Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav School of Management

Choice Based Credit System (CBCS) in Light of NEP-2020
MBA-BUSINESS ANALYTICS - IV SEMESTER (2022-2024)

MBABAN403 DATA VISUALIZATION FOR ANALYTICS

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN403	DSE	Data Visualization For Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

This course is designed to provide students with the foundations necessary for understanding and extending the current state of the art in data visualization.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcome

By the end of the course, students will have gained:

1. An understanding of the key techniques and theory used in visualization, including data models, graphical perception and techniques for visual encoding and interaction.
2. Exposure to a number of common data domains and corresponding analysis tasks, including multivariate data, networks, text and cartography.
3. Practical experience building and evaluating visualization systems.

COURSE CONTENT

Unit I: Data Visualization: Introduction

1. Data Visualization - What and Why?
2. Modes of Visualization
3. Applications of Data Visualization

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav School of Management

Choice Based Credit System (CBCS) in Light of NEP-2020
MBA-BUSINESS ANALYTICS - IV SEMESTER (2022-2024)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN403	DSE	Data Visualization For Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Unit II: Visualizing Data through Framework

1. Understanding and Responding to Visualization: Types of Reasoning - Inductive, Deductive, Abductive
2. Color Perception and Visualization
3. Data Visualization Framework : Data Types, Data as Variables

Unit III: Data Mapping

1. Data Mapping: Introduction, Steps in Data Mapping
2. Bar Chart, Vertical & Horizontal, Pie Chart and Coxcomb Plot, Line Chart, Area Chart
3. Tufte's Design Rules in Data Mapping

Unit IV: Business Intelligence and Visualization

1. Business Intelligence: Introduction, Tools of BI
2. Data Visualization Systems: Information Visualization, Large Data Visualization, Visual Analytics, Dash Boards
3. Schneiderman's Mantra of Data Visualization : Overview First, Zoom and Filter, Details on Demand

Unit V: Data Visualization using Excel Data & Tableau

1. Visualizing Unstructured Information
2. Data Visualization Using Excel
3. Data Visualization Using Tableau

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN403	DSE	Data Visualization For Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Suggested Readings

1. *https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.coursera.org/learn/datavisualization&ved=2ahUKEwjgrZ714vjuAhXU7XMBHcHNApoQjjgwAnoECCAQAg&usg=AOvVaw0YrCAiEEShQfBLyqiixsiz (Retrieved on February 02,2021)*
2. Liberatore and Luo (2010). *The Analytics Movement, Interfaces, Articles in Advance.* pp. 1–12, 2010.
3. Tufte, E. (2001). *The Visual Display of Quantitative Information (2nd Edition).* Graphics Press: UK.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav School of Management

Choice Based Credit System (CBCS) in Light of NEP-2020
MBA-BUSINESS ANALYTICS - IV SEMESTER (2022-2024)

MBABAN404 MARKETING METRICS FOR ANALYTICS

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN404	DSE	Marketing Metrics for Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

This course aims to cover topics in marketing analytics, an area that remains the decision enabler of utmost importance for many of the offline and online companies' marketing and merchandising divisions.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. Students will have a general understanding of this vital area of marketing analytics.
2. Students will be able to analyse marketing data effectively using analytics.

COURSE CONTENT

Unit I: Overview of marketing analytics

1. Introduction to analytics - Marketing Analytics as an enabler of Marketing Strategy
2. Statistical foundations of marketing: Descriptive Statistics – Distributions - General Linear Models – Optimization.

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN404	DSE	Marketing Metrics for Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Unit II: Product Analytics

1. Pricing and Revenue Management: Point-of-sale Data - Deciding on the "Right" Pricing Approach, a.k.a Strategic Pricing
2. Implementing tools to support pricing strategy - Managing the prices to meet revenue goals, a.k.a. Tactical Pricing Assortment Optimization: Panel and Point-of-Sale data - Customer meets product –
3. A retailer's nightmare: shelf-space optimization - Site-to-store – Product meets customer.

Unit III: Customer Analytics

1. Customer Lifetime Value: Loyalty Data - What is a customer's lifetime? –
2. How can we predict it? Market Basket Analysis
3. Market-Basket Data - Product Affinities

Unit IV: Channel analytics

1. Web Analytics: Online Data - Managing the online real estate
2. The "cloud" Marketing Budget Optimization across Channels
3. Search Engine Marketing versus Search Engine Optimization

Unit V: Managing the Delivery

1. Managing the delivery of analytics projects: Client is always right Future of Marketing Analytics.

Suggested Readings

1. Data, data everywhere, "*Special report on managing information, Economist"*, February 27th, 2010.
2. ***Using R for Data Analysis and Graphics: Introduction, Code and Commentary***. *Available at*http://cran.rproject.org/doc/contrib/usingR.pdf?bcsi_scan_B318185731EF FDE3=0&bcsi_scan_filename=usingR.pdf
3. Fader, P. and Hardie B.(2009). *Probability Models for Customer-Base Analysis. Journal of Interactive Marketing 23, 61–69.*

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav School of Management

Choice Based Credit System (CBCS) in Light of NEP-2020
MBA-BUSINESS ANALYTICS - IV SEMESTER (2022-2024)

MBABAN405 DECISION AND RISK ANALYTICS

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN405	DSE	Decision and Risk Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

Course focus is predominantly on prescriptive analytics with some parts focused on predictive analytics. It also focuses on topics such as PERT, CPM, computer simulation, decision analysis using decision trees and quantitative value functions, and heuristic methods are covered, as well as use of contemporary computer software for problem solving.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. Enable students to arrive at decisions based on analytical research
2. Use effectively analytical decision making tools for problem solving

COURSE CONTENT

Unit I: Predictive and Prescriptive Analytics

1. Introduction: predictive and Prescriptive Analytics
2. Mathematical optimization

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN405	DSE	Decision and Risk Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Unit II: Networks Modeling

1. Networks modeling-
2. Multi-objective optimization
3. Stochastic modeling

Unit III: PERT & PERT

1. PERT (performance evaluation and review technique)
2. CPM, (critical path method)
3. Computer simulation

Unit IV: Decision and Risk Analysis

1. Decision and Risk analysis
2. Decision trees
3. Quantitative value function model

Unit V: Forecasting Models

1. Forecasting models
2. Heuristic methods.

Suggested Readings

1. Stephen Powell and Ken Baker (2004). *The Art of Modeling with Spreadsheet.* Wiley.
2. *Hussein, Abbass (2014).* ***Computational Red Teaming Risk Analytics of Big-Data-to-Decisions Intelligent Systems.*** Springer International**:** Switzerland.

Choice Based Credit System (CBCS) in Light of NEP-2020

MBA-BUSINESS ANALYTICS - IV SEMESTER (2022-2024)

MBABAN406 BIG DATA ANALYTICS

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN406	DSE	Big Data Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives

1. Identify the importance of data governance for managing Big Data.
2. Learn tips and tricks for Big Data use cases and solutions.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcome

1. Enable the students to analyse the big data using modern statistical/analytics approach.

COURSE CONTENT

Unit I: Introduction to Big Data

1. Introduction – distributed file system
2. Big Data and its importance, Four Vs, Drivers for Big data, big data analytics, big data applications
3. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN406	DSE	Big Data Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Unit II: Introduction Hadoop

1. Big Data – Apache Hadoop & Hadoop EcoSystem
2. Moving Data in and out of Hadoop
3. Understanding inputs and outputs of Map Reduce - Data Serialization.

Unit III: Hadoop Architecture

1. Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands ,
2. Anatomy of File Write and Read., Name Node, Secondary NameNode, and DataNode
3. Hadoop Map Reduce paradigm, Map and Reduce tasks, Job, Task trackers –
4. Cluster Setup – SSH & Hadoop Configuration – HDFS Administering –Monitoring & Maintenance.

Unit IV: Introduction to R

1. Concept of R, Installing R, IDE of R, Getting help from R
2. Mathematical Operators and Vectors, Assigning Variables, Special Numbers, Logical Vectors, Classes, Different types of numbers, Changing classes, Examining Variables, the workplace.

Unit V: Elements in R

1. Vectors – Sequences, Lengths, Names, Indexing Vectors, Vector Recycling and Repetition,
2. Matrices and Arrays – Creating Arrays and Matrices, Rows, Columns, Dimensions, Indexing Arrays, Combining Matrices, Array Arithmetic,
3. Lists – Creating lists, Automatic and recursive variables, List dimensions and arithmetic, indexing lists.

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MBABAN406	DSE	Big Data Analytics	60	20	20	-	-	3		-	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **DSE-** Discipline Specific Elective

***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Suggested Readings

1. Michele Chambers, Michael Minelli, Ambiga Dhiraj (2012). ***Big Data Big Analytics, Emerging Business Intelligence and Analytic Trends for Today's Businesses***. Wiley: New Delhi.
2. Boris lublinsky, Kevin t. Smith and Alexey Yakubovich (2015). ***Professional Hadoop Solutions***. Wiley India: New Delhi.
3. Gert H. N. Laursen and Jesper Thorlund (2013). ***Business Analytics for Managers. Taking Business Intelligence beyond Reporting***. Wiley India: New Delhi.