proportion.

Chapter-4: Hypothesis Tests

Developing Null and Alternative Hypotheses, The Alternative Hypothesis as a Research Hypothesis, The Null Hypothesis as an Assumption to Be Challenged, Summary of Forms for Null and Alternative Hypotheses, Type I and Type II Errors, Population Mean: σ Known, One-Tailed Test, Two-Tailed Test, Summary and Practical Advice, Relationship Between Interval Estimation and Hypothesis Testing, Population Mean: σ Unknown, One-Tailed Test, Two-Tailed Test, Summary and Practical Advice, Population Proportion, Summary, Hypothesis Testing and Decision Making, Calculating the Probability of Type II Errors, Determining the Sample Size for a Hypothesis Test About a Population Mean.

Textbook:

- Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., Cochran, J. J., Fry, M. J., & Ohlmann, J. W. (2020). Statistics for business & economics (14th ed.). Cengage Learning.

Suggestive Reading

1. Larsen, R.J. and M.J. Marx (2017) – An Introduction to Mathematical Statistics and Its Applications, Pearson Education, 6th edition.
2. Wackerly, D., Mendenhall, W., & Scheaffer, R. (2014) – Mathematical Statistics with Applications, Cengage Learning, 7th edition.
3. Hogg, R. V., Tanis, E. A., & Zimmerman, D. L. (2018) – Probability and Statistical Inference, Pearson, 10th edition.
4. Casella, G., & Berger, R. L. (2002) – Statistical Inference, Duxbury Press, 2nd edition.