BUSINESS ANALYTICS

Subject Code	: 14MBA24	IA Marks	: 50
No. of Lecture Hours / Week	: 04	Exam Hours	: 03
Total Number of Lecture Hours	: 56	Exam Marks	: 100
Practical Component	: 01 Hour / Week		

Objectives:
1. To introduce analytics as a tool for business decision making
2. To learn multivariate statistical methods to explain or predict the measured values
3. To familiarize the use of project management evaluation techniques
4. To orient the students with research tools

Module 1 (8 Hours)
Descriptive Statistics: Measures of central tendency - Problems on measures of dispersion – Karl Pearson correlation, Spearman's Rank correlation, simple and multiple regression (problems on simple regression only)

Module 2 (6 Hours)
Probability Distribution: Concept and definition - Rules of probability – Random variables – Concept of probability distribution – Theoretical probability distributions: Binomial, Poisson, Normal and Exponential – Baye's theorem (No derivation) (Problems only on Binomial, Poisson and Normal)

Module 3 (8 Hours)
Decision Theory: Introduction – Steps of decision-making process – types of decision-making environments – Decision-making under uncertainty – Decision-making under Risk – Decision tree analysis (only theory).
Design of Experiments: Introduction – Simple comparative experiments – Single factor experiments – Introduction to factorial designs

Module 4 (only theory) (6 Hours)
Cluster Analysis: Introduction – Visualization techniques – Principal components – Multidimensional scaling – Hierarchical clustering – Optimization techniques
Factor Analysis: Introduction – Exploratory factor analysis – Confirmatory factor analysis
Discriminant Analysis: Introduction – Linear discriminant analysis

Module 5 (5 Hours)
Foundations of Analytics: Introduction – Evolution – Scope – Data for Analytics – Decision models – Descriptive, Predictive, Prescriptive – Introduction to data warehousing – Dashboards and reporting – Master data management(only theory)

Module 6 (15 Hours)
Linear Programming: structure, advantages, disadvantages, formulation of LPP, solution using graphical method. Transportation problem: Basic feasible solution using NWCM, LCM and VAM, optimisation using MODI method.

Assignment Model: Hungarian method – Multiple solution problems – Maximization case – Unbalanced – Restricted.

Module 7 **(8 Hours)**
Project Management: Introduction – Basic difference between PERT & CPM – Network components and precedence relationships – Critical path analysis – Project scheduling – Project time-cost trade off – Resource allocation

Instruction: Equal weightage is given for both theory and problems in the ratio of 60:40

Practical Component:
1. Students are expected to have a basic excel classes
2. Students should be able to categorize the data and find out the basic statistical values

RECOMMENDED BOOKS:
1. James R. Evans, Business Analytics – Methods, Models and Decisions, Prentice Hall, 1st edition, 2013, ISBN – 978-0-13-295061-9
2. J K Sharma, Operations Research – Theory & Applications, Macmillan publishers, 5th edition, 2013, ISBN 978-9350-59336-3
3. Purba Halady Rao, *Business Analytics – an application focus*, PHI Learning, 2013, ISBN 978-81-203-4819-6
4. N D Vohra, Quantitative Methods, Tata McGraw Hill, 4th Edition, 2010, ISBN 978-0-07-014673-0
5. S C Gupta, Fundamentals of Statistics, Himalaya Publishing House, 6th edition, 2007, ISBN 978-81-8318-755-8

REFERENCE BOOKS:
1. James Lattin, Douglas Carroll and Paul Green, *Analyzing Multivariate Data*, 2003, ISBN 0-534-34974-9, Thomson Learning
2. E. Turban, R. Sharda, J. Aronson, and D. King, *Business Intelligence: A Managerial Approach,* Pearson Prentice Hall, 2008, ISBN-13: 978-0-13-234761-7.
3. Anderson, Sweeney and Williams, Quantitative Methods for Business, Thomson, 2005, ISBN 981-240-641-7