Course Title:	Introduction to Statistics
Course Code:	CSTA-101
Semester:	I
Credit Hours:	3 Credit Hours
Pre-requisites:	N / A

Learning Outcomes

By the end of this course, students will be able to:

1. Understand the key concepts of Statistics.
2. Compute various summary statistics and make use of the graphical techniques to represent data.
3. Know the practical application of Index Numbers along with their computations.
4. Have the basic knowledge of Time Series, its components and the methods to analyze them.

Course Outline
Unit 1
1.1 Introduction
Meaning of Descriptive and Inferential statistics. Population and Sample. Types of variables, Measurement Scales. Sources of Statistical data in Pakistan.

1.2 Tables and Graphs
Description of data by frequency tables and graphs. Stem and Leaf plots and Box plots.

1.3 Measures of Central Tendency
A.M. H.M. G.M., Mode, Median, Quantiles. Properties of Mean with proofs. Weighted Arithmetic Mean. Empirical Relation between Mean. Median and Mode. Relative Merits and Demerits of various averages.

Unit 2
2.1 Measures of Dispersion
Absolute and Relative Measures, Range. Semi-Inter Quartile Range, Mean Deviation, Variance, Standard Deviation. Coefficient of Variation, Coefficient of Mean Deviation, Coefficient of Quartile Deviations, Properties of Variance and Standard Deviation with proofs. Standardized variables, Moments, Moment Ratios, Sheppards Correction, Kurtosis and Skewness.

Unit 3
3.1 Index Numbers
Construction and application of wholesale price Index Numbers. Fixed and chain base methods. Weighted Index Numbers (Laspeyre's, Paasche's Fisher's Ideal and Marshall-Edgeworth Indices). Tests for the consistency of Index Numbers Construction of Consumer price Index Numbers. Sensitive price Indicator.

3.2 Basics of Time series
Components of a time series. Analysis of time series. Measurement of secular trend and seasonal variations by various methods. Deseasonalization of data.

Teaching-learning Strategies:

Class Lecture method, which includes seminars, discussions, assignments and projects. (Audio-visual tools are used where necessary)

- **Assignments-Types and Number with calendar:**
  According to the choice of respective teacher.

- **Assessment and Examinations:**
  According to the University's Semester Rules.

Sr. No.	Elements	Weightage	Details
1	Midterm Assessment	35%	It takes place at the mid-point of the semester.
2	Formative Assessment	25%	It is continuous assessment. It includes: Classroom participation, attendance, assignments, and presentations, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

Text Books
1. Bluman (2011). *Elementary Statistics* (8th ed.). McGraw Hill, New York.
2. Chaudhry, S.M. & Kamal, S. (2010). *Introduction to Statistical Theory Part I*. Ilmi Kitab Khana,Urdu Bazar, Lahore.

Suggested Readings
1. Beg, M.A., & Mirza, M.D. (2006). *Statistics, Theory and Methods*, Volume I, Carvan Book House, Kutechery Road, Lahore.
2. Clarke G., & Cooke D. (2011). *A basic Course in Statistics* (5th ed.). Arnold Publisher, London.
3. Crawshaw, J., & Chambers, J. (2014). *A concise course in advanced level Statistics with worked examples,* Nelson Thornes, Revised Edition.
4. Johnson, R.A., & Wichern, D.W. (2003). *Business Statistics: Decision making with data,* John Wiley & Sons Inc.
5. Levin, J., & Fox, J.A. (2013). *Elementary Statistics in Social Research* (12th ed.). Pearson Education.
6. Levine, D.M., Kschbiel, T.C., & Berenson, M.L. (2009). *Business Statistics: A first course* (5th ed.). Pearson Education.
7. Macfie, B.P., & Nufrio, P.M. (2006). *Applied Statistics for public policy*, Prentice Hall of India.