



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

RESEARCH METHODOLOGY AND STATISTICS ANALYSIS								
I Semester: MBA								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
CMBE05	Core	L	T	P	C	CIA	SEE	Total
		4	0	-	4	40	60	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil			Total Classes: 45			
Prerequisite: Basic knowledge on statistics and research methodology								
SDGs Mapped: SDG 4 (Quality Education), SDG 9 (Industry, Innovation and Infrastructure)								

I. COURSE OVERVIEW:

This course is designed to understand of statistical methods and research techniques, enabling to make informed decisions in the field of management and conduct research effectively. The practical skills gained in this course are valuable for professionals in a wide range of industries and are often a foundation for further studies in business and management.

II. COURSES OBJECTIVES:

The students will try to learn:

- I. The various statistical techniques and solve problems effectively in the statistics.
- II. The different types of skewness and know about the coefficient variations of skewness.
- III. The application of statistical measures of central tendency and also statistical measures of dispersion.
- IV. The application of ANOVA, other non-parametric test and analyze the recent trends.
- V. The time series analysis and also trend analysis of data and also know its importance for solving the problems arising.

III. COURSE OUTCOMES:

At the end of the course students should be able to:

- CO1 Apply measures of central tendency, dispersion, skewness, and kurtosis for statistical analysis in business.
- CO2 Design business research using appropriate research methods, sampling techniques, and measurement tools.
- CO3 Interpret data using tabulation, diagrams, graphs, and perform hypothesis testing with t-tests.
- CO4 Formulate hypotheses and test them using small sample techniques for managerial decision-making.
- CO5 Apply ANOVA, chi-square, correlation, and regression techniques to analyze business data.
- CO6 Prepare professional research reports and perform time series analysis for forecasting trends.

IV. COURSE CONTENT:

MODULE - I: INTRODUCTION TO STATISTICS (08)

Functions of Statistics and Managerial Applications of Statistics, Relationship with other subjects. Measures of central Tendency- Mean, Median, Mode, Geometric Mean and Harmonic Mean. Range, Quartile deviation, Mean Deviation, Standard deviation and co-efficient of variation. Skewness: Karl Pearson's co-efficient of skewness, Bowley's co-efficient of skewness, Kelleys co-efficient of skewness, Kurtosis.

MODULE - II: RESEARCH DESIGN (09)

Meaning, Scope, Role of Business Research, Types of Research, Research Process, Ethics in Business Research, Research Problem, Purpose of Research Design, Types of Research Design: Experimental Research Design, Research Design for Cross Sectional, Longitudinal Studies, Data Collection **Methods & Tools:** Types of Data, Sources and Instruments for Data, Guidelines for Questionnaire, Sampling and its Application. Measurement and Scaling, Reliability and Validity in Measurement of Variables, Sources of Error in Measurement.

MODULE - III: TABULATION OF UNIVARIATE AND SMALL SAMPLE TESTS (08)

Bi variate and multi variate data, data classification and tabulation, diagrammatic and graphical representation of data. One dimensional, two dimensional and three dimensional diagrams and graphs.

t-Distribution, Properties and Applications, Testing for One and Two Means, Paired t-Test, Hypothesis Formulation and Testing.

MODULE - IV: ANALYSIS OF VARIANCE AND CORRELATION ANALYSIS (10)

One-Way and Two-Way ANOVA (with and without Interaction). Chi-Square Distribution: Test for a Specified Population Variance, Test for Goodness of fit, Test for Independence of Attributes.

Correlation, Limits for Coefficient of Correlation, Karl Pearson's Coefficient of Correlation, Spearman's Rank Correlation, Linear and Multiple Regression Analysis, Discriminant Analysis, Exploratory Factor Analysis.

MODULE - V: REPORT WRITING AND TIME SERIES ANALYSIS (10)

Importance of Report writing, Types of Research Reports, Report Preparation and Presentation, Report Structure, Report Formulation, Guides for Effective Documentation, Research Briefings. Referencing Styles and Citation in Business Management Research. Components, Models of Time Series-Additive, Multiplicative and Mixed models, Trend analysis-Free hand curve, Semi averages, moving averages, Least Square methods.

V. TEXTBOOKS:

1. Gerald Keller, "Statistics for Management and Economics", Cengage Learning, 12th edition, 2025.
2. Gupta S.C., "Fundamentals of Statistics", Himalaya Publishing House, 8th edition, 2023.
3. Levin R.I., Rubin S. David, "Statistics for Management", Pearson, 9th edition, 2023.
4. Levin Richard (Author), H. Siddiqui Masood (Author), S. Rubin David (Author), Rastogi Sanjay (Author), "Statistics for Management", Pearson Education, 8th edition, 2017.
5. P.C. Tulsian, Bharat Jhunjhnuwala, "Business Statistics", S. Chand, 2016.

VI. REFERENCE BOOKS:

1. Donald R Cooper, Pamela S. Schindler, Business Research Methods, Tata Mc Graw Hill, 12e, 2019.
2. Deepak Chawla, Neena Sondhi, Research Methodology: Concepts & Cases, Vikas Publishing, 2e, 2016.
3. William G Zikmund, Barry J Babin, Jon C. Carr, Atanu Adhikari, Mitch Griffin, Barry J. Babin, Business Research Methods Cengage Learning, 8e, 2016.
4. Levine, Stephan, Krehbiel, Berenson, "Statistics for Managers using Microsoft Excel", PHI, 4th edition, 2022.
5. J. K Sharma, "Business Statistics", Pearson Publications, 2nd edition, 2015.

VII. Web References:

1. <https://aditya30702.files.wordpress.com/2012/07/statistics-for-managers-using-microsoft-excel-gnv64.pdf>
2. <http://www.nprcet.org/mba/document/First%20Semester/BA7102%20STATISTICS%20FOR%20MANAGEMENT%20LT%20P%20C%203%201%200%204%20ODD.pdf>

VIII. E-Text Books:

1. <http://bookboon.com/en/statistics-and-mathematics-ebooks>
2. <http://www.ebay.com/bhp/statistics-for-managers-using-microsoft-excel>
3. <https://www.sapnaonline.com/books/statistics-management-levin-richard-8177585843-9788177585841-academic>
4. <https://link.springer.com/book/10.1007/b101868>