Proposal for New Course		
Course Number	**:**	MB520
Course Name	**:**	Fundamentals of Data and Analytics
Credits	**:**	2-0-0-2 (L-T-P-C)[1]
Prerequisites	**:**	None
Intended for	**:**	MBA
Distribution	**:**	Compulsory
Semester	**:**	Odd

Preamble

Increasingly the modern business is relying heavily on data so as to arrive at most appropriate rational decisions. Every successful decision maker needs to have the understanding of the basics of data analytics. The effectiveness of the decisions depends on data sources, data quality, intelligent data processing and analytics. This course will focus of model building from the given data, describing what happened, diagnosing what's wrong, predicting what's ahead, and prescribing what and how to do.
The participants will learn to collect right data and information, understand data, data preparation, data visualization, understand metrics used. Further, they will learn concepts of data analytics, acquaint with software tools, and understand business through data.

Objective

With the help of various examples students will learn how to identify which data sources likely matches research questions, how to turn research questions into measurable pieces, and how to think about an analysis plan.

On completion of this course, the student should be able to:

- Understanding and driving analytics effectively.
- Establishing processes or tools to measure success through analytics.
- Identifying good analytics from bad-analytics.
- Understanding where analytics can add value.

[1] L= Lectures per week, T=Tutorials per week – P = Practical/Lab session per week – C = Credits for course

Course Modules with Quantitative lecture hours		
Module 1	**Data and Analytics Concepts**	**(4)**
Data concepts - DIKW and data analytics pyramid, small data to big data, Data analytic thinking, uncertainty and decision, data driven and goal driven decision making, Analytics processes and systems, data and analytics maturity, CRISP-DM Process.		
Module 2	**Models and Processes**	**(4)**
Business analytics models, Strategy creation and Key Performance Indicators (KPIs), Business questions and KPIs, Asking right business questions on data and analytics, Data and Analytics Models and their types.		
Module 3	**Data Preparation**	**(6)**
Data collection and preparation, perspectives on data, data types, sources and quality, data description using levels of measurement and types of measurement scales, Types of attributes/features, data cycle-the data preparation activities, data cleaning and data transformation, data encoding, data discretization, transformation for normality, feature selection- shrinking, dimensionality reduction.		
Module 4	**Exploratory Analytics**	**(4)**
Describing the past, data visualization, understanding your data sources, understanding variability in the data.		
Module 5	**Predictive Analytics**	**(6)**
Classes of predictive models-logic driven and data driven, predicting numerical and categorical values, asking predictive questions, simple and multiple linear regression as a predictive tool, correlation and multiple regression analysis, Forward and backward step-wise regression, Role of F-ratio and R-square adjusted statistics for predictive analytics (multiple regression based).		
Module 6	**Prescriptive Analytics**	**(4)**

Optimization and experimentation for prescriptive analytics, asking prescriptive questions, optimization (MS Excel solver/other optimization tools), Prescriptive steps in analytics – defining the problem, decision variables, objective functions, constraints, and arriving at business solution. Introducing Causality, importance of causal analytics for business problem solving.

Lab Exercises (If applicable):
Nil.

Textbooks:	
1.	
2.	
Reference Book:	
1	Daniel, Vaughan, Analytical Skills for AI & Data Science, Shroff Publishers and Distributors Pvt. Ltd, 2020.
2	Daniel T. Larose, Chantal D. Larose: Data Mining and Predictive Analytics, Wiley, 2016.
3	HBR Guide to Data Analytics Basics for Managers, Harvard Business Review Press, 2018
4	Provost, F and Fawcett, T., Data Science for Business, Shroff Publishers and Distributors Pvt. Ltd, 2014.
5	Jeffrey D. Camm, James J. Cochran, Michael J. Fry, Jeffrey W. Ohlmann, Business Analytics: Descriptive, Prescriptive and Predictive, (4ed), Cengage Learning Inc, 2021.
6	Laursen, G.H.N. and Thorlund, J., Business Analytics for Managers. Wiley India Pvt. Ltd., 2014.

7	Amar Sahay, Essentials of Data Science and Analytics Statistical Tools, Machine Learning, and R-Statistical Software Overview, Business Expert Press, 2021.
8	J. D. Kelleher and B. Tierney, Data Science, The MIT Press, 2018