

<b>PROGRAM</b>	<b>Master of Business Administration – Business Analytics</b>
<b>SEMESTER</b>	<b>IV</b>
<b>COURSE TITLE</b>	<b>Predictive Analytics</b>
<b>COURSE CODE</b>	<b>04MB0453</b>
<b>COURSE CREDITS</b>	<b>02</b>
<b>COURSE DURATION</b>	<b>28 Hrs (28 sessions of 60 minutes each)</b>

**COURSE OUTCOMES:**

- Develop and use advanced predictive analytical methods and gain expertise in the use of popular tools and software for predictive analytics.
- Analyze business data using simple linear regression and multiple linear regression that help in prediction and decision making.
- Apply logistic regression, Decision Trees and Naïve Bayes Algorithm for discrete choice classification models in various business situations for classification purpose.

**COURSE CONTENTS:**

<b>Unit No</b>	<b>Unit / Sub Unit</b>	<b>Sessions</b>
<b>I</b>	<b>Introduction, Simple Linear Regression (SLR):</b> •Types of Analytics, Analytics in Decision Making, Introduction to Predictive Analytics. •Simple Linear Regression: Overview, Model Development, Assumptions, Model Validation, Model fitness and $R^2$ , Example of SLR.	<b>08</b>
<b>II</b>	<b>Multiple Linear Regression (MLR) and Logistic Regression:</b> •MLR: Introduction, Estimation of Regression Parameters, Explanatory vs. Predictive Modeling, Assumptions and Model Diagnostics, MLR with categorical predictors (dummy variable), Derived & Interaction Variables, Multi-collinearity, Adjusted $R^2$ , Model Deployment, Example of MLR. • <b>Logistic Regression:</b> Discrete Choice Models, Logistic Regression, Estimation of Parameters, Logistic Model Interpretation, Estimation of Odds Ratio, Measuring Model performance (accuracy) using confusion matrix, Logistic Model Deployment, Logistic Regression with more than two classes (Ordinal classes and Nominal Classes).	<b>10</b>
<b>III</b>	<b>Classification – Decision Trees Naïve Bayes Algorithm:</b> •Introduction to Decision Trees, Classification and Regression Tree – recursive partitioning, Tree Structure, numerical and categorical Predictors, Measure of Impurity. •Naive Bayes Classifiers (Algorithm) – Introduction, Cut-off Probability Method and Conditional Probability, Practical Difficulty with the Complete (Exact) Bayes Procedure, The naïve Bayes Approach, Assumptions of Conditional Independence, Examples.	<b>10</b>

**EVALUATION:**

The students will be evaluated on a continuous basis and broadly follow the scheme given below:

	<b>Component</b>	<b>Weightage</b>
A	Continuous Evaluation Component (Assignments / Quizzes /Class Participation etc.)	20% (C.E.C.)
B	Internal Assessment (Lab based Practical Examination using software)	30% (I.A.)
C	End-Semester Practical Examination	50% (Practical/VIVA)

**SUGGESTED READINGS:**
**Text Books:**

<b>Sr. No</b>	<b>Author/s</b>	<b>Name of the Book</b>	<b>Publisher</b>	<b>Edition and Year</b>
<b>T-01</b>	Galit Shmueli, Peter Bruce, Inbal Yahav, Nitin R Patel	Data Mining for Business Analytics: Concepts Techniques and Applications in R	Wiley	2017
<b>T-02</b>	Anderson, Sweeney, Williams	Statistics for Business and Economics	Cengage Learning	11 <sup>th</sup> Edition, 2019
<b>T-03</b>	U. Dinesh Kumar	Business Analytics – The Science of Data Driven Decision Making	Wiley	2017

**Reference Books:**

<b>Sr. No</b>	<b>Author/s</b>	<b>Name of the Book</b>	<b>Publisher</b>	<b>Edition &amp; Year</b>
<b>R-01</b>	Robert Nisbet	Handbook of Statistical Analysis & Data Mining Applications.	Elsevier / Academic Press	1 <sup>st</sup> Edition, 2009
<b>R-02</b>	Seema Acharya	Data Analysis using R	McGraw Hill Education	2018
<b>R-03</b>	Nicholas J. Horton and Ken Kleinman	Using R and RStudio for Data Management, Statistical Analysis, and Graphics	CRC Press	Second Edition, 2015
<b>R-04</b>	Daniel T Larose	Data Mining and Predictive Analytics	Wiley	2015