CS415: Data Visualisation	L	T	P	NIL
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Course Objective: The objective of this course is to introduce the principles and techniques of data visualization. It covers effective methods for visual data representation, understanding the impact of visual perception on data interpretation, and applying various visualization techniques to analyze and evaluate data.

S. No	Course Outcomes (CO)
CO1	Identify and recognize visual perception and representation of data.
CO2	Illustrate about projections of different views of objects.
CO3	Apply various Interaction and visualization techniques.
CO4	Analyze various groups for visualization.
CO5	Evaluate visualizations

S. No	Contents	Contact Hours
UNIT 1	Introduction to Data Science and Data Visualization: Concepts, lifecycle, applications of Data Science; Role of Data Visualization in Analysis and Decision Making; Basics of R Programming including variables, data types, operators; Fundamentals of Data Visualization covering principles and types.	8

UNIT 2	Data Preprocessing and EDA with R: Data Collection and Sources such as structured, unstructured, and web scraping; Data Cleaning techniques like handling missing data and outliers; Data Transformation Techniques including normalization, standardization, encoding; Exploratory Data Analysis (EDA) covering univariate, bivariate, and multivariate analysis; Advanced EDA Plotting using ggplot2 for customized visualizations, faceting, and distributions.	**9**
UNIT 3	Advanced Data Analysis and Visualization with R: Statistical Analysis including descriptive stats and hypothesis testing; Data Visualization Libraries in R, specifically ggplot2; Machine Learning Concepts introducing ML and basic models in R; R Shiny for building interactive web applications.	**8**
UNIT 4	Power BI for Data Visualization and Dashboard Creation: Introduction to Power BI including interface and data connection; Creating Basic Visualizations such as bar charts, line charts, and scatter plots; Building Interactive Dashboards focusing on design principles and combining visualizations; Effective Data Storytelling using Power BI.	**9**
UNIT 5	Advanced Data Visualization and Integration: Advanced Visualization Techniques in R; Integrating R with Power BI using R scripts and calculations; Data Visualization Ethics and Best Practices; Project applying skills using R and Power BI, including a Capstone project.	**8**
	Total	**42**