MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act,1956

COURSE CONTENT

DATA ANALYTICS								
III SEMESTER								
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
		L	**T**	**P**	**C**	**CIE**	**SEE**	**Total**
20MBA019	**CORE**	4	-	-	4	30	70	100
Contact Classes:60	**Tutorial Classes:** Nil	**Practical Classes:** Nil				**Total Classes:** 60		
Prerequisite: Basic knowledge of statistics and mathematics.								

COURSE OVERVIEW:

The course on Data Analytics introduces students to the concepts and importance of data in business decision-making. It focuses on data visualization, statistical analysis, and interpretation of data using various tools and techniques. The course covers descriptive and predictive analytics, including correlation, regression, and probability distributions. It also explores data mining methods for pattern recognition and classification. Additionally, simulation techniques are introduced to support decision-making under uncertainty, enabling students to analyze data effectively and derive meaningful insights.

COURSE OBJECTIVES:

- Understand the fundamentals of data analytics and its role in business decision-making.
- Apply descriptive statistical measures to summarize and analyze data.
- Analyze relationships between variables using correlation and regression techniques.
- Explore data mining techniques for classification, prediction, and pattern discovery.
- Apply simulation techniques for decision-making under uncertainty and risk analysis.

COURSE OUTCOMES: Students will be able to

1. Explain core principles of data analytics, analytical approaches, big data, visualization tools and statistical techniques.
2. Explore statistical approaches for population-sample analysis, covering descriptive statistics, probability distributions and data modeling
3. Apply statistical methods - correlation, regression, Spearman's rank and ANOVA for inference
4. Analyze data mining techniques, clustering, association rules, classification and prediction methods for effective data exploration - reduction.
5. Examine simulation models namely Monte Carlo and decision trees for risk assessment in decision-making

UNIT-I INTRODUCTION TO DATA ANALYTICS

Introduction to Data- Importance of Analytics- Data for Business Analytics –Big Data - Business Analytics in Practice. Data Visualization – Data Visualization tools, Data queries, Statistical methods for Summarizing data, Exploring data using pivot tables.

UNIT-II DESCRIPTIVE STATISTICAL MEASURES

Population and samples, Measures of location, Measures of Dispersion, Measures of variability, measures of Association. Probability distribution and Data Modeling – Discrete Probability distribution, Continuous Probability distribution, Random sampling from Probability Distribution, Data Modeling and Distribution fitting.

UNIT-III PREDICTIVE ANALYTICS

Karl Pearson Correlation Techniques - Multiple Correlation-Spearman‘s Rank correlation-Simple and Multiple regression-Regression by the method of least squares – Building good regression models – Regression with categorical independent variables - - Linear Discriminate Analysis-One way and Two Way ANOVA

UNIT-IV DATA MINING

Scope of Data Mining, Data Exploration and Reduction, Unsupervised learning – cluster analysis, Association rules, Supervised learning- Partition Data, Classification Accuracy, prediction Accuracy, k- nearest neighbors, Classification and regression trees, Logistics Regression.

UNIT-V SIMULATION

Random Number Generation, Monte Carlo Simulation, What if Analysis, Verification and Validation, Advantages and Disadvantages of Simulation, Risk Analysis, Decision Tree Analysis. Latest Amendments in Data Analytics

TEXT BOOKS:

1. James Evans, Business Analytics, 2e, Pearson, 2019.
2. Camm, Cochran, Fry, Ohlmann, Anderson, Sweeney, Williams Essential of Business Analytics, Cengage Learning.
3. Thomas Eri, Wajid Khattack & Paul Buhler : Big Data Fundamentals, Concepts, drivers and Techniques by Prentice Hall of India, New Delhi, 2015
4. Akil Maheswari: Big Data, Upskill ahead by Tata McGraw Hill, New Delhi, 2016

REFERENCE BOOKS:

- Seema Acharya & Subhashini Chellappan: Big Data and Analytics, Wiley Publications, New Delhi, 2015.
- Foster Provost, Tom Fawcett, *Data Science for Business*, O’Reilly Media.
- Trevor Hastie, Robert Tibshirani, Jerome Friedman, *The Elements of Statistical Learning*, Springer.

ELECTRONIC RESOURCES:

1. https://d1.islamhouse.com/data/en/ih_books/single/en_dataanalytics.pdf
2. http://www.ijcrar.com/vol-2-9/Pinki%20Rani.pdf
3. http://www.pondiuni.edu.in/storage/dde/downloads/markiii_cb.pdf
4. http://nptel.ac.in/courses/110105029/pdf%20sahany/Module-1-1.pdf

MATERIALS ONLINE:

1. Course template
2. Tutorial question bank
3. Tech talk and Concept Video topics
4. Open-ended experiments
5. Definitions and terminology
6. Assignments
7. Model question paper – I
8. Model question paper – II
9. Lecture notes
10. PowerPoint presentation
11. Drishya Siksha Sangrah (DSS) Videos