

Course Code	Course Title	L	T	P	C
BAMGT222	Predictive Analytics for Business Strategy	2	0	2	3
Pre-requisite	NIL	Syllabus Version			
		1			
Course Objectives					
Introduce students to the key concepts, methodologies, and strategic relevance of predictive analytics in business decision-making. Equip learners with the capability to design, construct, and validate predictive models using regression, decision trees, clustering, and ensemble methods. Facilitate the interpretation and application of predictive insights to address business challenges in areas such as segmentation, forecasting, and risk management.					
Course Outcomes					
Explain the fundamental concepts, processes, and business relevance of predictive analytics. Prepare and preprocess business datasets by handling missing values, outliers, and feature transformations to ensure model reliability. Analyze predictive models using regression, decision trees, and clustering techniques to solve structured and unstructured business problems. Analyze descriptive models for business problems Evaluate advanced predictive models for strategic decisions.					
Module:1	Introduction to Predictive Analytics	3 hours			
Overview of predictive analytics and its applications. Understanding the role of data in predictive analytics. Key concepts: supervised vs. unsupervised learning, parametric vs. non-parametric models. Business understanding and defining the problem.					
Module:2	Data Understanding and Preparation	4 hours			
Data visualization and summary statistics, Data cleaning and preprocessing, Handling missing values and outliers, Feature creation and variable transformations, Data quality and reliability					
Module:3	Predictive Modeling	7 hours			
Introduction to predictive modeling techniques. Regression, Decision trees, logistic regression, and neural networks. Model assessment and evaluation metrics. Overfitting					

and regularization techniques. Ensemble methods: bagging, boosting, and random forests.		
Module:4	Descriptive Modeling and Segmentation	7 hours
Clustering algorithms: K-means and Kohonen SOM, Principal component analysis (PCA) and dimensionality reduction, Association rules and itemsets. Interpreting descriptive models and identifying key variables		
Module:5	Advanced Predictive Modeling Techniques	7 hours
Advanced regression techniques: generalized linear models, generalized additive models. Support vector machines (SVMs) and kernel methods. Random forests and gradient boosting machines. Model selection and hyperparameter tuning.		
Module:6	Contemporary Topics	2 hours
Explainable AI, Realtime Analytics, Quantum computing, Guest Lecture		
Total Lecture Hours:		30 hours
Text Book(s)		
Sebastian Raschka and Vahid Mirjalili, " Python Machine Learning ", Packt, 2 nd Edition, 2017 Daniel T. Larose and O.P. Wali, " Data mining and Predictive Analytics ", Wiley, 2 nd Edition, 2023		
Reference Books		
Binit Patel, " Machine Learning Using Python - A Practical Guide ", Bluerose Publishers Pvt Ltd, 1 st Edition, 2022		
Indicative Experiments		
1. Data Understanding and Preparation		3 hours
2. Regression Analysis		3 hours
3. Logistic Regression Analysis		3 hours
4. Decision Trees		3 hours
5. Clustering- K-means		3 hours
6. PCA		3 hours
7. Association Rule		3 hours

8. SVM	3 hours
9. Random Forest	3 hours
10. Anomaly Detection	3 hours
Total Laboratory Hours:	30 hours
Text Book(s)	
Sebastian Raschka and Vahid Mirjalili, " Python Machine Learning ", Packt, 2 nd Edition, 2017 Daniel T. Larose and O.P. Wali, " Data mining and Predictive Analytics ", Wiley, 2 nd Edition, 2023	
Reference Books	
Binit Patel, " Machine Learning Using Python - A Practical Guide ", Bluerose Publishers Pvt Ltd, 1 st Edition, 2022	
Mode of Evaluation: Continuous Assessment Test, Quiz, Final Assessment Test, Lab Continuous Assessment, Lab Final Assessment, Seminar, Course Project	
Recommended by Board of Studies :	26-09-2025
Approved by Academic Council : No. 80	20-11-2025