

Subject Title	Paper DSC 403: FORECASTING & PREDICTIVE ANALYTICS		
Class/Group	B. Com (Business Analytics) (CBCS)Only	Semester	IV
Paper: DSC 403		Max. Marks: 70EE+30IE=100	
PPW: 5 Hrs.		Exam Duration: 3Hrs	

Objective: To make students to understand the Analytics of Forecasting & Predictive

UNITS	CONTENTS
I	REGRESSION, FORECASTING & DISTANCE: Bivariate regression: Identify linear regression models and their application in data analysis - Calculate linear bivariate regressions in order to model commonly encountered problems - Determine the quality of fit of a linear model, establishing its usefulness for prediction - Multivariate regression: Identify multivariate linear regression models in data analytics - Calculate linear multivariate regressions in order to model commonly encountered problems - Determine the quality of fit of a multivariate linear model, establishing its usefulness for prediction - Other regressions: Identify logistic regression models and apply those models to common business problems - Determine the quality of fit of a multivariate linear model - Forecasting in time: Identify the components of a time forecast in order to predict future values from a model - Differentiate seasonal variations from trends in order to improve prediction of future values from a model - Calculate seasonal indices so that seasonal variations can be qualified in the model - Measuring Distance: Identify the meaning of dimensionality and its implications in analytics - Calculate different types of distances and identify scenarios when each type is applicable.
II	CLASSIFICATION: Classification k Nearest Neighbor (KNN): Determine core aspects of classification in order to understand when it's an appropriate technique - Calculate KNN algorithm with fixed or variable number of k and assess the quality of the results - Classification Naïve Bayes: Identify Naïve Bayes classification and when it is applicable - Apply a Naïve Bayes classification to a common business problem - Classification Support Vector Machine: Identify the basics of the support vector machine (SVM) classification algorithm - Identify what a support vector is and its use in the classification algorithm - Calculate a SVM classification to solve common business problems - Classification Decision Trees: Identify the steps to build a decision tree classifier - Apply the steps to create a basic decision tree - Use a decision tree algorithm and appropriate metrics to solve a business problem and assess the quality of the solution
III	CLUSTERING: Determine core aspects and types of clustering in order to properly apply the algorithms to business problems - Apply various clustering algorithms to data sets in order to solve common, applicable business problems.
IV	OPTIMIZATION: Identify the goals and constraints of a linear optimization - Calculate a linear optimization in order to solve a business problem.
V	SIMULATION: Use data analysis performed on historical data and any applicable theory to construct a model - Use a Monte Carlo analysis with the model in order to generate and assess the likelihood of predictions from the model.
Reference	Text Books & Reference Books 1. Forecasting and Predictive Analytics Certificate; AICPA 2. Fundamentals of Business Analytics, 2nd Edition; R N Prasad, Seema Acharya; Wiley 3. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson Data Analytics with R; Bharti Motwani; Wiley