

## 23 AN 104: STATISTICS FOR BUSINESS ANALYTICS

Course Code	<b>23 AN 104</b>	Course Delivery Method	Classroom / Blended Mode
Credits	4	CIA Marks	30
No. of Lecture Hours / Week	5	Semester End Exam Marks	70
Total Number of Lecture Hours	75	Total Marks	100
Course Focus	Employability	Entrepreneurship	Skill Development

### **COURSE OUTCOMES: By the end of the course, students will be able**

- CO-1 To gain an understanding of how Managers Use Business Analytics to formulate and solve business problems and to support managerial decision making.
- CO-2 To provide students with knowledge of mathematical models for quantitative analysis of managerial problems in Industry and to improve skills in the use of descriptive statistics for business decisions.
- CO-3 To enable the students understanding probability concepts, probability distributions and its applications in business.
- CO-4 To develop the ability to evaluate the predictive analytics models like correlation, Regression and Time Series analysis.
- CO-5 To understand the significance of Business analytics in managerial decision-making

### **COURSE CONTENT**

**UNIT-I: Mathematics and Statistics for Business Analytics:** Application of Differentiation, Maxima and Minima, Matrices and Matrix Operations using Cramer's Rule and Inverse Method, Permutations and Combinations **(Problems)**  
**(15 Hours)**

**UNIT-II: Descriptive Statistics:** Diagrammatic and Graphical Representation of the data Measures of Central Tendency, Measures of Dispersion, Skewness, and kurtosis. **(Theory and Problems).**  
**(15 Hours)**

**UNIT-III: Probability and Probability distributions:** Concept of Probability, Definitions of Probability, Addition Theorem of Probability, Conditional Probability and Multiplication theorem of Probability, Baye's Theorem of Probability and its Applications. Theoretical distributions: Binomial Distribution, Poisson distribution and Normal distribution, Their Properties and Applications **(Theory and Problems).**  
**(15 Hours)**

**UNIT-IV: Business Analytics for Decision making:** Introduction to Hypothesis, Procedure for Testing of Hypothesis, Large and Small Sampling Tests, Z-Test- Single Proportion, Two Proportions, Single Mean, Two Means, t-Test-Single Mean, Difference of Means, Paired t-

test, Chi-square test- Goodness of Fit, Independence of Attributes, ANOVA One way and Two way Classification. **(Problems). (15 Hours)**

**UNIT-V: Predictive Analytics:** Correlation, Regression and Time Series: Correlation: Types of Correlation, Simple and Rank Correlation coefficient in the case of two variables  
Regression: Meaning and importance of Regression Analysis, Estimation of Lines of Regression in the case of two variables Time Series-Components of Time Series, Measurement of Trend (Linear Equation) **(Theory and Problems) (15 Hours)**

**PRACTICAL COMPONENT:**

1. Students should identify three companies using data analytics and analyze how companies are using analytics to prosper.
2. Should form groups ( A group consists of 4-6 students) and download R most popular software ( Free & Open source) for data management and statistical analysis of data
3. Students should conduct team base project which is unified and practical case on a topic of their choice, with approximately 4-6 students per group.
4. Assess the strengths and limitations of analytics and predictive modeling techniques for different business applications and varying data conditions using free and open-source software's like R.
5. Students are asked to conduct Market Survey to know the consumer perception towards any FMCG.

**REFERENCES:**

1. S.C. Gupta.-, Fundamentals of Statistics, 7th Revised Edition (2013) Himalaya Publishing House, New Delhi.
2. Sharma, J.K.-, Fundamentals of Business Statistics, 2nd Edition (2000) Pearson Education, New Delhi.
3. Sancheti, Dc & V.K Kapoor, Business Mathematics, 3<sup>rd</sup> Edition (2014) Sultan Chand & Sons, New Delhi..
4. Sharma, J.K., Quantitative Methods- Theory & Applications, 3<sup>rd</sup> Edition (2010) Macmillan New Delhi.
5. Shmueli, Pateland Bruce, *Data Mining for Business Intelligence, Concepts, Techniques and Applications*, Wiley.
6. Powell and Baker, *Management Science: The Art of Modeling with Spreadsheets*, Wiley.
7. Ledolter, *Data Mining and Business Analytics with R*, Wiley.