ADD-ON COURSE
OFFERED BY THE DEPARTMENT OF ECONOMICS
BIJNI COLLEGE::BIJNI

Course Title	: Foundations of Data Analysis
Course Code	: ADNCEDU-101
Course Duration	**:** 30 Hours
Credit	: 2 (1 Credit = 15 Hrs.)
Course Designed by	: Sabita Ray, Associate Professor (HOD)
	: Maloy Kumar Chanda, Assistant Professor
	: Surabhi Marandi, Assistant Professor
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Course Co-ordinator	**:** Molay Kumar Chanda, Assistant Professor
Approved by	**:** Governing Body, Bijni College, Bijni
Date of Approval	**:** 14-02-2025

Course Description:

The course is about data analysis. It is the process of systematically studying, cleaning, and transforming data to extract valuable insights and support decision-making. It involves various stages and techniques to handle data effectively and derive meaningful conclusions. It includes the study on Types of several primary types of data analysis, each serving different purposes: Descriptive Analysis: This type focuses on summarizing historical data to understand what has happened in the past. It uses measures such as mean, median, mode, and standard deviation to describe the data. Predictive Analysis: This type uses statistical models and machine learning techniques to predict future outcomes based on historical data. It helps in forecasting trends and behaviours. Diagnostic Analysis: This type aims to determine the cause of a past event by examining the data in detail. It often involves comparing different data sets to identify patterns and correlations. Exploratory Analysis: This type is used to explore data sets to find patterns, relationships, and anomalies without having a specific hypothesis in mind.

Course Objectives:

The course aims to prepare learners for a role working in data analytics. It aims to introduce to many of the primary types of data analytics and core concepts. It aims to teach students about the tools and skills required to conduct data analysis.

Course Outcomes:

Students will learner for a role working in data analytics. It will introduce students to many of the primary types of data analytics and core concepts. It will teach students about the tools and skills required to conduct data analysis.

Course Structure:

Unit-1 Collection of Data

Introduction, Types of Data, Sources of Data, Methods of Collection of Data (Preparation of Questionnaire). Fundamentals of Sampling.

Unit-2 Graphic Representation of Data

Construction of Bar Diagram, Pie Diagram, Histogram, Frequency Polygon, Bubble Chart. (Using Excel Sheet).

Unit-3 Use of Google Form for Data Analysis

What is Google Form, Common Uses and Applications, Accessing Google Forms, Creating Forms (Short Answer & Paragraph, Multiple Choice, Checkboxes, Dropdown, Linear Scale, Multiple Choice Grid & Checkbox Grid, and File Upload), sharing and collecting responses and analyzing responses.

Unit-4 Use of Excel Sheets for Data Analysis

Importance in data analysis, data entry and formatting techniques, basic excel functions for analysis (Sum, Average, Min, Max etc.), Correlation Analysis and Regression.

Unit-5 Introduction to Stata Software

Basics of Stata software and its application. (t test, chi square test)

Suggested Readings:

- M. A. Alkhatib, *Analysis of research in healthcare data analytics*, Australasian Conference on Information Systems, Sydney, pp. 1-16, 2015.
- M. R. Berthold, *Guide to Intelligent Data Analysis, Texts in Computer Science* 42, © Springer-Verlag London Limited 2010
- W. S. Cleveland, *The Elements of Graphing Data*, Pacific Grove, CA: Wadsworth & Advanced Book Program, 1985.
- W. S. Cleveland and R. McGill, *Graphical perception: Theory, experimentation, and application to the development of graphical methods,* Journal of the American Statistical Association, vol. 79, issue 387, pp. 531–540, 1984.
- Lacey and D. Luff, *Qualitative data analysis*, Trent Focus, 2001.
- G. Picciano, *the evolution of big data and learning analytics in American higher education*, Journal of Asynchronous Learning Networks, vol. 16, issue 3, pp. 9-20, 2012
- Sabia and K. Sheetal, *Applications of big data: Current status and future scope*, International Journal on Advanced Computer Theory and Engineering (IJACTE), vol. 3, issue 5, pp. 25-29, 2014
- P. Saxena, *Application of statistical techniques in market research: A sample survey*, International Journal of Applied Engineering Research, Dindigul, vol. 2, no 1, pp. 163-171, 2011.

Evaluation Process

1. A minimum of 75% class attendance is mandatory for course completion.5 marks will be assigned for attendance. 1 mark for 75%-80% attendance,2 marks for 81%-85% attendance, 3 marks for 86%-90% attendance,4 marks for 91%-95%attendance and 5 marks for 96%-100% attendance.
2. Evaluation will be based on- attendance, class tests/assignments, and practical.
3. Students must attend all the above-listed evaluation components.
4. To receive the course completion certificate, students must secure a minimum of 40% aggregate marks.
5. The percentage of Marks secured by students will be converted into a Grade as follows-

   40%-50%: Grade A

   30%-40%: Grade B

   20%-30%: Grade C